BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

DES PLAINES RIVER WATERSHED ALLIANCE, LIVABLE COMMUNITIES ALLIANCE, PRAIRIE RIVERS NETWORK, and SIERRA CLUB,	)	
Petitioners,	)	
v.	)	PCB 04-88 (NPDES Permit Appeal)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY and VILLAGE OF NEW LENOX	)	
Respondents.	)	

NOTICE OF FILING

PLEASE TAKE NOTICE that the Des Plaines River Watershed Alliance, the Livable Communities Alliance, Prairie Rivers Network, and the Sierra Club have filed the attached PETITIONERS' POST HEARING MEMORANDUM.

Albert F. Ettinger (Reg. No. 3125045)
Counsel for Des Plaines River Watershed Alliance, Livable Communities Alliance, Prairie Rivers Network and Sierra Club

DATED: April 21, 2006

Environmental Law and Policy Center
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PETITIONERS' POST HEARING MEMORANDUM

Neither the applicant nor the Illinois Environmental Protection Agency ("IEPA" or "Agency") did the necessary and legally-required studies to assure that Permit No. IL0020559 only allow pollution that was necessary and environmentally benign. As a result, the permit as issued allows unnecessary new pollution and the continuation of existing pollution that is likely to damage what was once one of Illinois' premier water bodies. The record before the Agency shows that the National Pollutant Discharge Elimination System ("NPDES") permit granted to the Village of New Lenox violates Section 39 of the Illinois Environmental Protection Act, 415 ILCS § 5/39, and numerous different Board rules as to numerous independent pollutant parameters. The permit allowed New Lenox to continue its existing discharge to Hickory Creek in Will County without increased controls despite evidence that the discharge was contributing to violations of water quality standards. The permit also allowed New Lenox to increase its discharge from 1.54 million gallons per day to 2.516 million gallons per day without any permit limits or other controls on nutrient discharges or copper. The Des Plaines River Watershed Alliance, the Livable Communities Alliance, Prairie Rivers Network, and the Sierra Club (collectively, "Petitioners") properly raised the issues that are the subject of this appeal.

The permit as issued violates five different regulatory requirements as to a number of different parameters. First, the permit as issued violates provisions of the Board's antidegradation rules, 35 Ill. Adm. Code § 302.105(c)(1) and (c)(2)(B)(iii), because it allows pollution not shown to be necessary and IEPA failed to "assure" that measures were incorporated into the permit to "minimize" pollution by failing to require or even seriously consider:

a. Phosphorus removal

b. Nitrogen removal

Second, the permit as issued violates 35 Ill. Adm. Code § 302.105(c)(2)(B)(i) because IEPA failed to "assure" that the increased discharge would not cause or contribute to violation of:

a. the narrative standard against offensive conditions, 35 Ill. Adm. Code § 302.203

b. the dissolved oxygen standard , 35 Ill. Adm. Code § 302.206,

c. the pH standard, 35 Ill. Adm. Code § 302.204, and

d. the copper standard, 35 Ill. Adm. Code § 302.208(e).

Third, the permit as issued violates 35 Ill. Adm. Code § 309.141(d) and federal regulations incorporated by reference, 40 C.F.R. §§ 122.4(d), 122.44(d)(1), because the permit does not "ensure" that the *total* discharge under the permit (the existing discharge plus the increased discharge) will not cause or contribute to violation of the standards regarding offensive conditions, dissolved oxygen, pH, and copper. Also in violation of 35 Ill. Adm. Code 142 the Agency failed to "verify" that the total plant discharge will not violate the offensive conditions, dissolved oxygen, pH and copper standards.

Fourth, the permit as issued violates 35 Ill. Adm. Code § 302.105(c)(2)(B)(ii) because the Agency did not "assure" that "all existing uses will be fully protected."

Finally, the permit as issued violates the Environmental Protection Act because it was issued although the applicant did not make the requisite showing that its discharge would not cause or contribute to violation of the offensive conditions, dissolved oxygen, pH or copper standards. *See* 415 ILCS § 5/39 (permit shall issue "upon proof by the applicant" that the facility will not cause a violation). In fact, the data offered by the applicant showed that the discharge is a major source of nutrients known to cause offensive algal blooms, low nighttime dissolved

oxygen levels and pH problems in water bodies. The applicant's data also showed that there was a potential to cause violation of the acute and chronic copper standards.[1]

The relevant facts and legal theories overlap with regard to many of these violations of the Environmental Protection Act and the Board regulations and Petitioners will attempt to avoid unnecessary repetition in the presentation of the facts and law. However, it must be emphasized that the permit as issued violates the Act or Board rules in many independent ways. As to some of these violations, there is clear evidence in the record showing that the permit should not have been issued and absolutely nothing in the record even superficially supporting IEPA's decision to issue the permit. As to other violations, there are conclusory statements in the record that would support issuance of the permit as written if the statements were supported by facts, but the statements relied on by IEPA have no support in the record. Under the law explained below, the permit cannot be sustained as issued unless the Agency record, as presented in the Responsiveness Summary, shows that the permit accords with every applicable regulation as to every pollutant parameter.

If the Board rules that the permit as issued violates the Environmental Protection Act or the Board rules in any of the ways asserted by Petitioners, the Board should remand the permit to IEPA for reconsideration as to each violation found by the Board. This would not cause any unusual hardship to New Lenox. On remand, IEPA should place economically reasonable limits on phosphorus, consider requiring other steps to minimize pollution and consider further studies

[1] Petitioners believe that the permit also violates 35 Ill. Adm. Code § 302.105(c)(2)(B)(iii) because IEPA did not properly consider land treatment and other alternatives that would have directed the discharge away from Hickory Creek. Given that the expanded plant is now on line and the practical and political realities implied by that fact, it does not seem worthwhile now to consider alternatives to discharges to Hickory Creek as to this permit although alternatives should be considered in the future as plant treatment costs increase.

or limits to ensure protection of water quality standards.

I. THE RELEVANT FACTS

A. Hickory Creek

Hickory Creek, a tributary of the Des Plaines River which flows in Will County, was once known for its exceptionally high water quality and biological integrity. Phillip Smith, a scientist of the Illinois Natural History Survey wrote in 1971 that "Prairie and Jackson Creeks have good species diversity, but Hickory Creek is the outstanding stream in the [Des Plaines River] system and contains populations of such unusual species as the northern hogsucker, rosyface shiner, and slender madtom." (HR 115)

More recently, Hickory Creek has been rated a "C" stream under IEPA's Biological Stream Characterization system. (HR 5) Also, IEPA's 2002 list of impaired waters identified Hickory Creek as having high levels of phosphorus and nitrogen because measurements of phosphorus and nitrogen were at or above the 85th percentile of all measurements of those pollutants in the state. (HR 5)[2] Further, the U.S. Geological Survey database shows that for the period of 1992 to 1997 total phosphorus in Hickory Creek exceeded IEPA's value for listing a pollutant as a potential cause of impairment for more than 20 percent of the samples. The phosphorus level in Hickory Creek often vastly exceeded U. S. EPA's recommended phosphorus criterion. (HR 67)

[2] In the Illinois Water Quality Report 2004, Hickory Creek Segment GG02 is listed as impaired with the potential causes of impairment being silver, nitrogen, pH, sedimentation/siltation, total dissolved solids, chlorides, flow alterations, physical-habitat alterations, total fecal coliform bacteria, total suspended solids, excess algal growth, and total phosphorus. It is also listed as impaired in the draft 2006 Illinois Water Quality Report with potential causes being chloride, habitat alterations, flow, sediment, silver, total dissolved solids, total suspended solids, zinc, total nitrogen, total phosphorus, excess algae, and fecal coliform.

B. Information IEPA had on Hickory Creek and the New Lenox discharge before it gave public notice of the draft permit

IEPA had a variety of information about Hickory Creek and the proposed discharge when it wrote the draft permit. It had the general data on degradation of the creek discussed above. IEPA itself had not, however, done any recent detailed study of the creek. The IEPA Antidegradation Assessment (HR 5-7) states that "The most recent facility related stream survey conducted by the Agency was on June 10, 1991. The facility related stream survey is not representative of the stream conditions that exist at this time, since the facility has been expanded since the 1991 facility related stream survey was conducted." (HR 5)

IEPA asked the applicant to perform a study of Hickory Creek. (HR 660.5) A September 30, 2002 memo by IEPA's Robert Mosher describes the reason IEPA asked for the study:

> I'll try to state the purpose behind the New Lenox [Facility Related Stream Survey] conducted by Earth Tech. New Lenox STP is up for an expansion. Unfortunately, Hickory Creek is listed as an impaired water under 303(d) (based on pretty old data) and some would say that pollutant loadings should not be increased. When faced with this dilemma, we are without policy. It seemed right at the time to tell New Lenox to conduct a new [Facility Related Stream Survey]. If it was found that the existing discharge was not a part of the 303(d) problem, then we could say that this issue should not stop the expansion. On the other hand, if they did document a stream impact from the existing discharge we could say that either an overloaded plant that could not meet standards was to blame and therefore they should be allowed to expand, or, the existing plan is meeting limits and yet the stream is still impaired and therefore an expansion could just make things worse. Under this possibly flawed reasoning (its all we've got because nobody seems to be able to scope this out any better than that) 2 out of 3 possible results allow the expansion to go as planned. (HR 673)

To do the study, the New Lenox hired Earth Tech that sampled macroinvertebrates above and below the New Lenox discharge point on August 20, 2002. (HR 5, 513-20). Finding that

there was no "definitive" difference in the health of the macroinvertebrate community above and below the plant, Earth Tech concluded that there "are likely no significant adverse effects to Hickory Creek from the New Lenox STP effluent discharge."[3] (HR 514) Earth Tech also concluded on page 3 of the study, without explanation, that "the invertebrate community will likely not be affected by the proposed treatment plant expansions and additional effluent." (HR 515).

The Hearing Record contains extensive criticisms by IEPA staff of the Earth Tech study. (HR 537, 556-58, 561, 661-98). A Sept. 24, 2002 internal IEPA email by IEPA biologist Howard Essig states, "The macroinvertebrate memo prepared by Earth Tech is one of the poorest studies I have seen in a while." This email also states, "Statements made by Earth Tech on page 3 of their report are all without merit. They do not back up any of their statements with data. For example they attribute differences in taxa between stations to variations in stream flow, dissolved oxygen levels and habitat types- but they provided no stream flow or dissolved oxygen data." The email further states, "Earth Tech also indicated that the current baseflow of Hickory Creek is adequate to dilute the volume discharged from the WWTP. They did not provide any flow data on Hickory Creek or the New Lenox WWTP to back up this claim." (HR 666-67)

A September 24 email by IEPA biologist Roy Smogor explains that because the study did

[3] In drawing this conclusion, Earth Tech did not consider whether the macroinvertebrate community *above* the New Lenox plant was affected by discharges from Frankfort and other pollution sources *upstream* of the New Lenox plant or whether, because water quality should have been expected to improve as the distance from the Frankfort discharge grew, the macroinverbrate community below the New Lenox plant should have been expected to be better than it was if the New Lenox plant was having no effect. In other words, the fact that there were so many pollution tolerant species above and below the New Lenox plant may prove that Hickory Creek is being injured above New Lenox by upstream pollution sources and is being injured downstream from the New Lenox plant by the pollution that reaches those areas from the sources above New Lenox reinforced by the pollution coming from the New Lenox plant.

not properly compare similar types of habitats above and below the plant, the study could not be fixed "without re-collecting the critters in ways that more appropriately address the objectives of the study." This email goes on to conclude that "Fundamental shortcoming in the sampling method used in this study prevent meaningful interpretation of the resulting MBI [macroinvertebrate] scores." (HR 665)

An Oct. 9, 2002 memorandum by Smogor summarizes the reviews by three IEPA biologists (Essig, Smogor and Mark Joseph) of the Earth Tech study and recommends that the study be conducted again. This memo states, "We find it difficult to judge the validity of the analyses and conclusions because the study used different collection methods, different taxon-tolerance values, and different criteria for interpreting MBI [macroinvertebrate] scores than those typically used by Illinois EPA. In addition, the report does not contain enough specific information on habitat, water chemistry, and flow." The memo concludes, "Therefore we recommend that Earth Tech conduct the survey again following the guidelines listed below." (HR 559-60).

A Nov. 25, 2002 IEPA email by Howard Essig asks whether "New Lenox conducted another study as Roy, Mark and I recommended" (HR 700) A Nov. 26, 2002 IEPA email by Greg Good (HR 562) shows that IEPA believed it was only necessary to require a proper biological study if the water was listed on the IEPA 305(b)/303(d) impaired waters list because of prior biological studies.[4] The email states, "The basis for the 305(b)/303(d) 'partial impairment' assessment was TDS standards violations rates greater than 11 percent. Therefore, forget using the contractor's bug study." According to Mr. Good, among the lessons learned

[4] Subsequently, Hickory Creek has been listed as impaired based on biological studies.

from IEPA's review of the Earth Tech study is that communities doing biological studies should use IEPA methods if possible and that quality assurance methods should be worked out in advance.

Despite the internal criticisms of the Earth Tech study, IEPA referenced it in the November 26, 2002 Antidegradation Assessment stating, "New Lenox sponsored a macroinvertebrate survey of Hickory Creek at this location in August 2002. Pollution intolerant organisms were found both upstream and downstream of the existing discharge." (HR 5)

The Antidegradation Analysis also stated that "the incremental nutrient loading anticipated to result from this project is not expected to increase algae or other noxious plant growth, diminish the present aquatic community or otherwise aggravate existing stream conditions." (HR 6) This claim is out of the blue since the record does not contain any scientific study or consideration of the potential effect of increased nutrient discharges from the plant on Hickory Creek or the Des Plaines River on algal growth, dissolved oxygen levels or pH levels. Further, since all it had was macroinvertebrate data taken at five sites, the Earth Tech study did not discuss the potential effect of the existing or increased discharge on algal blooms, dissolved oxygen levels, or pH levels. In an email of September 9, 2002, IEPA's Robert Mosher wrote, "There is no good way to predict what impact the expansion may have (antidegradation)...." (HR 660.5)

In addition to the Earth Tech macroinvertebrate study, IEPA had before it at the time of the issuance of the draft permit water quality data collected on August 20, 2002 by the Village of New Lenox (HR 522-35). It indicated the total phosphorus in Hickory Creek on that particular day was between 1.49 and 1.63 milligrams per liter. (HR 524, 527) These concentrations are approximately 20 times the U. S. EPA-recommended criterion and more than twice IEPA's value

for listing phosphorus as a potential cause of impairment. (HR 67) The sampling also found 2.76 mg/L of total phosphorus in the New Lenox plant effluent, almost twice the upstream concentration on that day and six times the average over time for that particular stream. (HR 68, 525) This data also shows stream nitrate levels between 6.2 mg/L and 7.4 mg/L with New Lenox discharging nitrate at a concentration of 11 mg/L. (HR 524, 525, 527)

Prior to issuing the public notice, IEPA also conducted a "reasonable potential analysis" of the chance that the discharge could cause a violation of certain numeric water quality standards. (HR 508-10) In this analysis the concentration of copper in the highest of the two samples was 20.5 µg/l while the chronic standard for copper at the hardness level found in Hickory Creek is 20.6 µg/l. IEPA's calculation of the reasonable potential for a violation of certain numeric water quality standards for copper using the U.S. EPA method revealed that there was a reasonable potential for the level of copper to be more than double the acute water quality standard for copper and to exceed the chronic standard by a factor of over 3.7. (HR 508)[5]

C. Information Learned and Issues Raised during the Public Comment Period

On January 5, 2003, IEPA gave notice that it had made a tentative decision to renew the NPDES permit to New Lenox to discharge into Hickory Creek. The draft renewed permit allowed the New Lenox plant to increase its design average flow from 1.54 million gallons per day to 2.516 million gallons per day. Along with the notice, IEPA filed its Antidegradation Analysis. (HR 1-15)

After reviewing a copy of the draft permit, Petitioners commented orally at a public hearing held on the draft permit on April 24, 2003 in the New Lenox Council Chambers (HR 61-

[5] IEPA also had before it when it wrote the draft permit various toxicity tests and other studies that are not relevant to the issues raised in the appeal.

87) and through written comments filed during the comment period after the hearing (HR 107-322) No one spoke at the hearing on behalf of the applicant and it does not appear that the applicant submitted anything to IEPA during the comment period.

1. Comments requesting that increased pollution be minimized

Petitioners at the hearing and in their written comments asked that IEPA incorporate into the permit all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loadings. Petitioners asked IEPA to improve the permit in a number of respects including that the permit provide for economically feasible controls on the discharge of phosphorus and nitrogen and that IEPA seriously consider whether all of the increased discharge was actually necessary in light of potential alternatives. (HR 112-13, 120-21, 126, 265-67)

At the public hearing, counsel for Petitioners asked IEPA to provide an estimate of the cost of removing phosphorus and the cost of removing nitrogen from the discharge. (HR 73-74) IEPA answered that it had not made any study of the cost of removing phosphorus or nitrogen at the plant. IEPA mentioned at the hearing a study commissioned by the Illinois Association of Wastewater Agencies ("IAWA") of nutrient removal but did not explain what this study might imply as to whether New Lenox could feasibly remove nutrients or claim that it was necessary to discharge the level of nutrients that the permit would allow. (HR 73-4)

2. Comments requesting that IEPA place limits in the permit to prevent violations of water quality standards.

In their comments and testimony, Petitioners also raised legal and scientific issues regarding compliance with water quality standards. Petitioners commented that the draft permit allowed discharges of phosphorus and nitrogen that cause, have a reasonable potential to cause

or contribute to violations of the water quality standards regarding offensive condition and that nutrients are the likely cause of algal blooms and other unnatural plant growth. (HR 68) Petitioners also commented that the permit allowed discharges that may cause, have a reasonable potential to cause or contribute to violations of water quality standards regarding dissolved oxygen, pH and copper. (HR 68, 126, 265-26)

A number of witnesses gave reports of offensive algal blooms in Hickory Creek including nearby resident Kim Kowalski. (HR 76) Jim Bland, Director of Integrated Lakes Management, a firm that works to protect water bodies from eutrophication, stated on behalf of the Des Plaines River Watershed Alliance that:

> [I] should comment that as recently as August of this year I saw something unique in-stream, something I have not seen before. The entirety of the stream is covered from Pilcher Park almost all the way up to Cedar Street with Hydrodictyon and algae on the surface of it. So here you have a running stream covered almost completely and a running stream that's really a very, very viable and important resource, pretty sadly degraded by the sorts of nutrient discharge that we are seeing. (HR 80, *see also*, HR 110)

Community resident Brad Salamy stated at the hearing that, "Last summer, and this was alluded to earlier, the creek was greener than I had ever seen it, a little patch down the center was liquid, the rest of it was completely green like you could walk on it." (HR 82-83)

Published treatises placed in the record show that elevated nutrient levels cause impairment of streams and that if nutrient levels are high, that algal blooms will occur on those days when flow, heat and sunlight are adequate. In addition to lowering aesthetic and recreational value of the affected waters, these algal blooms may cause adverse affects on dissolved oxygen levels and pH. (HR 163-64, 177, 180, 184, 187, 206, 210, 216) At the hearing on the draft permit, IEPA acknowledged that it was "very possible" that supersaturated oxygen

levels found during the daytime hours in Hickory Creek are due to algae saturation photosynthesis. (HR 67) A study cited by Petitioner Prairie Rivers Network discussed how nutrients discharged by a sewerage treatment plant affected a reservoir miles downstream from the plant. (HR 255-63)

In support of comments filed by the Sierra Club on the draft permit, Professors David Jenkins and Michael Lemke of the Biology Department, University of Illinois at Springfield stated:

- Based on the New Lenox August data, the current plant releases an average of 64.7 kg of nitrate+nitrite per day and 16.1 kg of total P [total phosphorus] into Hickory Creek.
- Based on long-term average August flow data from USGS and USGS Schmuhl Road nutrient analyses, current Hickory Creek nutrient loads upstream from the WWTP#1 are 151 kg nitrate+nitrite, and 22.7 kg total P.
- Therefore, the plant is responsible for 30% of downstream nitrate+nitrite load in Hickory Creek, and 41% of the Hickory Creek total P load.
- As currently planned (and assuming nutrient levels in plant discharge remain the same), the new plant discharge will release 105.7 kg of nitrate+nitrite per day and 26.3 kg of total P per day into Hickory Creek. Assuming that Hickory Creek flow will not change for reasons other than the planned extra plant discharge, the new plant discharge will release 41% of the stream nitrate+nitrite load, and 53.7% of the stream P load on an average basis.
- More importantly, the same-sized receiving stream will be bearing 170% the levels of nitrate+nitrite upstream of the plant, and 216% of the total P levels upstream of the

plant. These levels of nutrient loading will have substantial effects on downstream water quality, not only in Hickory Creek, but also the Des Plaines River and the Illinois River. (HR 304-05)

Based on their study of the data, Professors Jenkins and Lemke commented that it is likely that nutrient discharges from New Lenox are already adversely impacting Hickory Creek and reductions of nutrient discharges are needed to prevent further impact. (HR 305)

In written comments, Mr. Bland, stated that "On a long term basis the proposed increase in discharge [of nutrients] will increase the "attached algae" (periphyton that covers the rocks and bottom rubble that are characteristic of this reach (c.f. Ecological Effects of Wastewater, E.B. Welch)). This increase in stream productivity has the capacity to dramatically alter the character of the invertebrate communities downgradient from the STP." (HR 110) In addition, Mr. Bland asked that IEPA "Speed up the analysis of nutrient loading influences and apply this analysis to the existing permit specification. Document the direct influences of phosphorus which already exist at the stream." (HR 113)

In post hearing comments, Beth Wentzel of the Prairie Rivers Network stated that "The literature supports the claim that excess nutrients, nitrogen and phosphorus, can impair streams by affecting dissolved oxygen concentrations, causing nuisance algal blooms and causing other problems." (HR 125) She concluded that:

> As described at the hearing, the existing facility discharges nitrogen and phosphorus to Hickory Creek at concentrations that exceed instream concentrations. According to USGS flow data, Hickory Creek is regularly dominated by effluent flow. As demonstrated above and through testimony provided by local residents at the public hearing, there is reasonable potential that instream concentrations cause violations of water quality standards. Because the discharge from New Lenox STP #1 contributes to these violations, the existing discharge is illegal and

an expansion of the discharge would be illegal. (HR 126)

Regarding copper, Cynthia Skrukrud Ph.D. stated that using the standard U.S. EPA methodology the IEPA should either place limits in the permit to prevent toxicity from copper or at least get more data. (HR 70) In a post-hearing letter, Skrukrud wrote:

> The USEPA recommended method for Reasonable Potential Analysis is to use a multiplier to determine the potential to exceed a given standard when a small number of samples have been collected. It is precisely because so few data are collected that the multiplier is needed. IEPA's decision to abandon the method recommended by USEPA in *Technical Support Document for Water Quality Based Toxics Control* is not acceptable. IEPA should either use the multiplier in their analysis or require that more samples be collected ...(HR 264-65)

Petitioners also commented that the draft permit and the studies and lack of studies that led to the creation of the draft permit did not comply with Illinois antidegradation rules protecting the existing uses of the receiving waters. The studies that were conducted were not properly conducted to determine the potential effect of the draft permit on existing uses of the stream and IEPA took no steps to determine the existing recreational uses of the stream. (HR 69, 265)

D. The Final Permit and Responsiveness Document

On October 31, 2003, IEPA issued the permit that is subject to the current appeal. The final permit contains some changes from the draft including required levels of dissolved oxygen in the effluent and a limit on total dissolved solids.

1. IEPA declined to minimize pollution

The final permit did not place any limits on the discharge of phosphorus, nitrogen or copper. (HR 341-50) Other than to mention that the IAWA study (which is not in the record) which indicated that the combined costs of treating nitrogen to an unmentioned level and

phosphorus to the level of 0.5 mg/L might include capital costs of $5.4 million for a hypothetical plant (HR 358), IEPA never discussed the cost of treating phosphorus. The record contains no mention of any analysis of the cost, feasibility or reasonableness of any level of phosphorus treatment alone (without nitrogen treatment), of the feasibility of any level of phosphorus treatment other than 0.5 mg/L, or of the economic ability of New Lenox to afford some level of phosphorus removal. The Responsiveness Summary indicates that IEPA would only place limits on nutrients in the permit after numeric standards are set. (HR 356) In response to the question "How did the Agency determine whether all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loadings was made as to phosphorus," the Responsiveness Summary states only:

> As described in the antidegradation analysis, the nutrient issue is currently being explored. It has gone through the national water quality criteria process. The states are trying to deal with what the federal EPA has set for nutrient criteria. We estimate that it will probably be another four or five years before we know what phosphorus water quality standards should be in Illinois and to know how different sources of phosphorus would have to be dealt with. (HR 357)

This statement says nothing about what is technically and economically reasonable at the New Lenox plant.

2. IEPA did not consider limits requested in the permit to prevent violation of water quality standards.

IEPA placed no limit in the permit to prevent violation of the "offensive conditions" narrative standard. The Responsiveness Summary acknowledges that "Area residents have observed excessive and offensive blooms" (HR 357) and does not deny that such conditions exist

in Hickory Creek from time to time.[6] In explanation of why it refused to set limits to ensure that narrative water standards would be met in-stream, IEPA in the Responsiveness Summary states:

> There are no existing water quality standards for nutrients that apply to Hickory Creek. A narrative standard exists prohibiting plant and algal growth of other than natural origin. This is a very difficult standard to apply to a permit. The ongoing Agency effort to adopt water quality standards for nutrients will resolve this issue. In the meantime, the antidegradation assessment has concluded that the expansion will not exacerbate any existing problems in Hickory Creek due to nutrients. (HR 357)

The final permit allowed a monthly daily average increase of 82 lbs of CBOD5 and did not place any limit on the discharge of CBOD5 other that the effluent limit of 35 Ill. Adm. Code § 304.120. (HR 342-33) The Responsiveness Summary acknowledges that dissolved oxygen readings from Hickory Creek of 16.6 mg/L at 3:58 pm and 8.1 mg/L at 5:21 am on April 24 and 25, 2003, show "a large differential between the late afternoon reading when algal activity would tend to produce the highest concentration and the early morning value that would be the time the absolute lowest reading would be expected." (HR 364) The Responsiveness Summary did not consider whether the extent of the algal activity suggested by this data might cause a dissolved oxygen violation under warmer weather conditions in May or June although the inverse relationship between water temperature and dissolved oxygen levels was presented to IEPA. (HR

[6] A document in the record indicates that New Lenox's contractor, Earth Tech, was allowed to help draft the Responsiveness Summary. (HR 640-47) A comment on the draft Responsiveness Summary which was apparently sent by Earth Tech to IEPA, argues that because Earth Tech did not see any visible signs of over-nutrification at the plant discharge site on one day in August, 2002, the algal growth reportedly seen in August 2002 was most likely due to "low flow conditions" and "solar heating." (HR 639) There is no evidence in the record, however, that there was anything unnatural about the flow levels or the sunlight and no one claims or could sensibly claim that the algal bloom could occur without the necessary nutrients. Further, the record establishes that nutrients may affect water bodies well below the discharge point even if conditions for algal blooms may not be suitable for algal growth at the plant discharge point.

161)

Regarding pH, the Responsiveness Summary acknowledges that nutrients might cause algal activity that would lead to high pH levels and states that "The Agency has included a pH standard in the permit that requires the Water Quality standard to be met." (HR 369) However, IEPA offers no explanation of how pH limits in the permit will prevent nutrient discharges allowed by the permit from causing algal blooms that will cause violations of the Illinois pH standard.

The permit set no limit for copper. (HR 343) No explanation appears in the record as to why IEPA proceeded in conflict with the U.S. EPA recommended method for determining the reasonable potential to violate the acute copper standard. No study was done under 35 Ill. Adm. Code § 302.102 to develop a mixing zone analysis. Regarding the chronic copper standard, the New Lenox Responsiveness Summary states "It is important to remember that this comment is dealing with reasonable potential to exceed a chronic water quality standard. By definition, a chronic standard must not be exceeded in the receiving stream by the average of at least four samples." (HR 363) Yet there is no discussion of the possibility of requiring more samples than the two provided by the applicant. Further, the Responsiveness Summary does not address the issue that under the U.S. EPA recommended methodology, the samples taken indicate a reasonable potential to violate the *acute* copper standard as well as the chronic standard.

3. IEPA did not require studies that protect existing conditions

Regarding the danger of increased pollution harming existing conditions, the Responsiveness Summary states that "we believe all aspects of the regulation are covered. The

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(HR 125, 255-56) In any event, IEPA wisely did not rely on this Earth Tech argument in the Responsiveness Summary and so it is irrelevant to this appeal.

overall conclusion of the evaluation was that the expansion of the treatment plant would not cause uses of Hickory Creek to be diminished." It appears that the basis for this statement was the Earth Tech macroinvertebrate study as it is the only fact cited in the discussion of the potential effect of the increased discharge on existing conditions. (HR 368) As noted before, however, the Earth Tech study did not actually model or estimate conditions resulting from the increased discharge, but only current conditions. IEPA also did not consider the possibility that MBI values above the plan t were affected by pollution above the plant.

Regarding criticism of the Earth Tech study, the Responsiveness Summary states that "at least three individuals reviewed and commented on the report" (HR 370), without mentioning the fact that at least three individuals asked that the study be redone. The Responsiveness Summary then states that, without the study being redone, the Macroinvertebrate Biotic Index used in the study had been recalculated in response to one of the comments made on the study and that the "overall conclusion of the study was that there was very little difference between the upstream and downstream MBI values and therefore, an insignificant or no adverse effect on the receiving stream from the effluent was apparent." (HR 370) IEPA did not consider the possible effect of the discharges above the plant on the upstream MBI value and offered no explanation as to how a study of the existing discharge's affects on macroinvertebrates, even if properly performed, could show that a substantially increased discharge would not affect existing uses.

II. The Standard and Scope of Review

A. Standard of review and burden of proof

The burden of proof in this proceeding is on Petitioners to show that the permit as issued violated the Environmental Protection Act or the Board rules. *Prairie Rivers Network v. Illinois Pollution Control Board*, 335 Ill. App. 3d 391, 400, 781 N.E. 2d 372, 379 (4th Dist. 2002). As

will be seen below, Petitioners have easily met this burden because it is clear that issuance of the permit violated the Act and numerous Board rules.

IEPA's decision to issue the permit in its current form must be "supportable by substantial evidence." *Des Plaines River Watershed Alliance v. Illinois EPA*, PCB 04-88, 2005 Ill. Env. Lexis 622 at *15 (Nov. 17, 2005). The substantial evidence standard requires "more than a mere scintilla" of evidence and demands "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Finnerty v. Personnel Bd. of the City of Chicago*, 303 Ill. App. 3d 1, 11, 70 N.E.2d 600, 608 (1st Dist. 1999) (quoting *Richardson v. Perales*, 402 U.S. 389, 401 (1971)). The substantial evidence standard is "not nearly" as deferential to an agency's decision as the "manifest weight of the evidence" standard. *Id.* at 11-12. For many of the issues described below, the Record shows no evidence or at most a scintilla of evidence to support IEPA.

Agency conclusions of law should be reviewed de novo by this Board. *City of Kankakee v. County of Kankakee*, PCB No. 03-125, 2003 Ill. Env. LEXIS 462, at *34-35 (Aug. 7, 2003) (noting that jurisdiction is a question of law that, therefore, is reviewed de novo); *Saline County Landfill v. Illinois EPA*, PCB No. 04-117, 2004 Ill. Env. LEXIS 255, at *38-39 (May 6, 2004) (noting that Agency's interpretation of a provision of the Environmental Protection Act is "not relevant to the Board's decision" and that the "Board is not bound by the Agency's interpretation"); *Saline County Landfill v. Illinois EPA*, PCB No. 04-117, 2004 Ill. Env. LEXIS 255, at *38-39 (May 6, 2004) ("Because the question of jurisdiction is a legal question, the Board will review it de novo.").

B. Only evidence in the record at the time IEPA issued the permit is relevant and the permit may only be upheld on the basis of theories and facts relied on by the Agency.

The factual and scientific issues that are potentially relevant to determining the full effect of the New Lenox discharge on Hickory Creek, the Des Plaines River and the Illinois River are complex. This is true both as to the effect of the discharge as it existed at the time of the permit issuance and as to effect the increased discharge will have on Hickory Creek if the substantial expansion of the discharge is allowed. Fortunately, however, for this proceeding the issues are more focused. Board review of the IEPA decision is subject to various limits and the IEPA decision below is subject to various laws and Board regulations specifying what IEPA must do to issue a proper permit.

First, data that were not before IEPA at the time it issued the permit are not relevant. As the Board has made clear, this case must be decided "exclusively on the basis of the record before the Agency" under 415 ILCS § 5/40(e). *Des Plaines River Watershed Alliance* at *110-14. It is, thus, too late to present evidence that was not before the Agency. If the Board finds that the permit as issued is not supported by substantial evidence in the record, the Board need not and should not attempt to resolve the scientific issues, but should remand those issues back to IEPA which can obtain more evidence.

Second, Board rules and basic principles of administrative law limit the rationales that may be advanced to uphold the permit decision. In particular, IEPA's decision to issue the permit must be supported and justified in the Responsiveness Summary (HR 352-74) and the facts and documents cited in the Responsiveness Summary.

35 Ill. Adm. Code § 166.192, Contents of Responsiveness Summary, provides:

a) Responsiveness summary shall be prepared by the Agency. The responsiveness summary shall include . . .

4) A summary of all the views, significant comments, criticisms and suggestions, whether written or oral, submitted at the hearing or during the time the hearing record was open;
5) The Agency's specific response to all significant comments, criticisms, and suggestions; ...

The federal Environmental Appeals Board ("EAB") interpreted language that is substantially identical to 35 Ill. Adm. Code § 166.192 in a decision remanding for reconsideration portions of a NPDES permit issued by U.S. EPA. The EAB explained:

> Under the regulations that govern this permitting proceeding, a permit issuer must "briefly describe and respond to all significant comments on the draft permit." 40 C.F.R. § 124 17(a)(2). The Board has interpreted this provision as meaning that a response to comments need not be of the same length or level of detail as the comments and that related comments may be grouped together and responded to as a unit. (citations omitted) The Board has also held, however, that a response to comments must address the issues raised in a meaningful fashion and that the response, through perhaps brief, must nonetheless be clear and thorough enough to adequately encompass the issues raised by the commenter. (citations omitted) Moreover, the administrative record must reflect the permit issuer's "considered judgment," meaning that the permit issuer must articulate with reasonable clarity the reasons for its conclusions and the significance of crucial facts it relied upon in reaching those conclusions.

In re Washington Aqueduct Water Supply System, 11 E.A.D. 565, 2004 EPA App. LEXIS 28, *55 (EAB 2004) (emphasis added) (Appendix of Authorities A).

IEPA and the applicant cannot develop new rationales for what IEPA did with the matter in its current posture and the permit can be upheld only on the basis of theories clearly articulated in the Responsiveness Summary. *See Federal Power Comm. v. Texaco,* 417 U.S. 380, 397 (1974) (holding agency order can only be affirmed "on the same basis articulated in the

order by the agency itself"); *Reservation Telephone Cooperative v. Federal Communications Commission*, 826 F.2d 1128, 1134 (D.C. Cir. 1987) (stating court "cannot affirm an agency's decision on any rationale other than the one it offers to explain its actions"). Possible rationales for issuance of the permit that do not appear in the Responsiveness Summary may properly be considered by IEPA after the Board remands the permit to it for reconsideration.

In addition, the permit cannot be upheld on the basis of statements in the Responsiveness Summary or documents to which the Responsive Summary refers unless those statements are supported by facts or logic. The law requires a reasoned analysis of the issues at hand, not just unsupported conclusions. *See, e.g., Reinhardt v. Board of Educ. of Alton Community Unit Sch. Dist. No. 11*, 61 Ill. 2d 101, 103-04 (Ill. 1975) (agency decision that "reasons or causes" existed for firing teacher reversed where agency did not describe those reasons or causes); *District 1199P v. National Labor Relations Bd.*, 864 F.2d 1096, 1098 (3rd Cir. 1989) ("[t]he overarching principle of agency review is that the agency must provide a reasoned explanation for its actions"); *see also Harris v. Cropmate Co.*, 302 Ill. App. 3d 364, 375, 706 N.E.2d 55, 65 (4th Dist. 1999) ("[c]ourts should remember that they need not – and should not – accept an expert's opinion on the basis of *ipse dixit*, i.e., such a thing is so because I say it is so"). Indeed, with regard to compliance with water quality standards, Illinois has a specific provision, 35 Ill. Adm. Code § 309.142, requiring that compliance with water quality standards be "verified."

In summary, while the facts and science regarding the effects of sewage on natural streams are complex and the record contains a lot of material, the only things relevant to this appeal are the facts in the record that were offered by the applicant, Petitioners and others and the conclusions in the Responsiveness Summary that are substantiated by facts in the record.

III. The Relevant Laws and Regulations Regarding NPDES Permits.

As discussed below, a permit violates the Act and the Board rules unless IEPA before issuing the permit has:

- Assured that all reasonable technologies are used to minimize the pollution so that any increase in pollution can properly be said to be "necessary,"

- Assured that the increased pollution will not result in a violation of narrative or numeric water quality standards and ensured that the total discharge allowed under the permit (existing and increased) will not cause or contribute to a violation of numeric or narrative water quality standards in the receiving waters, and

- Assured that existing uses will not be harmed.

A. Illinois antidegradation regulations require that a permit for a new or increased discharge be granted only if the increase is necessary to accommodate important economic or social development and all reasonable measures to avoid or minimize the extent of the new pollution are incorporated into the permit.

Key provisions of Illinois antidegradation regulations enacted by the Board in 2002, 35 Ill. Adm. Code § 302.105(c), state:

> c) High Quality Waters
>
> 1) Except as otherwise provided in subsection (d) of this Section, waters of the State whose existing quality is better than any of the established standards of this Part must be maintained in their present high quality, unless the lowering of the water quality is necessary to accommodate important economic or social development.
>
> 2) The Agency must assess any proposed increase in pollutant loading that necessitates a new, renewed or modified NPDES permit or any activity requiring a CWA Section 401 certification to determine compliance with this Section. The assessment to determine compliance with this Section must be made on a case-by-case basis. In making this assessment, the Agency must:
>
> A) Consider the fate and effect of any parameters proposed for an increased pollutant loading.
>
> B) Assure the following:

> i) The applicable numeric or narrative water quality standard will not be exceeded as a result of the proposed activity;
>
> ii) All existing uses will be fully protected;
>
> iii) All technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollution loading have been incorporated into the proposed activity; ....

35 Ill. Adm. Code § 302.105(c) (emphasis added).

This language of 302.105(c) is clear and mandatory. Before granting a permit allowing new pollution loadings, IEPA "*must*" "*assure*" that "*all*" reasonable measures to "*minimize*" the extent of the pollution have been incorporated. *See also* 35 Ill. Adm. Code § 302.105(f)(1)(D) (information on treatment levels and alternatives must be presented by the applicant). "Assure" means "to make certain and put beyond doubt. To... ensure positively." *Rite Aid, Inc. v. Houston*, 171 F.3d 842, 852 n.10 (3rd Cir. 1999) citing Black's Law Dictionary 123 (6th ed. 1990). To "minimize" something is to reduce it "to the smallest possible amount, extent or degree". *Hazardous Waste Treatment Council v. U.S. EPA*, 886 F.2d 355, 361 (D.C. Cir. 1989).

While the Board's language requiring IEPA to consider all the ways to minimize pollution could not be clearer, it is worthwhile to review the considerations that led the Board to adopt this language. Even decades before adoption of the 2002 antidegradation rules, there was an established Illinois policy against allowing unnecessary pollution even if that new pollution would not cause a violation of water quality standards. As the Board explained in 1972 when adopting the "nondegradation" policy that preceded the current language, "This [policy] preserves the present prohibition on unnecessary degradation of waters presently of better quality than that required by the standards, recognizing that the standards represent not optimum water

quality but the worst we are prepared to tolerate if economic conditions so require." *In the Matter of: Water Quality Standards Revisions*, R71-14 (PCB March 7, 1972) p. 11; *see also In the Matter of: Site-Specific Exception to Effluent Standards for the Greater Peoria Sanitary and Sewage Disposal District*, No. R87-21, 1988 Ill. Env. Lexis 470 at *22 (Oct. 6, 1988) (the mandate of the Clean Water Act to restore, maintain and enhance water quality requires that Illinois "strive to go beyond the minimum cleanup goal of polluted waters, as well as to resist the temptation to pollute higher quality waters up to the maximum allowable limits").

In drafting current Section 302.105(c), the Board was also advised by the federal antidegradation regulations, which permit a lowering of water quality only if it is "necessary to accommodate important economic or social development," 40 C.F.R. § 131.12(a)(2). U.S. EPA in its *Water Quality Standards Handbook* (4th Ed. 1994) (available at www.epa.gov/watescience/standards/handbook) explained:

> [Lowering water quality is allowed] only in a few extraordinary circumstances where the economic and social need for the activity clearly outweighs the benefit of maintaining water quality above that required for "fishable/swimmable" water, and both cannot be achieved. The burden of demonstration on the individual proposing such activity will be very high. In any case, moreover, the existing use must be maintained and the activity shall not preclude the maintenance of a "fishable swimmable" level of water quality protection. (Appendix of Authorities B, p. 4-7)

B. A NPDES permit must contain limits that ensure that the total discharges allowed under the permit will not cause or contribute to violations of numeric or narrative water quality standards.

There are a number of Board regulations and, by incorporation, federal regulations that require that a NPDES permit have limits that "assure" or "ensure" that water quality standards not be violated as a result of the discharges allowed under the permit. As quoted above, a permit

can not be granted properly under 35 Ill. Adm. Code § 302.105(c)(2)(B)(i) for a new or increased discharge unless the Agency has "assured" that:

> The applicable numeric or narrative water quality standard will not be exceeded as a result of the proposed activity.

In addition to considering the effect of the increased discharge from the New Lenox treatment plant, IEPA was required to consider the effect on water quality standards of the total discharge from the plant along with the effects of the other sources of pollution to Hickory Creek. The first sentence of 35 Ill. Adm. Code § 304.105 states:

> In addition to the other requirements of this Part, no effluent shall, alone or in combination with other sources, cause a violation of any applicable water quality standard.

Under this "alone or in combination with other sources" language, the Board has upheld phosphorus limits even where the point source at issue was only seven percent (7%) of the total dissolved phosphorus input to the water body at issue. *In the Matter of: Site-Specific Phosphorus Limitation for the City of Shelbyville*, No. R83-12, 1984 Ill. Env. Lexis 129 (Dec. 20, 1984).

Further, 35 Ill. Adm. Code § 309.14 requires that:

> In establishing the terms and conditions of each issued NPDES Permit, the Agency shall apply and ensure compliance with all of the following, whenever applicable:
>
> .....
>
> (d) Any more stringent limitation, including those
>
> 1) necessary to meet water quality standards ...,
>
> 2) necessary to meet any other federal law or regulation ...

Thus, under 35 Ill. Adm. Code § 309.14(d)(2) federal regulations 40 C.F.R. § 122.4 and 122.44(d) are applicable in this proceeding. 40 C.F.R. § 122.4 provides that:

> No [NPDES] permit may be issued:
>
> .....

> (d) When the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States ....
> (emphasis added)

"Ensure" means "to make certain or sure." *Springwood Assoc. v. Lumpkin*, 239 Ill. App. 3d 771, 783, 606 N.E.2d 733, 740 (1992) citing American Heritage Dictionary 456 (2nd Ed. 1982). When a statue requires an agency to "ensure" something, it "unambiguously requires the state 'to make certain'" that the relevant requirements are carried out. *Corey H. v. Board of Education of the City of Chicago*, 995 F. Supp. 900, 913 (N.D. Ill. 1998) (emphasis added). A mandate to "ensure" that certain environmental protections are taken "requires agencies to take action . . . and 'to make certain, to secure, to guarantee' . . ." *Defenders of Wildlife v. U.S. EPA*, 420 F.3d 946, 963-64 (9th Cir. 2005). The meaning of "ensure" is not ambiguous; indeed, "[o]ne would be hard pressed to find a statutory provision whose terms were any plainer." *Id.* (quoting *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 180 (1978)).

40 C.F.R. § 122.4(d), which is expressly applicable to state programs, has been held to require that the permitting agency include limits in every permit that ensure that the discharge will not result in a violation of water quality standards. The federal EAB in *In re City of Marlborough, Massachusetts Easterly Wastewater Treatment Facility*, NPDES Appeal No. 04-113, 2005 EPA App. LEXIS 14, (EAB Aug. 11, 2005) (Appendix of Authorities C) addressed a situation very similar to the case at hand. The permit issuing agency had decided that a 0.1 mg/L limit for phosphorus, along with a statement "strongly encourag[ing]" the permittee to take additional steps to reduce phosphorus pollution, could prevent a violation of the state's narrative water quality standard against objectionable conditions including algal growth. Despite the *0.1* mg/L limit. The EAB remanded the permit to the agency, finding that:

> [I]t is unclear whether the Permit complies with the regulatory prohibition on issuing a permit 'when imposition of conditions cannot ensure compliance with the applicable water quality requirements.' 40 CFR § 122.4(d). (emphasis added)

Marlborough at 21 (emphasis in original). The provision the Board quoted, 40 C.F.R. § 122.4(d), applies to the New Lenox permit as well. The Board held that the agency on remand "must" actually "demonstrate that the Permit, as written, will ensure compliance with water quality standards" or must modify the permit. *Id.* at 40. Here IEPA did not even require the *1.0* mg/L limit that has been required of Illinois dischargers discharging less than twenty five miles upstream of lakes for decades.

Still further, 40 C.F.R § 122.44(d)(1)(i), also applicable to state programs, requires that limitations in an NPDES permit:

> ... must control all pollutants or pollutant parameters which ... are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.

As explained by *American Paper Institute v. U.S. EPA*, 996 F.2d 346, 350 (D.C. Cir. 1993), "permits must incorporate limitations necessary to meet standards that rely on narrative criteria to protect a designated use as well as standards that contain specific numeric criteria for particular chemicals." Further, not only must permit limits protect standards in the waters immediately below the discharge point, standards must be protected in waters far downstream of the discharge, even in another state. *Arkansas v. Oklahoma*, 503 U.S. 91, 107 (1992); *see also* 40 § C.F.R. 122.4(i). These federal principles of law are fully applicable to Illinois NPDES permits under Board regulations requiring permits to meet any federal law or regulation. 35 Ill. Adm. Code § 309.141(d)(2).

C. Illinois antidegradation regulations require that a permit for a new or increased discharge only be granted if the Agency assures that all existing uses will be fully protected.

As stated in the antidegradation provision quoted above, 35 Ill. Adm. Code § 302.105(c)(2)(B)(ii) provides that in granting a permit for an increased discharge, the Agency "must assure ... [that] all existing uses will be protected." Again the operative verb is "assure."

The meaning of "existing uses" is explained in 35 Ill. Adm. Code § 302.105(a) and includes the existing aquatic community and species diversity.

IV. The Permit As Issued Violates The Act And The Board Rules In Numerous Respects

A. The Permit as issued violates the requirement that the Agency must assure that all reasonable means be used to minimize new or increased pollution because steps to remove phosphorus and nitrogen were not considered.

As discussed above, the Board rules clearly require IEPA to look at all practical ways to limit new pollution and to require all feasible minimization techniques. The permit did not comply with 35 Ill. Adm. Code § 302.105(c)(2)(B)(iii) because IEPA failed in at least two different ways to assure that the permit incorporated all reasonable measures to avoid or minimize the extent of the new pollution loading. The IEPA offers no coherent explanation for failing to include phosphorus controls, and no explanation at all for failing to include nitrogen controls. Plainly, the Agency's decision not to require any controls on phosphorus or nitrogen is not "supportable by substantial evidence."

1. The Agency should have required reasonable phosphorus removal.

IEPA was required to minimize pollution to that which was necessary. IEPA violated this rule by failing to require that the New Lenox plant limit phosphorus discharges to the amount "necessary to accommodate important economic or social development." 35 Ill. Adm. Code § 302.105(c)(1).

The word "necessary," which is not defined in the regulations, must be read according to its plain meaning. "The Administrative Code has the force and effect of law, and the rules of statutory construction apply when construing its provisions." *Ress v. Office of the State Comptroller*, 329 Ill. App. 3d 136, 142, 768 N.E.2d 255, 260 (1st Dist. 2002). An agency must give effect to the intent of the rules. "The best indicator of this intent is the language of the rule, which is given its plain and ordinary meaning." *Id.* The plain meaning of "necessary" is clear. Something is "necessary" when it is "absolutely essential," "needed to achieve a certain result," or unavoidable or inevitable. *American Heritage Dictionary* (4th ed. 2000). *See AT&T Corp v. Iowa Utilities Bd.*, 525 U.S. 366, 392 (rejecting argument that "necessary" is to be read loosely as being satisfied whenever an increased cost is involved); *Chatham Corp. v. Dann Ins.*, 351 Ill. App. 3d 353, 360, 812 N.E.2d 483, 490 (1st Dist. 2004) (agreeing that "necessary" should be understood to mean "absolutely essential").

There is no evidence in the record that allowing any increased phosphorus pollution is necessary at all, much less that allowing increased phosphorus by the amount New Lenox requested, is unavoidable, absolutely essential, or needed. Dozens of other communities around Illinois have been able to support economic and population growth while also controlling phosphorus discharges. At a bare minimum to comply with the antidegradation rules, IEPA should have carefully considered the level of nutrient control that New Lenox could technically and economically provide. As explained above, the law requires that new pollution be minimized even when it would not potentially affect the receiving water. However, IEPA's failure to minimize the increased nutrient pollution of Hickory Creek and downstream waters is particularly regrettable because the record shows that the New Lenox discharge is a major source of phosphorus to Hickory Creek and there is evidence that phosphorus is already having an

adverse impact on downstream waters.

The record contains no discussion or evidence showing that New Lenox, a growing and wealthy community, could not bear the cost of phosphorus treatment. At a minimum, for lowering of water quality to be "necessary to accommodate important economic or social development," it must be the case that the development cannot practicably go forward without allowing lower water quality. As was explained by U.S. EPA in giving guidance to states as to how to implement antidegradation, "[w]hen performing an antidegradation review, the first question is whether the pollution controls needed to maintain the high-quality water will interfere with the proposed development. If not, then the lowering of water quality is not warranted." *Interim Economic Guidance for Water Quality Standards*, U.S. EPA (1995) (emphasis added).[7] U.S. EPA's guidance also sets a general rule that pollution loading is not normally "necessary" if it can be avoided at an annual cost of less than 1.0 percent of the median household income of the region served.[8] IEPA never looked to see if phosphorus controls at the New Lenox plant would meet this benchmark. *See also, Mississippi Sierra Club v. Mississippi Dept. of Env'tal Quality*, 819 So.2d 515, 521-23 (Miss. 2002) (reversing permit where the agency offered nothing more than a conclusory statement that the alternatives were "cost prohibitive").

IEPA should at least have imposed a 1 mg/L phosphorus limit. A 1 mg/L phosphorus limit was found economically reasonable by the Board even given the technology in existence two decades ago. *See Village of Wauconda v. Illinois EPA*, PCB No. 81-17, 1981 Ill. Env. Lexis

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[7] Available at http://www.epa.gov/waterscience/econ/chaptr5.html and attached to this memorandum as Supplemental Ex D. While the U.S. EPA Interim Economic Guidance is only guidance, it does indicate the sort of factors that IEPA should consider if it is to comply with the 35 Ill. Adm. Code § 302.105(c) requirements.

[8] *Id.* at 5-5.

266, at *4 (May 1, 1981); *In the Matter of: Amendments to the Water Pollution Regulations*, No. R76-1, 1979 Ill. Env. Lexis 312, at *2 (Feb. 15, 1979); *In the Matter of: Site-Specific Phosphorus Limitation for the City of Shelbyville*, No. R83-12, 1984 Ill. Env. Lexis 129, *13 (December 20, 1984). IEPA offers no specific excuse for failing to consider standard phosphorus removal treatment such as has been required of numerous Illinois dischargers upstream of lakes for decades. *See* 35 Ill. Adm. Code § 304.123. (1.0 mg/L limit required for dischargers less than 25 miles above lakes) In *City of Marlborough* a limit of .1 mg/L was required to prevent the sort of problem known to be in Hickory Creek.

The only rationale for failing to put phosphorus limits that appears in the Responsiveness Summary was that IEPA was working on numeric nutrient standards.[9] That explanation, however, is a *non sequitur*. The fact that IEPA is working on future phosphorus numeric standards is legally irrelevant to its failure to comply with existing antidegradation regulations. The requirement that unnecessary new pollution not be allowed applies even if all of the other water quality standards are actually satisfied and it has been shown that the new pollution will not have an effect on existing uses. As well as being illogical, IEPA's rationale for not complying with antidegradation rules is not supported by even a scintilla of evidence and certainly does not meet the "substantial evidence" standard. "Where it appears that the agency's findings are not supported by substantial evidence, they will be reversed." *Hoffman v. Lyon Metal Products*, 217 Ill. App. 3d 490, 497, 577 N.E.2d 514, 519 (2d Dist. 1991).

[9] While IEPA's failure to consider phosphorus and nitrogen limits is not supported by substantial weight of the substantial evidence, it is also legal error as they effectively concluded that the antidegradation provision's requirements do not apply here.

The Board in adopting 35 Ill. Adm. Code § 302.105(c) made clear that the "main objective" is to identify and implement alternatives that reduce or eliminate the proposed increased loadings. *In the Matter of: Revision to Antidegradation Rules*, No. R01-13, 2001 Ill. Env. Lexis 316 at *31 (June 21, 2001). Here IEPA plainly frustrated the main objective by refusing to consider phosphorus removal at all.

2. The Agency Should Have Considered Reasonable Nitrogen Removal

The situation as to nitrogen is similar to that as to phosphorus except that the Responsiveness Summary provides no hint at all as to why IEPA did not require or even consider nitrogen treatment of the New Lenox wastewater. The Agency violated 35 Ill. Adm. Code § 166.192 by failing to respond to the request for nitrogen controls and violated 35 Ill. Adm. Code § 302.105(c) by failing to even consider, much less assure, that feasible nitrogen removal was implemented.[10]

B. The Agency did not assure that the new loading allowed by the permit would not result in violation of water quality standards and did not ensure that the total discharge allow by the permit would not do so.

1. Compliance with the narrative standard on offensive conditions was not ensured.

35 Ill. Adm. Code § 302.203 establishes the narrative standard that:

> Waters of the State shall be free from sludge or bottom deposits, floating debris, visible oil, odor, plant or algal growth, color or turbidity of other than natural origin.

Under the law discussed above, IEPA was required under the antidegradation regulation 35 Ill. Adm. Code § 302.105 (c) to assure that the increased pollution to be allowed under the

[10] Clearly, where no explanation is given at all, a decision is not "supportable by substantial evidence" in the record.

permit would not result in a violation of the narrative standard. In addition, under 35 Ill. Adm. Code § 304.105 and 35 Ill. Adm. Code § 309.141(d) IEPA was required to ensure that the total discharge being allowed under the permit would not cause or contribute to a violation of the narrative standard against algal blooms. IEPA did neither.

All that IEPA did to assure that the increased discharge would not cause violation of the "offensive conditions" standard was to pronounce in the Antidegradation Analysis that the discharge would not do so. There is not a scintilla of fact or science in the record to support this pronouncement. The Earth Tech study was not designed to consider anything other than the effect of the existing discharge on biological life in the stream and did not even consider whether the existing discharge was causing offensive algal blooms. The Earth Tech study concluded that the *current* discharge is not harming macroinvertebrates very much. If there is a way to extrapolate from this conclusion regarding macroinvertebrates to the conclusion that the *increased* discharge would not cause offensive algal blooms, this extrapolation is not explained in the Responsiveness Summary.[11] IEPA only assured that the increased discharge would not cause violation of the narrative standard if one can assure something simply by unilaterally declaring it to be so. *Contra Bradd v. Illinois EPA*, PCB No. 90-173, 1991 Ill. Env. Lexis 367 at *34-35 and *37-38 (IEPA's unsupported conclusion inadequate in light of unrebutted testimony to the contrary); *Illinois Ayers Oil Co. v. Illinois EPA*, PCB No. 03-214, 2004 Ill. Env. Lexis 195 at *41-43 (IEPA's reliance on "one statement" in the record for support of its position outweighed by the "ample evidence" to the contrary).

[11] In fact, IEPA biologists noted that the Earth Tech "statements made on page 3 of their report [which includes the claim that increased discharges will not affect the creek] are all without merit." (HR 667)

On the question of whether the permit ensures that the total plant discharge (existing and increased) will not cause or contribute to violations of the offensive conditions standard, IEPA did not even offer an unsupported pronouncement. In the Responsiveness Summary, IEPA does not claim to have tried to ensure that the narrative standard against unnatural algal growth will not be violated or continue to be violated as a result of the discharge. While acknowledging the eyewitness reports and scientific evidence of high levels of algal activity, IEPA essentially states that it will not attempt to limit the discharge to prevent violations of 35 Ill. Adm. Code § 302.203 because that standard "is a very difficult standard to apply to a permit." (HR 357) IEPA can only be found to have complied with the requirement that NPDES permits ensure that narrative standards will not be violated if stating that it is "very difficult" to comply with a rule is sufficient to establish compliance.

IEPA's conclusory and unsupported statement declining to apply the offensive conditions standard to the New Lenox permit cannot stand. The Illinois Supreme Court has not hesitated to dismiss IEPA assertions that are "conclusory" and "fail to cite any authority," *Illinois E.P.A. v. Pollution Control Board*, 115 Ill. 2d 65, 71 (1986).

Under the applicable law the Board should remand the permit to the Agency because the record shows that the Agency did not ensure that discharges from the plant would not cause violations of water quality standards. *In re: City of Marlborough*, NPDES Appeal No. 04-113, 2005 EPA App. Lexis 14 at *38, remanded a permit where it was "simply unclear from the record before us whether this Permit will ensure compliance with water quality standards." Here the situation is much worse as the record is very clear that the permit at issue does not ensure compliance with the Illinois narrative standard against offensive conditions.

2. The permit does not assure that the increased discharge would not result in violations of the dissolved oxygen or pH standards and does not ensure that the total New Lenox discharge will not cause or contribute to a violation of those standards.

IEPA also failed to assure that the increased discharge would not cause algal blooms that would cause violations of the dissolved oxygen standard or the pH standard. IEPA further failed to ensure that the total discharge from the plant would not cause or contribute to violations of the dissolved oxygen or pH standard. IEPA did nothing to prevent discharges from the plant that would cause algal blooms although there was evidence that nutrients in the creek were already causing violations of the pH standard (HR 126) as well as dissolved oxygen swings that would cause violations of the dissolved oxygen standard in the summer. (HR 161, 266, 364)

To ensure that the discharge would not cause such violations would have required monitoring pH and dissolved oxygen carefully. Hickory Creek has apparently never been studied during pre-dawn summertime conditions when algal activity is most likely to cause violations of dissolved oxygen standards. One does not assure that something will not happen by failing to look to see whether it is already happening. IEPA cannot rely on evidence from the wrong times of day to conclude that no violations will occur. *See Permatreat of Illinois v. Illinois EPA*, PCB No. 93-159, 1993 Ill. Env. Lexis 1513 at *18-19 and *22-23 (IEPA assertion of a violation overruled where evidence of the violation was from the incorrect time period and IEPA was unsure whether violation existed at relevant time). IEPA did not assure that increased discharge of nutrients would not cause or contribute to violations of the pH or dissolved oxygen standards.

The Earth Tech study also did not show that the New Lenox plant is not causing or contributing to dissolved oxygen or pH problems. Had the study been done correctly, it would at most have shown that the dissolved oxygen and pH levels caused by the discharges from the

New Lenox plant were not affecting macroinvertebrate life at the four sites studied below New Lenox any more badly than pollution sources upstream from New Lenox were affecting the one site studied above the New Lenox plant. It is known that nutrients from sewerage treatment plant discharges can cause algal activity many miles below the discharge. (HR 125, 262) Indeed, it appears that this is what is happening in Hickory Creek where discharges from New Lenox, Frankfort and other pollution sources are causing algal blooms at Pilcher Park and other sites well below New Lenox. (HR 80)

3. IEPA must further consider whether a permit limit on copper is needed

The permit does not comply with 35 Ill. Adm. Code § 302.105(c)(2)(B)(i) or 35 Ill. Adm. Code § 309.141(d) because it does not "assure" or "ensure" that the discharge will not cause or contribute to a violation of the copper standard. While the IEPA permit writers purported to consider what limits were necessary to prevent violations of numeric water quality standards, their efforts fell short of assuring that the copper limit would not be exceeded.[12]

The U.S. EPA NPDES *Permit Writers Manual* discusses the problem of how to determine reasonable potential to violate water quality standards and how to deal with the risk of uncertainly particularly in the case in which there is limited data.[13] The Manual states:

> All toxic effects testing and exposure assessment parameters, for both effluent toxicity and individual chemical, have some degree of uncertainty associated with them. The more limited amount of data, the larger the uncertainty. To better characterize the effects of effluent variability and reduce uncertainty in the process of deciding whether to require an effluent limit EPA has developed a

[12] It may be as IEPA has suggested (HR 70) that the copper discharge would qualify for a properly demarcated mixing zone under 35 Ill. Adm. Code §302.102, but if IEPA is to rely on a mixing zone to establish compliance, it must ensure on the record that the discharge actually qualifies for a mixing zone.

[13] Available at: http://cfpub.epa.gov/npdes/writermanual.cfm?program_id=45

statistical approach to determining a reasonable potential.

Section 6.3.2 p. 102, Appendix of Authorities B (emphasis added).

IEPA did its analysis of the "reasonable potential to exceed" with only two effluent samples and actually did the calculation recommended by U.S. EPA. Based on the fact it was using only two samples, IEPA did the math and found that there was a potential to exceed the acute and chronic standards for copper. IEPA then threw federal guidance out the window and decided not to impose any copper limits in the permit or even establish a monitoring requirement.

Had IEPA applied the federal guidance, it would have had to place limits in the permit because its calculation showed that there was a reasonable potential for violating standards. Indeed, given the limited amount of data that it looked at, there was a reasonable potential for a discharge that exceeded the *acute* water quality standard by more than 200 percent. (HR 508)[14]

The record then definitely does not include "substantial evidence" showing that IEPA ensured compliance with the acute copper standard. The Responsiveness Summary does not even discuss the question of whether there could be a violation of the acute standard although IEPA's analysis indicates that there is a reasonable potential for violation of it. Thus the permit must be remanded for reconsideration of that issue.

As to the chronic standard, IEPA choose to ignore the federal guidance in favor of its own rule that allows permits to be issued based on an average of two samples. (HR 363) Common sense and U.S. EPA guidance both dictate that the use of only two samples is

[14] Had IEPA followed its own rule regarding discharges to the Great Lakes, it would have had to do a mixing zone analysis or place a monitoring requirement in the permit. 35 Ill. Adm. Code § 352.421. Here, IEPA did not do a mixing zone analysis or require monitoring.

inherently unreliable. The Board routinely overturns IEPA reliance on unreliable evidence, and should likewise do so here. *See Permatreat* at *19-20 and *22-23; *EPA v. Pollution Control Board*, 86 Ill. 2d 390, 404 (1981) (where IEPA position was not supported by any "substantial" evidence, Board was correct to overrule IEPA); *Pease v. Illinois EPA*, PCB No. 95-118, 1995 Ill. Env. Lexis 739 at *41 (IEPA "conjectures" that are unsupported in the record must cede to more reliable evidence to the contrary).

The IEPA rule that it may use a simple average of two or more samples to determine reasonable potential has never been approved by the Board or U.S. EPA and clearly is not protective. Further, the IEPA practice could not be approved consistently with federal regulations because the test for whether a pollutant might have the reasonable potential to violate water quality standards has always been meant to be a "worst case" test. *American Iron and Steel Institute v. Environmental Protection Agency*, 115 F.3d 979, 1001 (D.C. Cir. 1997). Because IEPA has not justified on the record its practice of ignoring U.S. EPA guidance and instead using a far less protective unpublished Illinois rule, the copper limit should also be remanded for reconsideration. *In re Washington Aqueduct Water Supply System*, 2004 EPA App. Lexis 28, *53-54.

Accordingly, the permit should also be remanded for consideration of whether a copper limit is necessary. Such a remand may result simply in more data being collected, a proper consideration of a mixing zone that would comply with 35 Ill. Adm. Code § 302.102, or a copper limit.

C. The Permit does not assure that existing uses will be protected.

In its antidegradation analysis, IEPA broadly concluded that the increment of increased pollution allowed by the permit would not affect existing aquatic life or other uses of Hickory

Creek. But there is nothing in the record to support that conclusion. No study or any analysis of any kind was conducted of the potential effects of the increased discharge although the increased discharge makes up a large portion of the flow of the creek during critical low flow conditions.

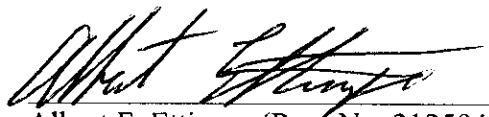
It is true that the Earth Tech report concluded that the "invertebrate community will likely not be significantly altered by the proposed treatment plant expansion." (HR 515) But even if the Earth Tech report were otherwise sound, it would not be reasonable to leap from the conclusion that the New Lenox plant was not harming invertebrates as the plant was operated in 2002 to the conclusion that it would not hurt aquatic life to dramatically increase the amount of pollution New Lenox was discharging into the water. The Earth Tech conclusion is like saying that the fact that a man is not getting fat while eating 2500 calories a day means that he will not gain weight if he begins eating 3500 calories a day. As noted by an IEPA biologist, this statement regarding the effect of increased discharges and the other conclusions on Page 3 of the Earth Tech report "are all without merit." (HR 667)

As explained by IEPA biologists at the time, the Earth Tech study should have been redone to derive any valid conclusions from it. IEPA certainly did not "assure" protection of existing uses by relying uncritically on an unsupported conclusion about the future based on a methodologically unsound study of the present.

CONCLUSION

The Board should reverse the October 31, 2003 decision of the Illinois Environmental Protection Agency ("IEPA") to grant a National Pollutant Discharge Elimination System ("NPDES") permit (Permit No. IL0020559) to the Village of New Lenox to increase its discharge of pollutants into Hickory Creek from its sewerage treatment plant. The Board should further direct that IEPA reconsider the permit in order to establish conditions and limits

necessary to limit nutrient pollution to that consistent with the lowest technologically and economically feasible level, and ensure that discharges from New Lenox STP #1 do not violate the standards regarding offensive conditions, dissolved oxygen, pH and copper.



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DATED: April 21, 2006

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Appendix of Authorities A

1 of 2 DOCUMENTS

In re: Washington Aqueduct Water Supply System

NPDES Permit No. DC0000019; NPDES Appeal No. 03-06

United States Environmental Protection Agency
Environmental Appeals Board

2004 EPA App. LEXIS 28

July 29, 2004

HEADNOTE:
[*1]

Syllabus

The Washington Aqueduct Water Supply System, a division of the U.S. Army Corps of Engineers, Baltimore District, provides drinking water to the Washington, D.C. metropolitan area. The Aqueduct "manufactures" drinking water by taking in raw Potomac River water, allowing a large percentage of sediments to settle out of the water, and then treating the water using a three-step process: (1) chemically induced sedimentation, in which aluminum sulfate, a widely used flocculant, is added to the water to induce further separation of solids from the water; (2) filtration; and (3) disinfection. The sedimentation step, which is at the heart of this appeal, occurs in six "sedimentation basins" that are adjacent to the Aqueduct's water treatment facilities in northwest Washington, D.C.

Over time, the aluminum sulfate flocculant added to the sedimentation basins and the resultant settled solids build up in the bottom of the basins and can interfere with the daily production of drinking water if they are not periodically removed. Accordingly, from two-to-five times per year per basin (depending on basin size and use), the Corps of Engineers cleans out the basins by discharging the treated **[*2]** sediments and supernatant into the Potomac River. Historically, each discharge episode has occurred over the course of several days in batch releases lasting approximately four-to-twelve hours.

On March 14, 2003, Region III of the U.S. Environmental Protection Agency ("EPA" or "Agency") issued a revised version of a National Pollutant Discharge Elimination System ("NPDES") permit to the Corps of Engineers' Baltimore District authorizing the discharges from the Washington Aqueduct into the waters of the United States, pursuant to section 402 of the Clean Water Act ("CWA"), 33 U.S.C. § 1342. On April 11, 2003, the National Wilderness Institute ("NWI"), a non-profit environmental organization based in Alexandria, Virginia, filed a petition for review of Region III's permit decision. NWI requested on several grounds that the permit be remanded to the Region for further consideration. Region III subsequently issued a modified version of the permit on February 27, 2004, which is now before the Environmental Appeals Board ("Board").

Held: NWI's petition for review of the Washington Aqueduct's NPDES permit is denied in part; however, with respect to one issue, the permit is remanded to EPA **[*3]** Region III for further consideration.

Under the federal regulations implementing section 402 of the CWA, 33 U.S.C. § 1342, permit issuers must determine, among many other things, whether a given point source discharge "causes, has the reasonable potential to cause, or contributes to" an exceedance of certain narrative and numeric criteria for various pollutants set forth in state water quality standards. If a discharge is found to cause, have the reasonable potential to cause, or contribute to such an exceedance, the permit writer must calculate water quality-based effluent limits ("WQBELs") for the relevant pollutants. The permit writer must then compare the resulting WQBELs to any technology-based effluent limits developed for particular pollutants and incorporate the more stringent set of effluent limitations into the NPDES permit.

In this case, Region III conducted the "reasonable potential" analysis for the Washington Aqueduct using grab samples of effluent that had been discharged from one of the sedimentation basins on October 21, 2002. After determining the concentrations of various metals, such as aluminum, arsenic, chromium, copper, iron, lead, mercury, selenium, and zinc, **[*4]** and other pollutants in the Aqueduct's effluent, the Region determined that only aluminum had a reason-

able potential to exceed District of Columbia water quality standards. The Region therefore calculated WQBELs for aluminum but found that the technology-based effluent limits it had developed for that metal were slightly more stringent that the WQBELs. Accordingly, Region III did not include any WQBELs in the Aqueduct's NPDES permit.

In comments on the Aqueduct's draft permits, NWI raised questions about the representativeness of the data Region III chose to use to conduct the Aqueduct's reasonable potential analysis. NWI reviewed a decade of Discharge Monitoring Reports from the Aqueduct, which disclosed the concentrations of aluminum, iron, and total suspended solids discharged from the sedimentation basins into the Potomac River. NWI also collected several reports, prepared by the Corps of Engineers or its contractors, that contained measured concentrations of metals and other pollutants in the Aqueduct's effluent. Finally, NWI collected its own samples of Aqueduct discharges and had them evaluated for their metals concentrations. NWI argued, on the basis of these data sets, that **[*5]** the pollutant concentrations measured by Region III in the October 21, 2002 samples were uncharacteristically low and thus provided an unsuitable basis for the reasonable potential analysis.

In its response to these comments on the draft permits, Region III asserted that the pollutant concentrations detected in the October 21, 2002 samples fell within the range of other samples and thus apparently could legitimately be used in the reasonable potential analysis. In other instances, the Region did not respond to NWI's data sets at all. On appeal, NWI argues that Region III responded inadequately to its comments.

Upon review of the administrative record and applicable federal law and Agency guidance, the Board holds that Region III clearly erred by failing to respond, adequately or in some cases at all, to significant comments NWI submitted on the Washington Aqueduct's draft NPDES permits. According to the Board, a response to comments must address the issues raised in a meaningful fashion and be clear and thorough enough to adequately encompass the issues raised by the commenter. Moreover, the administrative record must reflect the permit issuer's considered judgment, meaning that the **[*6]** permit issuer must articulate with reasonable clarity the reasons for its conclusions and the significance of the crucial facts it relied upon in reaching those conclusions. In this case, Region III chose to conduct the reasonable potential analysis using pollutant concentration levels that appear, on the basis of competing data compiled by NWI, to be substantially lower than worst-case or even average pollutant levels discharged from the Aqueduct, and yet the record contains virtually nothing explaining the Region's decision to proceed as it did. The record also contains no explanation or acknowledgment of the NPDES regulatory requirement that permit issuers use procedures to evaluate pollutant variability in effluent samples when analyzing reasonable potential, despite NWI's comments that clearly indicated pollutant variability was a significant issue in Aqueduct discharges.

The Board therefore remands the NPDES permit to Region III so that the Region may revisit the reasonable potential analysis, ensure that its use of procedures to account for pollutant variability in conducting the analysis are clearly documented in the administrative record, and respond to NWI's comments in **[*7]** a meaningful fashion that is sufficiently clear and thorough enough to adequately encompass the issues raised. Review of all other issues is denied.

PANEL:

Scott C. Fulton, Ronald L. McCallum, and Kathie A. Stein, Environmental Appeals Judges

OPINION-BY:

Opinion of the Board by Judge McCallum

OPINION:

ORDER DENYING REVIEW IN PART AND REMANDING IN PART

In the mid-1800s, the Congress of the United States enacted legislation creating the "Washington Aqueduct Water Supply System" ("Washington Aqueduct" or "Aqueduct") as a division of the U.S. Army Corps of Engineers, Baltimore District, for the purpose of providing drinking water to the Washington, D.C. metropolitan area. Today, the Washington Aqueduct supplies potable water to approximately one million residents of the District of Columbia, Arlington County, Virginia, the City of Falls Church, Virginia, and portions of Fairfax County, Virginia.

In the course of its operation of the Aqueduct over the past few decades, the Corps of Engineers' Baltimore District obtained a National Pollutant Discharge Elimination System ("NPDES") permit for discharges of pollutants from the Aqueduct into the waters of the United States, pursuant to section 402 of the Clean Water Act **[*8]** ("CWA" or "Act"), *33 U.S.C. § 1342.* On March 14, 2003, Region III of the U.S. Environmental Protection Agency ("EPA" or "Agency")

issued a revised version of the NPDES permit to the Corps of Engineers for discharges from the Washington Aqueduct into the Potomac River and Rock Creek.

On April 11, 2003, the National Wilderness Institute ("NWI"), a non-profit environmental organization based in Alexandria, Virginia, filed a petition for review of Region III's permit decision. NWI requested on several grounds that the permit be remanded to the Region for further consideration. Region III subsequently issued a modified version of the permit on February 27, 2004, n1 which is now before the Environmental Appeals Board ("Board"). For the reasons set forth below, we remand the Washington Aqueduct's NPDES permit to the Region for further consideration consistent with this decision.

I. *BACKGROUND*

A. *Statutory and Regulatory Background*

In 1972, Congress enacted the CWA "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a), *33 U.S.C. § 1251*(a). To **[*9]** achieve this objective, the Act prohibits the discharge of pollutants into the waters of the United States unless such discharge proceeds in compliance with a CWA permit. CWA § 301(a), *33 U.S.C. § 1311*(a). The CWA permitting program of relevance in the instant case is the NPDES program, set forth at section 402 of the CWA, *33 U.S.C. § 1342,* and implementing regulations developed by EPA at 40 C.F.R. part 122. NPDES permits typically contain provisions that incorporate or otherwise address two central CWA elements: (1) effluent limitations, which are established by EPA or permit issuers; and (2) water quality standards, which are promulgated by states and approved by EPA. *See* CWA § § 301, 303, 304(b), *33 U.S.C. § § 1311,* 1313, 1314(b); 40 C.F.R. pts. 122, 125, 131.

n1 As explained in Part I.B.2 below, we stayed our consideration of NWI's April 11, 2003 petition pending Region III's reconsideration of various portions of the revised permit.

[*10]

Effluent limitations control pollutant discharges into the waters of the United States by restricting the types and amounts of particular pollutants a permitted entity may lawfully discharge. CWA § 304(b), *33 U.S.C. § 1314*(b); 40 C.F.R. § 122.44. Effluent limitations are either "technology-based" or "water quality-based," whichever is more stringent. CWA § § 301(b)(1), 302, *33 U.S.C. § § 1311*(b)(1), 1312. Technology-based effluent limitations are generally developed on an industry-by-industry basis and establish a minimum level of treatment that is technologically available and economically achievable for facilities within a specific industry. CWA § § 301(b), 304(b), *33 U.S.C. § § 1311*(b), 1314(b); 40 C.F.R. pt. 125, subpt. A; *see* 40 C.F.R. pts. 405471 (effluent limitations guidelines for various point source categories). In some cases no industry-specific effluent limitations guidelines exist, and in those instances, permit issuers must use their "best professional judgment" to establish appropriate technology-based effluent limitations on a case-by-case basis. CWA § 402(a)(1), **[*11]** *33 U.S.C. § 1342*(a)(1); 40 C.F.R. § § 122.44, 125.3.

Water quality-based effluent limitations, on the other hand, are designed to ensure that state water quality standards are met regardless of the decisions made regarding technology and economics in establishing technology-based limits. State water quality standards are comprised of three parts: (1) one or more "designated uses" (i.e., public water supply, agriculture, recreation) for each water body or water body segment in the state; (2) water quality "criteria" expressed in numerical concentration levels for short ("acute") or longer ("chronic," "human health") exposure times and/or narrative statements specifying the amounts of various pollutants that may be present in the water without impairing designated uses; and (3) an antidegradation provision. CWA § 303(c)(2)(A), *33 U.S.C. § 1313*(c)(2)(A); 40 C.F.R. § § 131.10-.12. Water quality-based effluent limitations, or "WQBELs," are derived on the basis of the second component of water quality standards, i.e., the numeric or narrative water quality criteria for various pollutants established for particular water **[*12]** bodies.

Under the federal regulations implementing section 402 of the CWA, *33 U.S.C. § 1342,* permit issuers must determine, among many other things, whether a given point source discharge "causes, has the reasonable potential to cause, or contributes to" an exceedance of the narrative or numeric criteria for various pollutants set forth in state water quality standards. 40 C.F.R. § 122.44(d)(1)(ii). This regulatory requirement, sometimes described as the "reasonable potential analysis," provides in full:

> When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a state water quality standard, the permitting authority shall use procedures [that] account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.

Id. If a discharge is found to cause, have the reasonable potential **[*13]** to cause, or contribute to such an exceedance, the permit writer must calculate WQBELs for the relevant pollutants. n2 40 C.F.R. § 122.44(d)(1)(i), (iii)-(vi). The permit writer must then compare the resulting WQBELs to any technology-based effluent limits developed for particular pollutants and incorporate the more stringent set of effluent limitations into the permit. CWA § § 301(b)(1)(C), 302, *33 U.S.C. § § 1311*(b)(1)(C), 1312; 40 C.F.R. § 122.44(d).

> n2 EPA has developed guidance for permit issuers to use in developing WQBELs. *See, e.g.,* Office of Water, U.S. EPA, EPA/505/2-90-001, *Technical Support Document for Water Quality-Based Toxics Control* ch. 3 (Mar. 1991); *see also* Office of Water, U.S. EPA, EPA-833-B-96-003, *U.S. EPA NPDES Permit Writers' Manual* ch. 6 (Dec. 1996).

B. *Factual and Procedural Background*

Over the course of the last few years, EPA Region III has issued several rounds of draft and final NPDES permits for the Washington Aqueduct and has **[*14]** attempted to respond to extensive comments on these permits from an array of governmental entities, public interest organizations, and private citizens. Various components of the permits have been challenged in federal court as well as before this tribunal, and some of that litigation is still ongoing. n3 For reasons of practicality and efficiency, we have chosen to limit our survey of the extensive background information in this case to only those matters that have relevance to the specific issues we have been asked to decide. We commend to interested parties the lengthy administrative record in this case as a starting place for research and further investigation into other details concerning the CWA and the Washington Aqueduct's NPDES-regulated discharges.

> n3 *See Nat'l Wilderness Inst. v. U.S.Army Corps of Eng'rs,* No.1:01-CV-00273 (TFH) (D.D.C. filed Feb. 6, 2001)(alleging Endangered Species Act violations at Washington Aqueduct);*see also Nat'l Wilderness Inst. v. U.S.Army Corps of Eng'rs,* No.1:02-CV-01244(TFH)(D.D.C.Mar.29,2004)(order granting motion to dismiss for lack of jurisdiction in a citizen suit case filed in June 2002, alleging effluent violations).

[*15]

1. *Washington Aqueduct Operations*

We begin with a brief overview of the Washington Aqueduct's operations. The Aqueduct "manufactures" drinking water by taking in raw Potomac River water at two dams -- Great Falls and Little Falls, Maryland -- and piping the water to the Dalecarlia Reservoir, a forty-six-acre earthen basin situated on Washington, D.C.'s northwestern border with the State of Maryland. Once in the Reservoir, river water receives passive "pretreatment" of sorts, as approximately fifty-one percent of the sediments suspended in the water settle out, simply by virtue of gravity and the stillness of the water, and ~~thus~~ are removed from the water. These sediments are periodically dredged out ~~of~~ the bottom of the Reservoir and applied to land as a high-quality soil amendment. Meanwhile, the now-"pretreated" river water is sent from the Dalecarlia Reservoir to one of two drinking water treatment plants in the District of Columbia: the Dalecarlia plant and the McMillan plant.

At both of these plants, the drinking water "manufacturing" or treatment process consists of three steps: (1) chemically induced sedimentation, in which aluminum sulfate, a widely used flocculant, **[*16]** is added to the water to induce further separation of solids from the water; n4 (2) filtration; and (3) disinfection. The sedimentation step, which is at the heart of this appeal, occurs in "sedimentation basins" at the two water treatment plants. The Dalecarlia plant is

served by four sedimentation basins, which are denoted "Dalecarlia Sedimentation Basins # 1 through # 4," while the McMillan plant is served by two sedimentation basins, called "Georgetown Sedimentation Basins # 1 and # 2."

n4 As EPA explains:

> Flocculation refers to water treatment processes that combine small particles into larger particles, which settle out of the water as sediment. Aluminum sulfate (alum) and iron salts or synthetic organic polymers are generally used to promote coagulation. Alum added to water with carbonate alkalinity creates aluminum hydroxide in the form of a visible floc [that] settles to the bottom of the basin. Nutrients, silt, and organic matter sorb to the aluminum hydroxide and hydrogen ions are produced. This process tends to lower the pH of the water[;] however, if the pH remains in the range of 6-8, the nontoxic forms of aluminum will remain. Settling or sedimentation is simply a gravity process that removes flocculated particles from the water.

U.S. EPA Region III, *Fact Sheet, NPDES Permit Reissuance, Washington Aqueduct Water Treatment Plant* 13 (Mar. 27, 2002).

[*17]

Over the course of weeks and months, the aluminum sulfate flocculant and settled solids build up in the bottom of the sedimentation basins and can interfere with the daily production of drinking water if they are not periodically removed. Accordingly, from two-to-five times per year per basin (depending on basin size and use), the Corps cleans out the basins by discharging the treated sediments and supernatant (i.e., the liquid sitting on top of the settled solids) into the Potomac River. The Dalecarlia basins discharge through Outfall 002, which is located just south of the Maryland/District of Columbia boundary and north of Chain Bridge, while the Georgetown basins discharge through Outfalls 003 and 004, which are situated south of Fletcher's Boat House and north of Georgetown University on the north/south borders of the basins, respectively. Historically, each discharge episode has occurred over the course of several days in batch releases lasting approximately four-to-twelve hours. *See, e.g.*, EPA Ex. 7, at 18.

2. *Recent Permitting History*

On March 28, 2002, Region III issued a new draft NPDES permit for the Washington Aqueduct, designated for purposes of these proceedings **[*18]** the "first draft NPDES permit." *See* EPA Region III Response to Petition for Review Exhibit ("EPA Ex.") 5 (EPA Region III, Draft NPDES Permit No. DC0000019 for the Washington Aqueduct (Mar. 27, 2002)) ("First Draft Permit"). The Region also issued a fact sheet explaining the first draft permit and a request for public comments on the permit. *See* EPA Ex. 7 (EPA Region III, Draft NPDES Permit No. DC0000019 Fact Sheet (Mar. 27, 2002)) ("First Draft Permit Fact Sheet"). A large number of entities, including NWI, submitted comments on the first draft permit. *See* Letter from Rob Gordon, Director, NWI, to Environmental Appeals Board, Exhibit ("NWI Ex.") 3 (Apr. 11, 2003) & EPA Ex. 8 (NWI Comments on First Draft Permit (June 28, 2002)) ("NWI's First Comments").

Region III made substantial revisions to the first draft permit in response to the comments received on that version of the permit. On December 18, 2002, the Region issued a revised draft permit, referred to in these proceedings as the "second draft NPDES permit," along with a response to comments document, a revised fact sheet, and a request for comments on the new draft permit. *See* EPA Ex. 10 (EPA Region III, Draft **[*19]** NPDES Permit No. DC0000019 for the Washington Aqueduct (Dec. 17, 2002)) ("Second Draft Permit"); EPA Ex. 12 (EPA Region III, Response to Public Comment on Washington Aqueduct NPDES Draft Permit (undated; prob. Dec. 17, 2002)) ("RTC on First Draft Permit"); EPA Ex. 2 (EPA Region III, Draft NPDES Permit No. DC0000019 Fact Sheet (Dec. 17, 2002)) ("Second Draft Permit Fact Sheet"). The Region again received extensive comments on the draft permit from a variety of parties, including NWI. *See* NWI Ex. 4 & EPA Ex. 26 (NWI Comments on Second Draft Permit (Jan. 30, 2003)) ("NWI's Second Comments").

On March 14, 2003, Region III issued a final NPDES permit to the Corps for the Washington Aqueduct, along with a response to comments on the second draft permit. *See* EPA Ex. 1 (EPA Region III, NPDES Permit No. DC0000019, Washington Aqueduct (Mar. 14, 2003)); EPA Ex. 3 (EPA Region III, Response to Public Comment on Washington

Aqueduct NPDES Revised Draft Permit (Mar. 14, 2003)) ("RTC on Second Draft Permit"). The final permit incorporated a number of modifications to address comments on various matters pertaining to sediment discharges and the spring spawning season, emergency discharges, **[*20]** genetic and habitat studies, the permit reopener clause, and related topics. *See, e.g.,* RTC on Second Draft Permit at 715, 21.

As mentioned in the introduction, NWI filed a petition for review of the March 14, 2003 permit with the Board on April 11, 2003. *See* Letter from Rob Gordon, Director, NWI, to Environmental Appeals Board (Apr. 11, 2003) ("NWI Pet'n"). Region III filed a response to the petition for review on July 7, 2003. *See* EPA Region III's Response to Petition for Review ("EPA Resp."). On December 16, 2003, in response to a number of motions and other procedural developments in this case, the Board placed a stay on further proceedings in NWI's appeal while Region III reconsidered various portions of the March 14th NPDES permit. *See* Order Denying Motion for Partial Remand and Staying Further Proceedings During Reconsideration of Permit Conditions (Dec. 16, 2003).

Region III subsequently filed a motion with the Board on March 30, 2004, reporting that it had modified several conditions of the March 14th permit and reissued the permit in final form on February 27, 2004. *See* EPA's Motion for Lifting Stay of Further Proceedings; *id.* Ex. 5 (EPA Region III, **[*21]** NPDES Permit No. DC0000019, Washington Aqueduct (Feb. 27, 2004)). The Region therefore requested that the Board lift the stay of NWI's appeal. On April 23, 2004, the Board granted the Region's motion and reinitiated proceedings in this case. *See* Order Lifting Stay of Proceedings (Apr. 23, 2004). Notably, because NWI's appeal raises issues the Region did not address during its reconsideration and reissuance of the February 27, 2004 permit, and because the February 27, 2004 permit has superseded the March 14, 2003 permit, the final NPDES permit before us now is the February 27, 2004 permit. We will therefore apply NWI's arguments to that permit. The case stands ready for decision by the Board.

II. *DISCUSSION*

A. *Standard of Review*

Under the rules governing this proceeding, an NPDES permit ordinarily will not be reviewed unless it is based on a clearly erroneous finding of fact or conclusion of law, or involves an important matter of policy or exercise of discretion that warrants Board review. 40 C.F.R. § 124.19(a); *45 Fed. Reg. 33,290, 33,412* (May 19, 1980); *see In re Gov't of D.C. Mun. Separate Storm Sewer Sys., 10 E.A.D. 323, 341-43, 345-47, 357 (EAB 2002)* **[*22]** (remanding portions of NPDES permit pursuant to section 124.19(a)). The Board's analysis of NPDES permits is guided by the preamble to the part 124 permitting regulations, which states that the Board's power of review "should be only sparingly exercised" and that "most permit conditions should be finally determined at the [permit issuer's] level." *45 Fed. Reg. at 33,412; accord In re City of Moscow, 10 E.A.D. 135, 141 (EAB 2001).* The burden of demonstrating that review is warranted rests with the petitioner. 40 C.F.R. § 124.19(a); *In re Town of Westborough, 10 E.A.D. 297, 304 (EAB 2002).*

In permit appeals, the Board traditionally assigns a heavy burden to petitioners seeking review of issues that are technical in nature. *See, e.g., In re Phelps Dodge Corp., 10 E.A.D. 460, 517-19 (EAB 2002); In re Steel Dynamics, Inc., 9 E.A.D. 165, 201 (EAB 2000); In re Town of Ashland Wastewater Treatment Facility, 9 E.A.D. 661, 667 (EAB 2001).* As we have explained:

> When presented with technical issues, we look to **[*23]** determine whether the record demonstrates that the [permit issuer] duly considered the issues raised in the comments and whether the approach ultimately adopted by the [permit issuer] is rational in light of all the information in the record. If we are satisfied that the [permit issuer] gave due consideration to comments received and adopted an approach in the final permit decision that is rational and supportable, we typically will defer to the [permit issuer's] position. Clear error or reviewable exercise of discretion are not established simply because the petitioner presents a different opinion or alternative theory regarding a technical matter, particularly when the alternative theory is unsubstantiated.

In re MCN Oil & Gas Co., Order Denying Review, UIC Appeal No. 0203, slip op. at 25-26 n.21 (EAB Sept. 4, 2002) (citations omitted); *accord In re Three Mountain Power, L.L.C., 10 E.A.D. 39, 50 (EAB 2001); Steel Dynamics, 9 E.A.D. at 180 n.16, 201; In re NE Hub Partners, L.P., 7 E.A.D. 561, 567-68 (EAB 1998), review denied sub nom. Penn Fuel Gas, Inc. v. U.S. EPA, 185 F.3d 862 (3d Cir. 1999).* **[*24]**

Moreover, with respect to questions pertaining to the "representativeness" of data used as the basis for establishing permit conditions (which is central to this appeal), the Board has repeatedly held, in the context of the Clean Air Act's prevention of significant deterioration program, that the choice of appropriate data sets is generally left to the discretion of the permitting authority. *E.g., In re Encogen Cogeneration Facility, 8 E.A.D. 244, 256-57 (EAB 1999)* (choice of data sets for air quality analysis largely left to discretion of permit authority); *In re Knauf Fiber Glass, GmbH, 8 E.A.D. 121, 147 (EAB 1999)* (same, but with the proviso that permit authority's decision is adequately justified in the record). The Board's deference in these circumstances stems partly from the fact that selecting an appropriate data set is a technical matter, but it also stems from the fact that EPA has issued guidelines for determining whether data is sufficiently "representative" to be legitimately used in an air quality analysis, and permit issuers have discretion to act within the spirit of those guidelines. *See, e.g., Encogen, 8 E.A.D. at 256* **[*25]** (quoting EPA guidance that recommends consideration of air quality monitor location and data quality and currentness when determining "representativeness" of data); *In re Haw. Elec. Light Co., 8 E.A.D. 66, 97 (EAB 1998)* (same); *In re Kawaihae Cogeneration Project, 7 E.A.D. 107, 128 (EAB 1997)* (ambient air monitoring guidelines give permit issuers discretion to allow representative data submissions on case-by-case basis). Guidance of a similar nature exists to ensure effluent is meaningfully characterized for reasonable potential purposes under the NPDES program, although the Board has not had prior cause to address that guidance in depth. *See* Office of Water, U.S. EPA, EPA/505/2-90-001, *Technical Support Document for Water Quality-Based Toxics Control* § 3, at 47-66 (Mar. 1991); *cf. In re Gov't of D.C. Mun. Separate Storm Sewer Sys., 10 E.A.D. 323, 336-37, 340 & n.18 (EAB 2002)* (noting Region's decision that derivation of WQBELs using methods in Technical Support Document was not feasible due to insufficient information regarding magnitude, variation, and frequency of river and storm **[*26]** water discharge flow rates).

B. *Water Quality Analyses*

In its appeal of the Washington Aqueduct's NPDES permit to this Board, NWI is primarily interested in the effects the Aqueduct's activities will have on the water quality of the Potomac River. To analyze these effects, Region III initially relied on two studies prepared by environmental consulting companies on behalf of the Corps' Baltimore District, as well as on supplemental studies conducted by one of the companies. Second Draft Permit Fact Sheet at 4, 18-19; *see* EPA Ex. 16 & NWI Ex. 6 (EA Engineering, Science & Technology, Inc., *Water Quality Studies in the Vicinity of the Washington Aqueduct* (Oct. 2001)) (*"2001 Water Quality Studies"*); EPA Ex. 17 (Memorandum Reevaluating 1 December 1999 Acute Toxicity Test Value (Mar. 19, 2002)) (*"Supplemental Studies"*); Dynamac Corp., *Impacts of Sedimentation Basin Discharge from the Dalecarlia and Georgetown Reservoirs on the Potomac River* (Sept. 1, 1992). These studies included effluent toxicity testing and effluent fate and transport modeling of the Aqueduct's discharges conducted from 1997 through 2001, as well as modeling of discharge plumes for each outfall **[*27]** into the Potomac River at various river flow conditions. *2001 Water Quality Studies* pts. 2-4; *Supplemental Studies* at 2-12; *see* Second Draft Permit Fact Sheet at 18. The Region imposed water quality-based restrictions in the first draft permit, including a prohibition on sediment discharges during the spring spawning season, on the basis of these studies. First Draft Permit Fact Sheet at 3, 5, 7, 9-12, 17-19.

Region III subsequently decided, after it had received substantial public comment on the first draft permit, that it needed "additional reliable up-to-date values for various pollutants, particularly metals, in the Washington Aqueduct's discharge." n5 EPA Resp. at 7. Apparently, prior to this time, the Region had not prepared a formal, on-the-record analysis of the Washington Aqueduct's reasonable potential to cause an exceedance of D.C. water quality standards for metals and other pollutants likely to be in the Aqueduct's effluent. n6 The Region therefore collected grab samples of effluent (i.e., supernatant and settled solids) being discharged from Dalecarlia Sedimentation Basin # 2 on October 21, 2002, and analyzed those samples to determine the concentration of **[*28]** total suspended solids ("TSS"), dissolved and total metals, and other contaminants in the effluent. EPA Ex. 18 (Marilyn Gower, Environmental Scientist, U.S. EPA, *Washington Aqueduct Special Sampling Inspection Report* (Nov. 26, 2002)); EPA Ex. 19 (Office of Analytical Services & Quality Assurance, U.S. EPA Region III, *OASQA Laboratory Report: Washington Aqueduct* (Nov. 18, 2002)). Laboratory analysis indicated that the effluent samples contained, among other things, aluminum at 983 milligrams per liter ("mg/L"), iron at 39.8 mg/L, a variety of other metals (e.g., arsenic, copper, magnesium, mercury, zinc) in small quantities, and TSS at 4,300 mg/L. EPA Exs. 18-19.

n5 NWI's comments on this issue stated, among other things:

> Grab samples of sludge discharges from the Washington Aqueduct have indicated concentrations of arsenic, chromium, lead, nickel, selenium, and zinc that may exceed acute, chronic, or human health water quality standards. The draft NPDES permit requires no testing nor imposes any limit on these metals, several of which are carcinogens, and EPA offers no consideration of these pollutants or justification for not requiring testing or the inclusion of limits. Clearly, limits consistent with DC Water Quality Standards are necessitated by the reasonable potential that discharges will exceed DC standards.

NWI's First Comments at 22.

[*29]

n6 We have been unable to locate such an analysis in the materials submitted to us by the Region and NWI, including the first draft permit, the first draft permit fact sheet, NWI's comments on the first draft permit, and the Region's response to comments on the first draft permit; nor have we found it listed in the certified index to the administrative record. (The response to comments on the first draft permit mentions a reasonable potential analysis, but it is the one conducted using the October 21, 2002 grab samples and as such postdates the first draft permit.) Indeed, the closest thing we have found to a reasonable potential analysis for the first draft permit is an explanation in the fact sheet for that draft permit regarding proposed effluent limits for iron and aluminum. The Region notes in the fact sheet that it had consulted the D.C. water quality standards and found no numeric criteria for aluminum and only a chronic (not an acute) criterion for iron and thus did not pursue WQBELs for either of these pollutants. *See* First Draft Permit Fact Sheet at 17-19. (For definitions of the terms "acute" and "chronic" in the water quality context, *see infra* note 7.)

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The Region proceeded to use the pollutant concentrations detected in the October 21, 2002 grab samples to analyze the reasonable potential of the Washington Aqueduct's pollutant discharges to exceed D.C. water quality standards, pursuant to 40 C.F.R. § 122.44(d)(1)(ii). Second Draft Permit Fact Sheet at 19 ("EPA performed a reasonable potential analysis using the results of the October 21 sampling"); *see* EPA Ex. 20 (reasonable potential analysis); *see* D.C. Mun. Regs. tit. 21, ch. 11 (as amended May 24, 2002) (EPA Ex. 23) (D.C. water quality standards). At the outset of its analysis, Region III decided that of three types of numeric water quality criteria in the D.C. standards -- acute, chronic, and human health n7 -- only the acute criteria, representing one-hour average concentrations of the pollutants, had relevance to the Aqueduct's relatively short-duration discharges. EPA Resp. at 14; EPA Ex. 20.

n7 "Acute" water quality criteria represent "the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (one-hour (1hour) average) without deleterious effects at a frequency that does not exceed more than once every three (3) years." D.C. Mun. Regs. tit. 21, § 1199.1 (definition of "CMC" or "Criteria Maximum Concentration"). "Chronic" water quality criteria are similarly defined, except that the time period is longer, representing a four-day average. *Id.* (definition of "CCC" or "Criteria Continuous Concentration"). Finally, "human health" water quality criteria are represented by a thirty-day average. *Id.* § 1104.7, tbl. 2.

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On this basis, the Region eliminated iron, antimony, and thallium from consideration in the reasonable potential analysis because, though present in the October 21, 2002 grab samples, these metals lack designated acute criteria in the D.C. water quality standards. n8 EPA Resp. at 15; *see* D.C. Mun. Regs. tit. 21, § 1104.7 tbl. 2. The Region also ruled out a reasonable potential analysis for arsenic, cadmium, chromium, copper, lead, nickel, selenium, silver, and zinc because, though also determined to be present in the Aqueduct's effluent on October 21, 2002, these metals were not detected in quantifiable amounts and/or in amounts that exceeded their respective acute water quality criteria, and thus the Region assumed concentrations of zero for these pollutants. *See* EPA Resp. at 17; RTC on Second Draft Permit at 31-32; RTC on First Draft Permit at B.25; EPA Ex. 20. Finally, the Region excluded mercury, though detected in the efflu-

ent in quantifiable amounts, because the concentration nonetheless fell below the acute criterion for that metal. n9 EPA Resp. at 18.

n8 Region III also contends that the D.C. water quality standards do not have an acute water quality criterion for silver. EPA Resp. at 15. On the contrary, in the standards submitted by the Region as EPA Exhibit 23 (May 24, 2002 version), silver is assigned an acute value of e<(1.72[ln(hardness)]-6.52)> microgram per liter (" [mu] g/L"), as adjusted. D.C. Mun. Regs. tit. 21, § § 1104.7 tbl. 2, 1105.10; *see 60 Fed. Reg. 22,229, 22,231* tbl. 2 (May 4, 1995) (conversion factors for total recoverable/dissolved metals).

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n9 An alternative version of the Region's mercury analysis is included in the second response to comments document, in which Region III asserts that the October 21, 2002 samples of supernatant were "below the detection limit for dissolved mercury," and thus the Region assumed the concentration of mercury was zero. RTC on Second Draft Permit at 32. The discrepancy may be due to different mercury measurements in supernatant versus sediments. *See* EPA Ex. 18 (mercury results reported in October 21, 2002 samples, of which all measured below quantitation limit for mercury (0.2 [mu] g/L) except one result from south end of Dalecarlia Sedimentation Basin # 2 (where most solids settle out of river water), which measured 0.4 [mu] g/L); *see also* D.C. Mun. Regs. tit. 21, § 1104.7 tbl. 2 (acute water quality criterion for mercury (expressed as total recoverable) is 2.4 [mu] g/L).

The Region concluded that only aluminum, of all the metals, had a reasonable potential to cause an exceedance of the D.C. water quality criteria. **[*33]** Notably, the D.C. standards contain no numeric criteria -- acute, chronic, or human health -- for aluminum. *See* D.C. Mun. Regs. tit. 21, § 1104.7 tbl. 2. The standards do contain, however, a relevant narrative water quality criterion, which specifies, "The surface waters of the District shall be free from substances in amounts or combinations that * * * cause injury to, are toxic to, or produce adverse physiological or behavioral changes in humans, plants, or animals." *Id.* § 1104.1(d). Region III relied on this criterion and other considerations in deciding to adopt, for purposes of this permit, the acute criterion for aluminum included in the Great Lakes Water Quality Criteria (i.e., 750 [mu] g/L). RTC on Second Draft Permit at 19. The Region computed a "wasteload allocation" for aluminum in Washington Aqueduct effluent using this criterion, n10 and, because the effluent concentration found in the October 21, 2002 grab samples exceeded the wasteload allocation, the Region proceeded to calculate WQBELs for aluminum. *See* EPA Ex. 20 (computing average monthly limit for aluminum of 5,529 [mu] g/L (5.5 mg/L) and maximum daily limit of 8,074 [mu] g/L (8 mg/L)). After comparing **[*34]** these WQBELs to the technology-based effluent limits it had also derived for aluminum (i.e., 4 mg/L monthly average and 8 mg/L daily maximum), Region III found the technology-based limits to be slightly more stringent and therefore incorporated those limits, rather than the WQBELs, into the permit. RTC on Second Draft Permit at 1819; *see* EPA's Motion for Lifting Stay of Further Proceedings Ex. 5 (EPA Region III, NPDES Permit No. DC0000019, Washington Aqueduct pts. I.A-.F (Feb. 27, 2004)).

n10 Region III used the following equation to compute the "wasteload allocation" for aluminum: WLA = (WQC*(Qe+MZ*Qs)-(BC*MZ*Qs))/Qe, where "WLA" = wasteload allocation; "WQC" = acute water quality criterion (750 [mu] g/L); "Qe" = effluent flow (0.132 cubic meters per second ("cms")); "Qs" = stream flow (153 cms); "MZ" = acute mixing factor (0.145); and "BC" = background concentration (390 [mu] g/L). EPA Ex. 20, at 1. The equation yielded a wasteload allocation value for aluminum of 8,086 [mu] g/L.*Id.*

C. *NWI's Arguments* **[*35]** *on Appeal*

In two rounds of comments on draft permits for the Aqueduct, NWI attempted, in a variety of ways, to persuade EPA Region III that it had failed to adequately evaluate the concentrations of various metals (e.g., aluminum, arsenic, chromium, copper, iron, lead, mercury, selenium, zinc) and TSS in the Aqueduct's discharges and, as a consequence, failed to incorporate into the permit appropriate effluent limitations -- specifically WQBELs -- for these contaminants. *See* NWI's Second Comments at 1-8; NWI's First Comments at 18-23, 45-50 & tbls. I-VII. Because EPA remained un-

convinced that deficiencies existed in its water-quality analyses, the Region did not modify the permit in response to these concerns. NWI therefore asks this Board to remand the permit to Region III for further analyses of water quality issues and establishment of WQBELs.

NWI argues on two separate (though related) grounds that Region III responded inadequately to comments it submitted on the draft permits regarding the Region's "reasonable potential to cause an exceedance of water quality standards" analysis. First, NWI contends that the October 21, 2002 data Region III relied on to conduct the reasonable **[*36]** potential analysis for the second draft permit were not representative, in terms of levels of pollutant concentrations, of the pollutant load typically carried by discharges from the Washington Aqueduct sedimentation basins. Second, NWI claims that Region III chose to defend its October 21, 2002 sampling results rather than consider alternative metals data sets NWI had submitted or identified in its comments. NWI also raises a number of minor subsidiary points having to do with federal facilities compliance agreements, n11 the Data Quality Act, and incorporation of comments by reference. We address these issues in turn below.

n11 *See infra* note 28.

1. *Reasonable Potential Analysis*

a. *Representativeness of October 21, 2002 Sampling Data*

To begin, NWI points out that in its comments on the second draft permit, it had argued that the samples collected by Region III on October 21, 2002, were not representative of the range of pollutant concentrations actually discharged from Outfalls 002, 003, and **[*37]** 004. NWI Pet'n at 1-3; *see* NWI's Second Comments at 1-4. To support this argument with respect to Outfall 002, NWI reviewed ten years of Discharge Monitoring Reports ("DMRs"), from January 1992 through May 2002, for the four Dalecarlia sedimentation basins. The DMRs reported actual discharge concentrations of aluminum, iron, and TSS that were higher, NWI asserts, in virtually every instance than the concentrations recorded in the Region's October 21, 2002 samples. n12 According to NWI: (1) forty-eight of fifty-six values for monthly average aluminum concentrations reported on the DMRs exceeded 983 mg/L (the October 21, 2002 sample value), with the average of the monthly average values being 2,359 mg/L; (2) fifty-four of fifty-four values for monthly average iron concentrations reported on the DMRs exceeded 39.8 mg/L (the October 21, 2002 sample value), with the average of monthly average values being 688 mg/L; and (3) fifty-three of fifty-five values for monthly average TSS concentrations reported on the DMRs exceeded 4,300 mg/L (the October 21, 2002 sample value), with the average of monthly average values being 20,374 mg/L. NWI's Second Comments at 1-2; *cf.* NWI's First Comments **[*38]** at 45-50 & tbls. I-VII.

n12 In the period covered by the 1992-2002 DMRs, the Corps had an obligation, set forth in its NPDES permit for the Washington Aqueduct, to monitor and report -- in DMRs -- its discharges of aluminum, iron, and TSS to the waters of the United States. *See* EPA Ex. 4 (EPA Region III, NPDES Permit No. DC0000019, Washington Aqueduct § § A, C, at 2-3, 12-15 (Apr. 3, 1989)). The Corps had no equivalent obligation in that time frame to monitor or report Aqueduct discharges of any of the other metals of interest to NWI. Accordingly, the DMRs relied upon by NWI in this appeal contain no discharge concentrations or other specific information regarding pollutants of concern to NWI other than aluminum, iron, and TSS.

To support the argument with respect to Outfalls 003 and 004, NWI pointed out that EPA had "apparently made the assumption," in its reasonable potential analysis, that a discharge from Dalecarlia Sedimentation Basin # 2 through Outfall 002 could adequately represent discharges from the two **[*39]** Georgetown Sedimentation Basins through Outfalls 003 and 004. NWI's Second Comments at 2. NWI discussed differences in management of the two sets of sedimentation basins, noting that the basin sizes, chemicals added, sediment retention times, means of cleaning the basins, and discharge frequencies differed between the Dalecarlia and Georgetown facilities. *Id.* at 2-3. NWI also alleged that DMRs for the Georgetown basins indicate that "substantially higher pollutants on average" are discharged from the Georgetown basins through Outfalls 003 and 004 than from the Dalecarlia basins through Outfall 002. *Id.* at 3.

On appeal, NWI contends that Region III responded to its comments regarding Outfall 002 by stating only that the October 21, 2002 samples were "representative of the Dalecarlia basin discharge at the time they were taken." NWI Pet'n at 2 (quoting RTC on Second Draft Permit at 30). NWI argues that this response is inadequate, stating:

> NWI did not contend that the samples taken by EPA were not representative of the effluent and supernatant that was being discharged at the event sampled by EPA but that all of the available historical data from DMR's indicates that the **[*40]** concentrations detected in that event showed that the event itself is not representative of the discharges that actually occur. Therefore, the EPA's samples were an inappropriate basis for conducting [the] reasonable potential analysis.

Id.

With respect to its comments on Outfalls 003 and 004, NWI notes that Region III expressed its awareness that discharges from Outfall 002 are "somewhat different" from those of Outfalls 003 and 004 but stated that those differences "do not affect the requirements of the permit because the technology-based limitations for TSS will remove aluminum and other metals to levels well below the limits needed to protect water quality." RTC on Second Draft Permit at 32 (quoted in NWI Pet'n at 3). NWI argues that this response is also inadequate because the Region remained focused on its October 21, 2002 samples of an Outfall 002 discharge rather than evaluating discharges from Outfalls 003 and 004. NWI Pet'n at 3.

Upon examination of the record, it becomes clear that Region III provided a little more information in response to NWI's and another commenter's concern about data representativeness than NWI admits. The Region explained that experienced **[*41]** EPA professionals had obtained and analyzed the October 21, 2002 samples in accordance with EPA sampling methods, chain-of-custody protocols, and quantification techniques, and that Region III believed the methods used were reliable and appropriate for establishing effluent limits. RTC on Second Draft Permit at 27, 30-31. More significantly, the Region asserted that "while the analytical results were not the highest concentrations ever recorded for the basins, they were within the range found by other samplers (see *2001 Water Quality Studies*)." n13 *Id.* at 27. The Region amplifies this point in its response to NWI's appeal, pointing specifically to three tables in the *2001 Water Quality Studies* that summarize chemistry monitoring data collected for the Dalecarlia sedimentation basins from 1997 through 2001. EPA Resp. at 13 & n.7 (citing *2001 Water Quality Studies* ch. 4 & tbls. 4-1a, 4-2a, 4-3). Region III contends that the data reported in these tables demonstrate that the results for aluminum, iron, and TSS from the October 21, 2002 samples "were within the range found for other samples taken at other times from that basin" ("that basin" presumably meaning Dalecarlia **[*42]** Sedimentation Basin # 2). *Id.* at 13.

> n13 In addition, Region III explicitly acknowledged NWI's survey of historical DMR data for the Washington Aqueduct in its response to comments on the first draft permit. In that instance, NWI had argued that the ten years of DMR data revealed that the toxicity of the Aqueduct's discharges was much greater than reported in the *2001 Water Quality Studies* for Outfalls 002, 003, and 004. NWI's First Comments at 45-50 & tbls. I-VII. The Region rejected NWI's argument on the ground that relative toxicity could not validly be assessed by comparing historical average discharge concentrations reported on DMRs to toxicological evaluations of discharges conducted using numeric water quality criteria for individual pollutants. RTC on First Draft Permit at B40-42. The Region did not explain why such a comparison is invalid. Instead, the Region simply stated that the Corps' contractor who prepared the *2001 Water Quality Studies* performed the toxicological studies in accordance with EPA methods. *See id.*
>
> In its second round of comments, NWI altered its DMR-based argument to challenge the representativeness of the new data set (i.e., "new" since issuance of the first draft permit) Region III used to conduct the reasonable potential analysis. Because this argument is different than the argument made in its first set of comments, in that it targets a different data set (the October 21, 2002 grab sample data rather than the *2001 Water Quality Studies* toxicity data) from a different angle (i.e., degree of toxicity versus representativeness of data in a reasonable potential context), we cannot find that the Region's response to NWI's first DMR-based comments constitutes a response to NWI's second DMR-based comments.

[*43]

In light of Region III's assessment, on the basis of the *2001 Water Quality Studies,* that the October 2002 samples could serve as an adequate data set upon which to conduct the reasonable potential analysis, we turn our attention to the

Studies report itself. Chapter 4 of the *Studies,* entitled "Effluent Chemical Characterization," summarizes existing grab sample data collected by Aqueduct staff from 1997 through 2001 in tables 4-1 and 4-2, n14 as well as six samples collected for effluent toxicity testing purposes in table 4-3. n15 The data reveal three matters of relevance to the issue before us.

n14 It is possible that some or all of these data might also have been reported on Washington Aqueduct DMRs for the relevant years, as Aqueduct staff routinely collected grab samples of effluent, chemically analyzed the samples for their aluminum, iron, and TSS concentrations, and reported the results on DMRs. *See 2001 Water Quality Studies* § 4.1, at 4-1 to -3 (discussing use in *Studies* of "existing Aqueduct effluent chemistry data"); *see also* EPA Ex. 4 (EPA Region III, NPDES Permit No. DC0000019, Washington Aqueduct § § A, C, at 2-3, 12-15 (Apr. 3, 1989)) (setting forth monitoring and DMR reporting requirements for TSS, aluminum, and iron).

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n15 According to the *Studies* report, which covers the period 1997-2001:

> Discharge samples from the Dalecarlia and Georgetown basins * * * were collected to be representative of the "worst-case" solids discharge concentrations that would exist during a discharge event (i.e., samples were collected at Dalecarlia when hose cleaning operations were pushing out the largest masses of solids, and at Georgetown when the front end loaders were actively pushing solids into the conduit from the deeper areas of the reservoir.

2001 Water Quality Studies § 3.2.1, at 3-2.

First, we are struck by the variability in the concentrations of aluminum, iron, and TSS the *2001 Water Quality Studies* reports as being discharged from the Aqueduct's sedimentation basins. The grab sample data collected by Aqueduct staff and included in table 4-2 reveal that from 1997-2001, the average yearly concentrations of aluminum, iron, and TSS discharged from the four Dalecarlia sedimentation basins varied from 651 to 4,180 mg/L **[*45]** for aluminum, 47.3 to 1,400 mg/L for iron, and 5,020 to 48,900 mg/L for TSS. n16 *2001 Water Quality Studies* tbl. 4-2a. The variation is even more dramatic when discharges from the Georgetown sedimentation basins are included (i.e., 26 to 8,250 mg/L for aluminum; 4 to 1,400 mg/L for iron; and 377 to 69,452 mg/L for TSS). *Id.* tbls. 4-2a, -2b. In addition, four other data points collected in 1999-2001 for toxicity testing purposes indicate discharges from Dalecarlia Sedimentation Basins # 2 and # 3 of 270 to 1,830 mg/L of aluminum, 69 to 118 mg/L of iron, and 2,500 to 8,030 mg/L of TSS. *Id.* tbl. 4-3. Given this wide variability in discharge concentrations of these three pollutants, which NWI also identified, and assuming that it is scientifically valid to compare the October 2002 sampling data to these data (as the Region suggests we do, *see* EPA Resp. at 13 & n.7), n17 we conclude that the Region is generally correct in asserting that the October 2002 sampling data, which reported an aluminum concentration of 983 mg/L, an iron concentration of 39.8 mg/L, and a TSS concentration of 4,300 mg/L, fall within the range of samples reported in the *2001 Water Quality Studies.* **[*46]** n18

n16 This same data set indicates that the average yearly concentrations discharged from Dalecarlia Sedimentation Basin # 2 alone varied from 800 mg/L to 1,490 mg/L for aluminum, 61.4 mg/L to 372 mg/L for iron, and 5,520 mg/L to 14,400 mg/L for TSS.

2001 Water Quality Studies tbl. 4-2a.

n17 In this regard, it appears that tables 4-1a, 4-1b, 4-2a, and 4-2b in the *2001 Water Quality Studies* contain grab sample data, as do the Washington Aqueduct DMRs for 1992-2002 that NWI summarized. *See 2001*

Water Quality Studies § 4.1, at 4-1; EPA Ex. 4 (EPA Region III, NPDES Permit No. DC0000019, Washington Aqueduct § § A, C, at 2-3, 12-15 (Apr. 3, 1989)). EPA also collected the October 21, 2002 effluent using the grab sample technique. EPA Ex. 18. It would therefore appear to us that comparisons between these data sets can legitimately be made. However, lacking full development of this issue in the briefs before us, we decline to rule on the matter and determine only that it "appears" the numbers are variable and, as set forth below, the October 21, 2002 samples contain low-end pollutant concentrations.

[*47]

n18 Notably, the 39.8 mg/L iron value falls below the average iron concentration ranges for the Dalecarlia basins, but it falls within the wider range reported for the Georgetown basins.

Second, although the evidence seems to support Region III's observation that the October 21, 2002 data fall within the range of other samples, at least for aluminum, iron, and TSS, the evidence also seems to indicate, as NWI argued in its comments, that the aluminum, iron, and TSS levels in the October 2002 samples are situated on the low end of the concentration ranges for those three pollutants. According to the *Studies,* the overall discharge concentrations for the four Dalecarlia basins during 1997-2001 averaged 2,275 mg/L for aluminum, 431 mg/L for iron, and 20,825 mg/L for TSS. *2001 Water Quality Studies* § 4.1, at 4-1 & tbl. 41a. For Dalecarlia Sedimentation Basin # 2 alone, the discharge concentrations for 1997-2001 averaged 1,270 mg/L for aluminum, 217 mg/L for iron, and 12,300 for TSS. n19 *Id.* tbl. 4-1a. When compared **[*48]** to the October 21, 2002 results of 983 mg/L aluminum, 39.8 mg/L iron, and 4,300 TSS -- and again making the assumption that these data set comparisons are scientifically appropriate -- these figures establish that the October 2002 concentrations of aluminum, iron, and TSS are substantially lower than average discharges of these three pollutants through Outfall 002 analyzed in the *2001 Water Quality Studies.* Notably, moreover, the mean concentration values from the *2001 Water Quality Studies* report are closer in magnitude to the average values computed by NWI from the Aqueduct's 1992-2002 DMRs (i.e., 2,359 mg/L for aluminum, 688 mg/L for iron, and 20,374 mg/L for TSS) than they are to the October 2002 concentrations used in Region III's reasonable potential analysis.

n19 It is perhaps significant that these Dalecarlia Sedimentation Basin # 2 averages are themselves lower than the concomitant average concentration levels for Dalecarlia Sedimentation Basins # 1, # 3, and # 4 and Georgetown Sedimentation Basin # 1. *See 2001 Water Quality Studies* tbls. 4-1a, 4-1b (summarizing chemistry monitoring data for 1997-2001).

[*49]

Third, the Corps' contractor that prepared the *2001 Water Quality Studies* noted, "It should be understood that because of the way the basins and reservoirs are cleaned (fire hoses at Dalecarlia and front end loaders at Georgetown), grab sample data can be quite variable from minute to minute. Thus, mean effluent concentration data are probably the most reliable when evaluating the discharges." *2001 Water Quality Studies* § 4.1, at 4-1. The Region acknowledged this statement in its response to comments on the first draft permit and thus was aware that, given the special circumstances at the Washington Aqueduct, single grab sample concentrations could be less reliable when characterizing effluent than averages of multiple grab sample concentrations. *See* RTC on First Draft Permit at B-42 (because of variability of grab sample data, "mean effluent concentration data were considered more reliable").

In summary, although Region III indicated that the *2001 Water Quality Studies* supported its choice of data for the reasonable potential analysis, the evidence presented in that document instead raises questions about that choice. We therefore are hesitant to grant deference to **[*50]** the Region's data choice in this regard, as we otherwise might have been inclined to do. *See In re Haw. Elec. Light Co., 8 E.A.D. 66, 97-105 (EAB 1998)* (remanding air permit where permit issuer failed to respond adequately to comments questioning representativeness of air quality data used to establish permit conditions); *cf. In re Encogen Cogeneration Facility, 8 E.A.D. 244, 256-57 (EAB 1999)* (choice of data sets left to discretion of permit authority); *In re Knauf Fiber Glass, GmbH, 8 E.A.D. 121, 147 (EAB 1999)* (same, but noting that permit authority's decision must be adequately justified in the record).

As mentioned in Part I.A above, the regulations require a permitting authority to use procedures to account for pollutant variability in effluent in analyzing a discharger's reasonable potential to exceed water quality standards. 40 C.F.R. § 122.44(d)(1)(ii). EPA has published detailed technical guidance to assist permit writers in conducting reasonable po-

tential analyses and ensuring variability is considered therein. *See* EPA Exs. 24-25 (1985 and 1991 editions of EPA's "Technical Support **[*51]** Document for Water Quality-Based Toxics Control"). In cases where, as here, effluent monitoring data are available, the guidance recommends that agencies use all such data to characterize pollutant concentrations in the effluent. n20 Office of Water, U.S. EPA, EPA/505/2-90-001, *Technical Support Document for Water Quality-Based Toxics Control* § 3.3.1, at 51 (Mar. 1991). In cases where monitoring data are limited in quantity (as here with respect to all metals other than aluminum and iron), the guidance asserts that it is "impossible to determine from one piece of monitoring data" where in the range of effluent variability that particular data point would fall. *Id.* § 3.3.2, at 52. Accordingly, EPA developed a statistical approach "to better characterize the effects of effluent variability and reduce uncertainty in the process of deciding whether to require a [WQBEL]." *Id.* The guidance explains:

> This [statistical] approach combines knowledge of effluent variability as estimated by a coefficient of variation with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. The estimated maximum concentration is calculated **[*52]** as the upper bound of the expected lognormal distribution of effluent concentrations at a high confidence level.

Id.; see id. box 3-2, at 53 (statistical approach includes: (1) determining number of effluent samples for particular pollutant and selecting highest value from that data set; (2) multiplying highest value by coefficient of variation for data set (0.6 for sets containing less than six data points); (3) factoring in appropriate dilution; and (4) comparing maximum receiving water concentration result to water quality criterion to determine reasonable potential to exceed ambient standards). EPA therefore intends the reasonable potential analysis to reflect "worst-case" effluent conditions. *Id.* § 3.3.2, at 52; *accord Am. Iron & Steel Inst. v. EPA, 115 F.3d 979, 1001 (D.C. Cir. 1997)* (1991 Technical Support Document reflects EPA's long-established view that reasonable potential analyses incorporate worst-case estimates of effluent quality).

> n20 EPA guidance also suggests means by which permit agencies can determine whether WQBELs are needed in cases where no effluent monitoring data are available. *See* Office of Water, U.S. EPA, EPA/505/2-90-001, *Technical Support Document for Water Quality-Based Toxics Control* § 3.2, at 50-51 & box 3-1, at 49 (Mar. 1991).

[*53]

As far as we have been able to determine in this case, the Region's reasonable potential analysis and related documents in the record contain no discussion of the Agency's policy and practice of considering effluent variability in analyzing reasonable potential or whether or how this practice and policy was carried out in this case. *See, e.g.*, EPA Ex. 20 (reasonable potential analysis); Second Draft Permit Fact Sheet at 17-19; RTC on Second Draft Permit at 18-20, 30-38. It appears that the Region simply relied on the raw numbers reported from the laboratory on the October 21, 2002 grab samples alone, without any statistical analysis to reduce the uncertainty caused by using single samples or to ensure that worst-case conditions were evaluated, and without considering actual monitoring data that were available on some of the pollutants. *See* EPA Ex. 20. Certainly, NWI's and another's comments questioning this analysis brought the issues of representativeness, data variability in general, n21 and the reasonable potential analysis to the Region's attention (albeit without citing the relevant regulatory provision). As mentioned above, Region III offered a nominal response to these **[*54]** comments, and, consequently, we cannot completely rule out the possibility that the Region evaluated data variability in some manner (although if it did so it did not document the evaluation in the record). n22 We can and do conclude, however, on the basis of that nominal response, that the Region failed to respond to NWI's significant comments in an adequate fashion.

> n21 *Cf. Am. Iron & Steel Inst. v. EPA, 115 F.3d 979, 1000 (D.C. Cir. 1997)* (in order for a single data set to be "valid and representative" for a point source affected by the EPA Water Quality Guidance for the Great Lakes System, that data set must account for "variability" of the pollutant in the effluent).

> n22 The lack of such an evaluation, if established, would be clear error and grounds for a remand in and of itself. *See* 40 C.F.R. § 122.44(d)(1)(ii).

[*55]

Under the regulations that govern this permitting proceeding, a permit issuer must "briefly describe and respond to all significant comments on the draft permit." 40 C.F.R. § 124.17(a)(2). The Board has interpreted this provision as meaning that a response to comments need not be of the same length or level of detail as the comments and that related comments may be grouped together and responded to as a unit. *E.g., In re Hillman Power Co., 10 E.A.D. 673, 695-97 & n.20 (EAB 2002); In re NE Hub Partners, L.P., 7 E.A.D. 561, 582-84 (EAB 1998), review denied sub nom. Penn Fuel Gas, Inc. v. U.S. EPA, 185 F.3d 862 (3d Cir. 1999).* The Board has also held, however, that a response to comments must address the issues raised in a meaningful fashion and that the response, though perhaps brief, must nonetheless be clear and thorough enough to adequately encompass the issues raised by the commenter. *See, e.g., Hillman, 10 E.A.D. at 696 n.20; In re Steel Dynamics, Inc., 9 E.A.D. 165, 174-81 (EAB 2000); In re RockGen Energy Ctr., 8 E.A.D. 536, 555-58 (EAB 1999);* [*56] *In re Tallmadge Generating Station,* Order Denying Review in Part and Remanding in Part, PSD Appeal No. 02-12, slip op. at 8-12, 22-28 (EAB May 21, 2003). Moreover, the administrative record must reflect the permit issuer's "considered judgment," meaning that the permit issuer must articulate with reasonable clarity the reasons for its conclusions and the significance of the crucial facts it relied upon in reaching those conclusions. *In re Ash Grove Cement Co., 7 E.A.D. 387, 417-18 (EAB 1997); In re Austin Powder Co., 6 E.A.D. 713, 720 (EAB 1997).*

In the case before us, the NPDES regulations mandate use of procedures to evaluate pollutant variability in effluent, yet Region III chose to conduct the reasonable potential analysis using pollutant concentration levels that appear to be, as NWI pointed out in its comments, substantially lower than worst-case or even average pollutant levels discharged from the Aqueduct. The Region's response to the comments questioning the validity of this approach -- in which it stated that the pollutant concentrations detected in samples collected on one day in October 2002, from one of [*57] the six sedimentation basins at the Aqueduct, "fall within the range of other samples" and thus apparently could legitimately be used in a reasonable potential analysis -- is, at least without further elaboration or explanation, an insufficient justification for the Region's decision, considering the weight of the evidence in the record that seems to indicate much higher average (and even higher worst-case) discharge levels for three of the targeted pollutants and potentially others. n23 We therefore hold that the Region failed to comply with 40 C.F.R. § 124.17(a)(2) (i.e., the duty to respond to significant comments) in responding to NWI's comments on data representativeness and in so doing clearly erred. *See Steel Dynamics, 9 E.A.D. at 174-81* (permit issuers must adequately document their decisionmaking processes); *RockGen, 8 E.A.D. at 555-58* (permit issuers must give "thoughtful and full consideration" to public comments before making final permit determinations); *In re Knauf Fiber Glass, GmbH, 8 E.A.D. 121, 134-42 (EAB 1999)* (remand appropriate where comments raised legitimate questions [*58] but were rejected by permit issuer without adequate explanation).

n23 With respect to metals other than aluminum and iron, we can do no more at this juncture than recognize that the Region indicated there is a connection of some kind between the level of TSS measured in effluent and the level of metals in their solid form suspended in that effluent. *See* RTC on Second Draft Permit at 24 ("the reduction or removal of TSS will remove or reduce aluminum and the other metals in the discharge"); RTC on First Draft Permit at C.3 ("the removal of TSS required by the effluent limits for this parameter * * * will remove much of the aluminum in the discharges").

b. *Metals Data Sets*

Next, NWI notes that in comments on the second draft permit, it had argued that WQBELs should be included in the permit for a number of metals because actual measured concentrations of these metals in Washington Aqueduct discharges indicated they had a reasonable potential to exceed D.C. water quality standards. NWI Pet'n at 3. To support [*59] this argument, NWI submitted three sets of data showing higher quantities of various metals being discharged by the Aqueduct into waters of the United States than EPA had detected in its October 21, 2002 grab samples. *See* NWI's Second Comments at 4-7.

The first data set consisted of samples of Aqueduct discharges taken by NWI and unspecified "others" on March 29, 2002, October 19, 2002, and November 2, 2002, and contained measurements of arsenic, copper, lead, nickel, selenium, and zinc concentrations in the effluent. NWI's Second Comments at 5. The second data set consisted of measurements of chromium, lead, nickel, and zinc submitted in 1988 by the Corps of Engineers as part of an NPDES permit renewal application. *Id.* at 6; NWI's First Comments at 19; *see* NWI Ex. 13 (Corps NPDES permit application). The third data set consisted of cadmium, copper, lead, nickel, and zinc measurements taken by a Corps consultant in Febru-

ary 1979. n24 NWI's Second Comments at 6; *see* NWI Ex. 14 (Camp Dresser & McKee, Inc., *Report on Site Disposal Study for Water Treatment Plant Residues, Dalecarlia Water Treatment Plant and Georgetown Reservoir* (1979)).

n24 In its first set of comments, NWI also submitted metals data for arsenic, chromium, lead, nickel, silver, and zinc from a March 1995 study entitled "Residuals Thickening and Dewatering Pilot Study, Technical Memorandum No. 7," prepared by Whitman, Requardt & Associates on behalf of the Corps' Baltimore District. NWI's First Comments at 22-23; *see* NWI Ex. 22 (pilot study). To our knowledge, Region III did not respond to these data, *see* RTC on First Draft Permit, and NWI did not raise the matter on appeal to this Board.

[*60]

On appeal, NWI quotes Region III's response to its metals data, in which the Region acknowledged receipt of the data and then simply stated, "EPA stands by the results of its [October 21, 2002] sampling." NWI Pet'n at 3 (quoting RTC on Second Draft Permit at 34). The Region also reiterated, in its response to NWI's comments, that its October 21, 2002 samples had been collected and tested in accordance with EPA-approved methods and protocols. RTC on Second Draft Permit at 27, 31. NWI now argues that Region III's response to its comments indicate that the Region chose to take the position "of defending the results of a particular sampling event it engaged in, almost as [if] EPA itself is the permittee, rather than appropriately considering the information that had been provided" in the course of the public comment process. NWI Pet'n at 3.

In its response to the petition for review, Region III enlarges upon its response to NWI's comments in this regard. According to the Region, the metals data in the 1979 technical report and the Corps' 1988 permit application "were not useful because more recent data were available" and also because the Region had in its possession a more-recent permit **[*61]** application from the Corps. n25 EPA Resp. at 19. As for the NWI sampling data, the Region asserts that NWI failed to submit documentation indicating that it had "complied with the protocols for taking the samples or that the results were validated using quality assurance/quality control procedures." n26 *Id.* The Region concludes by stating that it did follow these protocols itself and reiterates that it "stands by the sampling results it obtained." *Id.*

n25 We note in this regard that the newer application, unlike the older one, does not contain any actual metals measurements but only indicates that certain metals "may be present" in the effluent. *See* EPA Ex. 21 (Corps' 2001 permit application).

n26 NWI did submit several "Certificates of Analysis," prepared by Phase Separation Science, Inc. of Baltimore, Maryland, and signed by Matt Cohen, a "Quality Assurance Chemist." NWI Ex. 4 attachs. The certificates specify that Phase Separation Science, Inc. analyzed all the metals in the samples using EPA Method 200.8. *Id.* The Region does not mention these certificates in its responses to comments or the petition for review, and thus we lack specific briefing on the question whether the certificates constitute sufficient documentation.

[*62]

Under EPA permitting rules, NWI's submission during the comment period of three sets of metals data (two of which consisted of data collected by the Corps or a Corps' contractor) appears to qualify as a "significant" comment to which the Region owes consideration and at least a brief response in its response to comments document. *See* 40 C.F.R. § 124.17(a)(2); *see, e.g., In re Steel Dynamics, Inc., 9 E.A.D. 165, 180 (EAB 2000)* ("an allegation that an agency underestimated lead emissions, accompanied by a detailed alternative analysis of such emissions * * * is significant enough to warrant consideration and at least some form of acknowledgment and response"); *In re Pennzoil Exploration & Prod. Co., 2 E.A.D. 730, 732-33* (Adm'r 1989) (petitioner's 1911 map identifying underground injection wells within boundaries of proposed project and identification of abandoned well in same area are significant comments that must be considered and responded to by permit issuer). While the Region responded to the 1988 data in its response to comments on the first draft permit, n27 the Region did not mention the 1979 and NWI's own metals **[*63]** data even summarily in the comment responses, thus leaving us to guess as to whether or not the Region dismissed these data for valid reasons or failed to consider them. *See* RTC on Second Draft Permit at 30-38. Instead, as NWI observed, the Region decided to focus on defending its October 2002 sampling data by asserting that it "stands by" that data, thereby seemingly exhibiting an unwillingness to engage other data that might complicate the reasonable potential analysis and/or

lead to different conclusions about necessary WQBELs. Moreover, the Region cannot through its arguments on appeal augment the record upon which the permit decision was based. *E.g., In re Chem. Waste Mgmt. of Ind., Inc., 6 E.A.D. 144, 151-52 (EAB 1995)* (rejecting permit issuer's explanation for permit condition because explanation was raised for first time on appeal, rather than in response-to-comments document); *In re Amoco Oil Co., 4 E.A.D. 954, 964 (EAB 1993)* (same).

n27 In its response to comments document, the Region stated, among other things:

> Applicants are not accountable for contaminants in their raw process water, rather, only for those contaminants [that] are added as a result of the treatment process, and only at certain concentrations. The metals of interest [here] are found in the raw process water, which contains high levels of [TSS] and are not found to be added by the Corps in any quantity by its manufacturing process (if they are added at all it is as low level impurities in water treatment chemicals).

RTC on First Draft Permit at B.24. In its response to this appeal, the Region has neither relied on this passage nor pursued this line of argument. Accordingly, we do not consider it further.

In addition, the Region also noted that the Corps' 1988 data were based on analyses of raw water coming into the Aqueduct and thus were "not representative of the effluent." *Id.* at B.27. The Region concluded:

> EPA is not aware of any reliable analytical sediment or liquid effluent data [that] supports the conclusion that the discharge has the potential to exceed [D.C. water] quality standards for any metals. The results of the *2001 Water Quality Studies* show that there is no acute toxicity due to the discharge. The *2001 Water Quality Studies* results for chronic toxicity are not conclusive but appeared to support the results of the 1993 Dynamac Study[, which found little or no chronic toxicity].

Id.; see 2001 Water Quality Studies at ES-3.

[*64]

Region III's apparent failure to consider and respond to NWI's significant comments in a meaningful fashion, coupled with its belated efforts to supplement the record on appeal, is in our view clearly erroneous and grounds for a remand of the permit. *See, e.g., In re Weber # 4-8,* UIC Appeal No. 03-01, slip op. at 6-8 (EAB Dec. 11, 2003), 11 E.A.D. (vacating and remanding underground injection well permit on ground that "40 C.F.R. § § 124.17 and 124.18 are designed to ensure that the decisionmaker gives serious consideration to public comments at the time of making his or her final permit decision," even if such consideration will not necessarily alter permit decision); *In re Atochem N. Am., Inc., 3 E.A.D. 498, 499* (Adm'r 1991) (vacating and remanding Resource Conservation and Recovery Act permit where EPA failed to respond to public comments before issuing permit).

Moreover, whatever the merits of the Region's arguments on appeal expounding on these issues (*see supra* notes 25-27), the fact remains that, as discussed in Part I.A above, effluent variability must be considered in analyzing reasonable potential to exceed water quality standards. **[*65]** NWI attempted to make this point with respect to metals other than aluminum and iron by marshaling a variety of publicly available data and by collecting some of its own samples of those metals. While the Region may have had valid reasons for finding these data unsuitable for incorporation into the reasonable potential analysis, the Region nonetheless has a legal obligation to take variability into account in some fashion and, as we held in Part II.C.1.a, *supra,* must do so on the record on remand.

c. *Conclusion*

Region III clearly erred in this instance by failing to respond, adequately or in some cases at all, to significant comments about data representativeness and the reasonable potential analysis, in violation of 40 C.F.R. § 124.17(a)(2). We therefore remand the permit so that the Region can revisit the reasonable potential analysis conducted for the Washington Aqueduct and ensure the analysis is clearly explained in the record and consistent with federal law. n28

n28 Because we are remanding the reasonable potential analysis, we need not reach NWI's arguments pertaining to Region III's alleged failure to respond to NWI's comments regarding the Region's analysis of dissolved versus total recoverable metals. *See* NWI Pet'n at 4. The Region responded to these concerns as raised during the comment period by stating, among other things, that because "the permit limit for aluminum is technology-based, not water quality-based, [NWI's contention that Region III's methods did not comply with D.C. water quality standards] is irrelevant." RTC on Second Draft Permit at 33 (response to question G.8). The Region may or may not find it necessary to take NWI's dissolved/total recoverable metals-related comments into consideration in the course of revisiting the reasonable potential analysis and whether WQBELs are needed for this permit.

Similarly, we need not reach NWI's arguments pertaining to the Federal Facilities Compliance Agreement ("FFCA") that Region III entered into with the Corps in June 2003 regarding this NPDES permit. The FFCA specifies that the Corps must achieve compliance with the numeric discharge limits set forth in the NPDES permit no later than March 1, 2008, for at least one of the Aqueduct's sedimentation basins, and no later than December 30, 2009, for all the basins. EPA Ex. 22, at 6 (FFCA P 22). On appeal, NWI notes that under the D.C. water quality standards, a permittee may obtain a variance from a water quality standard that is the basis of a WQBEL only if that permittee can justify, every three years through a public hearing process, that attaining the water quality standard is not feasible for particular reasons. D.C. Mun. Regs. tit. 21, § 1105.1(a)-(c). NWI points out that no such variance has been sought for the Aqueduct, even though the Corps will not be in compliance with its numeric discharge limits (which at the moment are all technology-based) for more than three years from the date of permit issuance. NWI Pet'n at 1-2, 3, 5. Again, because at this juncture it is unclear whether the Region will determine that WQBELs are necessary for the Washington Aqueduct, we need not rule on this issue. We recognize that this D.C. variance issue may become relevant in the course of the Region's revisiting the reasonable potential analysis and may accordingly be considered and discussed during the course of the remand.

[*66]

2. *Other Issues*

Finally, NWI raises several additional points in its petition for review. For the reasons set forth below, we find that the arguments made on these points lack merit, and review is denied on their basis.

a. *Data Quality Act*

First, NWI asserts in its petition that Region III failed to comply with the Data Quality Act n29 in conducting the reasonable potential analysis and calculating WQBELs. NWI Pet'n at 1, 3, 5. The Region observes that NWI did not raise this argument in its first or second set of comments on the draft permits. EPA Resp. at 21. Moreover, the Region notes that NWI did not demonstrate in its petition that any other party raised this issue during the public comment periods. Region III states that failure to raise an issue during the public comment period and failure to show that any other party raised the issue precludes a petitioner from raising the issue in a permit appeal. *Id.* (citing 40 C.F.R. § § 124.13, .19(a); *In re City of Phoenix, 9 E.A.D. 515, 524 (EAB 2000), appeal dismissed per stipulation,* No. 01-70263 (9th Cir. Mar. 21, 2002)).

n29 *See* Treasury and General Government Appropriations Act for Fiscal Year 2001, Pub. L. No. 106-554, tit. V, § 515, 114 Stat. 2763, 2763A-153 to -154 (2000) (referred to by various entities as the "Data Quality Act," the "Information Quality Act," or "Section 515"). EPA promulgated procedures to implement the legislation in October 2002. *See* Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency, *67 Fed. Reg. 63,657 (2002);* EPA Information Quality Guidelines, *available at* http://www.epa.gov/quality/informationguidelines.

[*67]

Upon review of petitioner's two sets of comments, we agree that NWI did not raise the Data Quality Act in those comments, even though the existence of the statute was a reasonably ascertainable issue prior to the close of the two comment periods on June 28, 2002, and January 30, 2003. *See* 40 C.F.R. § 124.13; NWI's Second Comments; NWI's First Comments. We also agree with Region III that the petition does not identify any other parties as raising the Data

Quality Act in their comments on the draft permits. Accordingly, we deny review on this ground. *See* 40 C.F.R. § § 124.13, .19(a); *see, e.g., In re Kendall New Century Dev.*, PSD Appeal No. 03-01, slip op. at 21-22 (EAB Apr. 29, 2003), 11 E.A.D. (issue regarding size and magnitude of proposed power plant not raised below, so not considered on appeal); *In re Phelps Dodge Corp., 10 E.A.D. 460, 519-20 (EAB 2002)* (breach of trust and fiduciary duty arguments not raised below, so not considered on appeal).

b. *Comments Incorporated by Reference*

Second, NWI concludes its petition by stating that "numerous other flaws within this permit are incorporated herein by reference to NWI's previously **[*68]** submitted comments." NWI Pet'n at 5. The Region retorts that attempts to raise issues before the Board in this manner -- i.e., via incorporation by reference of comments on a draft permit, without any further elaboration or examination of the permit issuer's response to those comments -- must fail because such attempts do not provide the Board with the requisite specificity and argumentation mandated by the part 124 regulations governing this proceeding. EPA Resp. at 30 (citing *In re Knauf Fiber Glass, GmbH, 9 E.A.D. 1, 5 (EAB 2000); In re Adcom Wire, 4 E.A.D. 221, 228-29 (EAB 1992)).*

We agree with the Region, as we have frequently held that 40 C.F.R. § 124.19(a) requires petitioners to clearly identify the permit conditions they wish to challenge and present us with arguments explaining how the permit issuer's ultimate decisions on the permit, after considering comments on the draft versions thereof, are clearly erroneous, an abuse of discretion, or otherwise warrant review under that regulatory provision. *E.g., In re Phelps Dodge Corp., 10 E.A.D. 460, 520 (EAB 2002)* (unsupported assertion **[*69]** that permit issuer failed to analyze adverse effects of permitted project on minority populations is not sufficient for grant of review under § 124.19(a)); *In re New England Plating Co., 9 E.A.D. 726, 737-39 (EAB 2001)* (unsubstantiated arguments provide insufficient basis for grant of review of permit decision); *In re LCP Chems., 4 E.A.D. 661, 664-65 (EAB 1993)* (petitioner failed to identify specific permit conditions objected to, thus providing no basis for granting review); *Adcom Wire, 4 E.A.D. at 228-29* (incorporation of letter by reference not sufficient for review under § 124.19(a)). Because NWI's incorporation of its comments on the draft permits fails to meet the requirements of 40 C.F.R. § 124.19(a), review on this basis is denied.

III. *CONCLUSION*

For the foregoing reasons, we remand this permit to Region III. The Region is directed to reopen the permit proceedings for the limited purposes of: (1) revisiting the reasonable potential analysis and ensuring that its use of procedures to account for effluent variability in conducting the analysis is clearly documented in the administrative **[*70]** record; and (2) responding to NWI's comments in a meaningful fashion that is sufficiently clear and thorough to adequately encompass the issues raised. If the Region cannot justify the permit conditions as written (for example if it finds WQBELs are necessary for some pollutants), it should revise them and provide a justification for the revised conditions. Any party who participates in the remand process and is not satisfied with the Region's decision on remand may file an appeal with the Board pursuant to 40 C.F.R. § 124.19. Any such appeal must be limited to issues within the scope of the remand.

On all other issues, the petition for review is denied.

So ordered.

Appendix of Authorities B

United States Environmental Protection Agency

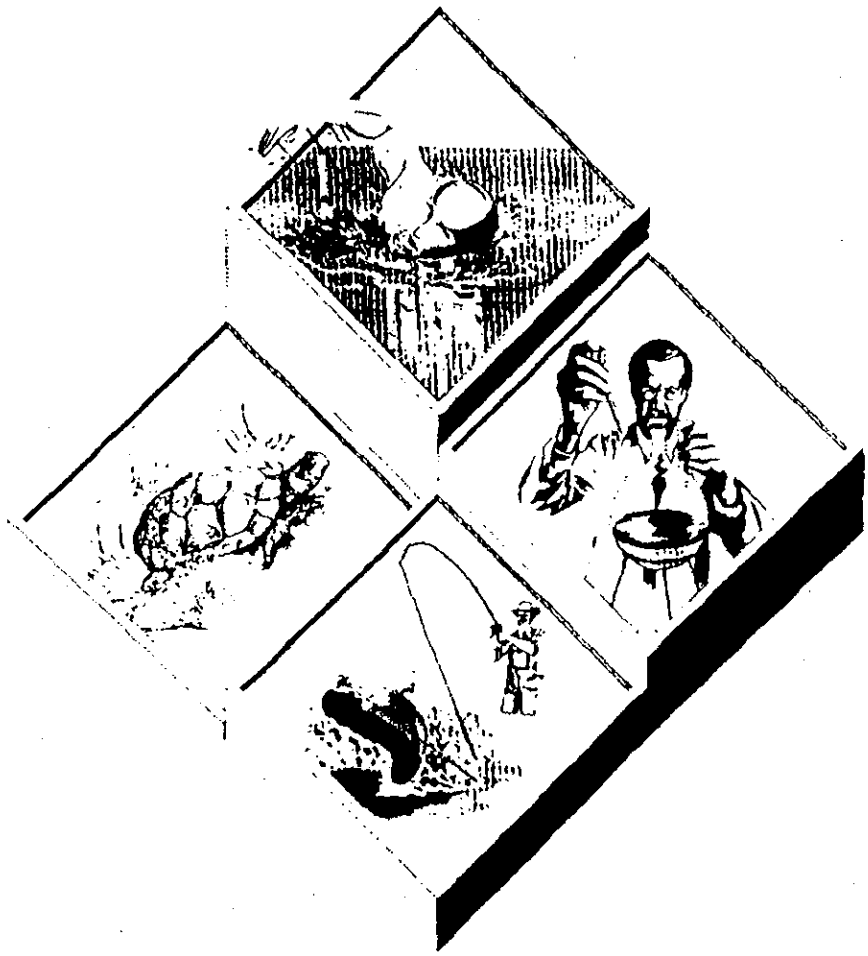
Office of Water (4305)

EPA 823-B-94-005a
August 1994

EPA

Water Quality Standards Handbook:

Second Edition



"... to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

Section 101(a) of the Clean Water Act

Contains Update #1
August 1994

High-quality waters are those whose quality exceeds that necessary to protect the section 101(a)(2) goals of the Act, regardless of use designation. All parameters do not need to be better quality than the State's ambient criteria for the water to be deemed a "high-quality water." EPA believes that it is best to apply antidegradation on a parameter-by-parameter basis. Otherwise, there is potential for a large number of waters not to receive antidegradation protection, which is important to attaining the goals of the Clean Water Act to restore and maintain the integrity of the Nation's waters. However, if a State has an official interpretation that differs from this interpretation, EPA will evaluate the State interpretation for conformance with the statutory and regulatory intent of the antidegradation policy. EPA has accepted approaches that do not use a strict pollutant-by-pollutant basis (USEPA, 1989c).

In "high-quality waters," under 131.12(a)(2), before any lowering of water quality occurs, there must be an antidegradation review consisting of:

- a finding that it is necessary to accommodate important economical or social development in the area in which the waters are located (this phrase is intended to convey a general concept regarding what level of social and economic development could be used to justify a change in high-quality waters);

- full satisfaction of all intergovernmental coordination and public participation provisions (the intent here is to ensure that no activity that will cause water quality to decline in existing high-quality waters is undertaken without adequate public review and intergovernmental coordination); and

- assurance that the highest statutory and regulatory requirements for point sources, including new source performance standards, and best management practices for nonpoint source pollutant controls are achieved (this requirement ensures that the limited provision for lowering water quality of high-quality waters down to "fishable/swimmable" levels will not be used to undercut the Clean Water Act requirements for point source and nonpoint source pollution control; furthermore, by ensuring compliance with such statutory and regulatory controls, there is less chance that a lowering of water quality will be sought to accommodate new economic and social development).

In addition, water quality may not be lowered to less than the level necessary to fully protect the "fishable/swimmable" uses and other existing uses. This provision is intended to provide relief only in a few extraordinary circumstances where the economic and social need for the activity clearly outweighs the benefit of maintaining water quality above that required for "fishable/swimmable" water, and both cannot be achieved. The burden of demonstration on the individual proposing such activity will be very high. In any case, moreover, the existing use must be maintained and the activity shall not preclude the maintenance of a "fishable/swimmable" level of water quality protection.

The antidegradation review requirements of this provision of the antidegradation policy are triggered by any action that would result in the lowering of water quality in a high-quality water. Such activities as new discharges or expansion of existing facilities would presumably lower water quality and would not be permissible unless the State conducts a review consistent with the previous paragraph. In addition, no permit may be issued, without an antidegradation review, to a discharger to high-quality waters with effluent limits greater than actual current loadings if such loadings will cause a lowering of water quality (USEPA, 1989c).

Antidegradation is not a "no growth" rule and was never designed or intended to be such. It is a policy that allows public decisions to be made on important environmental actions. Where the State intends to provide for development, it may decide under this section, after satisfying the

Appendix of Authorities C

United States
Environmental Protection
Agency

Office of Water
(4203)

EPA-833-B-96-003
December 1996

EPA

U.S. EPA NPDES Permit Writers' Manual

General Considerations

When determining whether WQBELs are needed in a permit, the permit writer is required to consider, at a minimum: (1) existing controls on point and nonpoint sources of pollution; (2) the variability of the pollutant or pollutant parameter in the effluent; (3) the sensitivity of the species to toxicity testing; and (4) where appropriate, the dilution of the effluent in the receiving water (40 CFR §122.44(d)(ii)). The permit writer also must consider whether technology-based limits are sufficient to maintain State water quality standards. Finally, the permit writer should consider other available data and information pertaining to the discharger (e.g., compliance history, in-stream survey data, dilution, data from similar facilities) in addition to effluent monitoring data to assist in making an informed reasonable potential determination.

6.3.2 Determining Reasonable Potential With Effluent Monitoring Data

When characterizing an effluent for the need for a WQBEL, the permit writer should use any available effluent monitoring data as well as other information pertaining to the discharge (e.g., type of industry, compliance history, stream surveys) as the basis for a decision. The permit writer may already have effluent data available from previous monitoring, or he or she may decide to require the permittee to generate effluent monitoring data prior to permit issuance or as a condition of the issued permit. EPA recommends monitoring data be generated prior to permit limit development for the following reasons: (1) the presence or absence of a pollutant can be more clearly established or refuted; and (2) effluent variability can be more clearly defined. Data collection should begin far enough in advance of permit development to allow sufficient time for conducting toxicity tests and chemical analyses.

The permit writer can use the available effluent data and a water quality model to perform a reasonable potential analysis. The mass balance equation, presented in **Exhibit 6-2**, is a simple water quality model that can be used for this analysis. The permit writer would use the maximum observed effluent concentration, or a statistically projected worst-case value, to calculate a projected in-stream concentration, under critical stream conditions. The permit writer would then compare the projected receiving water concentration to the applicable water quality criteria to determine whether a water quality-based effluent limit is needed.

EXHIBIT 6-2
Basic Mass Balance Water Quality Equation

$$Q_d C_d + Q_s C_s = Q_r C_r$$

Q_d = waste discharge flow in million gallons per day (mgd) or cubic feet per second (cfs)
C_d = pollutant concentration in waste discharge in milligrams per liter (mg/l)
Q_s = background stream flow in mgd or cfs above point of discharge
C_s = background in-stream pollutant concentration in mg/l
Q_r = resultant in-stream flow, after discharge in mgd or cfs
C_r = resultant in-stream pollutant concentration in mg/l in the stream reach (after complete mixing occurs)

All toxic effects testing and exposure assessment parameters, for both effluent toxicity and individual chemicals, have some degree of uncertainty associated with them. The more limited the amount of data, the larger the uncertainty. To better characterize the effects of effluent variability and reduce uncertainty in the process of deciding whether to require an effluent limit EPA has developed a statistical approach to determining reasonable potential. This approach is described in detail in Chapter 3 of the *Technical Support Document for Water Quality-Based Toxics Control*[18] (hereafter referred to as the "TSD"). The statistical approach combines knowledge of effluent variability with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. This projected maximum concentration, after considering dilution, can then be compared to an appropriate water quality criterion to determine the need for an effluent limit.

Example:

Q_s	=	Available dilution from upstream river flow	= 1.2 cfs
Q_d	=	Discharge flow	= 0.31 cfs
C_s	=	Upstream river concentration	= 0.8 mg/l
C_d	=	Statistically projected maximum discharge concentration	= 2.0 mg/l
C_r	=	Receiving water concentration	
Water Quality Criterion			= 1.0 mg/l

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r} = \frac{(0.31\,cfs)\,(2.0\,mg/l) + (1.2\,cfs)\,(0.8\,mg/l)}{(1.2\,cfs) + (0.31\,cfs)}$$

C_r = **1.05 mg/l**

Discussion: Since the downstream concentration (C_r) exceeds the water quality criterion, there is a reasonable potential for water quality standards to be exceeded.

[18]USEPA (1991). *Technical Support Document for Water Quality-Based Toxics Control.* EPA-505/2-90-001. Office of Water Enforcement and Permits.

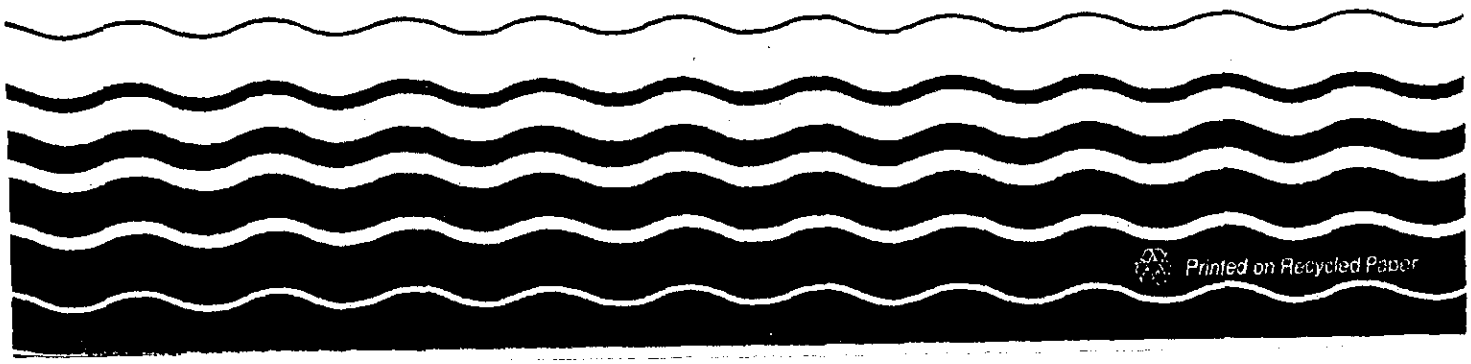
United States
Environmental Protection
Agency

Office Of Water
(EN-336)

EPA/505/2-90-001
PB91-127415
March 1991

EPA

Technical Support Document For Water Quality-based Toxics Control



3.3.2 Addressing Uncertainty in Effluent Characterization by Generating Effluent Monitoring Data

All toxic effects testing and exposure assessment parameters, for both effluent toxicity and individual chemicals, have some degree of uncertainty associated with them. The more limited the amount of test data available, the larger the uncertainty. The least amount of uncertainty of an effluent's impact on the receiving water exists where (1) a complete data base is available on the effects of acute and chronic toxicity on many indigenous species, (2) there is a clear understanding of ecosystem species composition and functional processes, and (3) actual measured exposure concentrations are available for all chemicals during seasonal changes and dilution situations. The uncertainty associated with such an ideal situation would be minimal. However, generation of these data can be very resource intensive.

An example of uncertainty that results from limited monitoring data is if a regulatory authority has only one piece of effluent data (e.g., an LC_{50} of 50 percent) for a facility. Effluent variability in such a case, given the range of effluent toxicity variability seen in other effluents, may range between 20 percent and 100 percent (see Appendix A). It is impossible to determine from one piece of monitoring data where in this range the effluent variability really falls. More monitoring data would need to be generated to determine the actual variability of this effluent and reduce this source of uncertainty.

To better characterize the effects of effluent variability and reduce uncertainty in the process of deciding whether to require an effluent limit, EPA has developed the statistical approach described below. This approach combines knowledge of effluent variability as estimated by a coefficient of variation with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. The estimated maximum concentration is calculated as the upper bound of the expected lognormal distribution of effluent concentrations at a high confidence level. The projected effluent concentration after consideration of dilution can then be compared to an appropriate water quality criterion to determine the potential for exceeding that criterion and the need for an effluent limit.

The statistical approach has two parts. The first is a characterization of the highest measured effluent concentration based on the desired confidence level. The relationship that describes this is the following:

$$p_n = (1 - \text{confidence level})^{1/n}$$

where p_n is the percentile represented by the highest concentration in the data and n is the number of samples. The following are some examples of this relationship at a 99 percent confidence level:

- The largest value of 5 samples is greater than the 40 percentile
- The largest value of 10 samples is greater than the 63 percentile
- The largest value of 20 samples is greater than the 79 percentile
- The largest value of 100 samples is greater than the 96 percentile.

The second part of the statistical approach is a relationship between the percentile described above and the selected upper bound of the lognormal effluent distribution. EPA's effluent data base suggests that the lognormal distribution well characterizes effluent concentrations (see Appendix E). For example, if five samples were collected (which represents a 40th percentile), the coefficient of variation is 0.6, and the desired upper bound of the effluent distribution is the 99th percentile, then the two percentiles can be related using the coefficient of variation (CV) as shown below:

$$\frac{C_{99}}{C_{40}} = \frac{\exp(2.326\sigma - 0.5\sigma^2)}{\exp(-0.258\sigma - 0.5\sigma^2)} = 4.2$$

where $\sigma = \ln(CV^2+1)$ and 2.326 and -0.258 are the normal distribution values for the 99th and 40th percentiles, respectively. The use of the 99th percentile is for illustrative purposes here. Although it does represent a measure of the upper bound of an effluent distribution, other percentiles could be selected by a regulatory agency. The relationship shown above can be calculated for other percentiles and CVs by replacing the values in the equation.

Tables 3-1 and 3-2 show the combined effects of both parts for a 99-percent confidence level and upper bounds of the 99th and 95th percentiles, respectively. The factors shown in the tables are multiplied by the highest concentration in an effluent sample to estimate the maximum expected concentration.

This procedure can be used for both single and multiple discharges to the same receiving waterbody. This is accomplished for multiple dischargers by summing the projected RWCs for the pollutant or pollutant parameter of concern from each individual discharger, and comparing it to the water quality standard. This involves an assumption of conservative additivity of the pollutant after discharge, which may not accurately reflect the true behavior of the toxicant. To overcome this, and to further refine the proportional contribution of each discharger and the resultant limits, the permitting authority should supplement this evaluation with multiple source WLA modeling and/or ambient water concentration monitoring.

3.3.3 Effluent Characterization for Whole Effluent Toxicity

Once an effluent has been selected for whole effluent toxicity characterization after consideration of the factors discussed above, the regulatory authority should require toxicity testing in accordance with appropriate site-specific considerations and the recommendations discussed below. In the past 5 years, significant additional experience has been gained in generating effluent toxicity data upon which to make decisions as to whether or not an effluent will cause toxic effects in the receiving water in both freshwater and marine environments.

Table 3-1. Reasonable Potential Multiplying Factors: 99% Confidence Level and 99% Probability Basis

Number of	Coefficient of Variation																			
Samples	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
1	1.6	2.5	3.9	6.0	9.0	13.2	18.9	26.5	36.2	48.3	63.3	81.4	102.8	128.0	157.1	190.3	227.8	269.9	316.7	368.3
2	1.4	2.0	2.9	4.0	5.5	7.4	9.8	12.7	16.1	20.2	24.9	30.3	36.3	43.0	50.4	58.4	67.2	76.6	86.7	97.5
3	1.4	1.9	2.5	3.3	4.4	5.6	7.2	8.9	11.0	13.4	16.0	19.0	22.2	25.7	29.4	33.5	37.7	42.3	47.0	52.0
4	1.3	1.7	2.3	2.9	3.8	4.7	5.9	7.2	8.7	10.3	12.2	14.2	16.3	18.6	21.0	23.6	26.3	29.1	32.1	35.1
5	1.3	1.7	2.1	2.7	3.4	4.2	5.1	6.2	7.3	8.6	10.0	11.5	13.1	14.8	16.6	18.4	20.4	22.4	24.5	26.6
6	1.3	1.6	2.0	2.5	3.1	3.8	4.6	5.5	6.4	7.5	8.6	9.8	11.1	12.4	13.8	15.3	16.8	18.3	19.9	21.5
7	1.3	1.6	2.0	2.4	2.9	3.6	4.2	5.0	5.8	6.7	7.7	8.7	9.7	10.8	12.0	13.1	14.4	15.6	16.9	18.2
8	1.2	1.5	1.9	2.3	2.8	3.3	3.9	4.6	5.3	6.1	6.9	7.8	8.7	9.6	10.6	11.6	12.6	13.6	14.7	15.8
9	1.2	1.5	1.8	2.2	2.7	3.2	3.7	4.3	5.0	5.7	6.4	7.1	7.9	8.7	9.6	10.4	11.3	12.2	13.1	14.0
10	1.2	1.5	1.8	2.2	2.6	3.0	3.5	4.1	4.7	5.3	5.9	6.6	7.3	8.0	8.8	9.5	10.3	11.0	11.8	12.6
11	1.2	1.5	1.8	2.1	2.5	2.9	3.4	3.9	4.4	5.0	5.6	6.2	6.8	7.4	8.1	8.8	9.4	10.1	10.8	11.5
12	1.2	1.4	1.7	2.0	2.4	2.8	3.2	3.7	4.2	4.7	5.2	5.8	6.4	7.0	7.5	8.1	8.8	9.4	10.0	10.6
13	1.2	1.4	1.7	2.0	2.3	2.7	3.1	3.6	4.0	4.5	5.0	5.5	6.0	6.5	7.1	7.6	8.2	8.7	9.3	9.9
14	1.2	1.4	1.7	2.0	2.3	2.6	3.0	3.4	3.9	4.3	4.8	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2
15	1.2	1.4	1.6	1.9	2.2	2.6	2.9	3.3	3.7	4.1	4.6	5.0	5.4	5.9	6.4	6.8	7.3	7.7	8.2	8.7
16	1.2	1.4	1.6	1.9	2.2	2.5	2.9	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.1	6.5	6.9	7.3	7.8	8.2
17	1.2	1.4	1.6	1.9	2.1	2.5	2.8	3.1	3.5	3.8	4.2	4.6	5.0	5.4	5.8	6.2	6.6	7.0	7.4	7.8
18	1.2	1.4	1.6	1.8	2.1	2.4	2.7	3.0	3.4	3.7	4.1	4.4	4.8	5.2	5.6	5.9	6.3	6.7	7.0	7.4
19	1.2	1.4	1.6	1.8	2.1	2.4	2.7	3.0	3.3	3.6	4.0	4.3	4.6	5.0	5.3	5.7	6.0	6.4	6.7	7.1
20	1.2	1.3	1.6	1.8	2.0	2.3	2.6	2.9	3.2	3.5	3.8	4.2	4.5	4.8	5.2	5.5	5.8	6.1	6.5	6.8

Table 3-2. Reasonable Potential Multiplying Factors: 99% Confidence Level and 95% Probability Basis

Number of	Coefficient of Variation																			
Samples	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
1	1.4	1.9	2.6	3.6	4.7	6.2	8.0	10.1	12.6	15.5	18.7	22.3	26.4	30.8	35.6	40.7	46.2	52.1	58.4	64.9
2	1.3	1.6	2.0	2.5	3.1	3.8	4.6	5.4	6.4	7.4	8.5	9.7	10.9	12.2	13.6	15.0	16.4	17.9	19.5	21.1
3	1.2	1.5	1.8	2.1	2.5	3.0	3.5	4.0	4.6	5.2	5.8	6.5	7.2	7.9	8.6	9.3	10.0	10.8	11.5	12.3
4	1.2	1.4	1.7	1.9	2.2	2.6	2.9	3.3	3.7	4.2	4.6	5.0	5.5	6.0	6.4	6.9	7.4	7.8	8.3	8.8
5	1.2	1.4	1.6	1.8	2.1	2.3	2.6	2.9	3.2	3.6	3.9	4.2	4.5	4.9	5.2	5.6	5.9	6.2	6.6	6.9
6	1.1	1.3	1.5	1.7	1.9	2.1	2.4	2.6	2.9	3.1	3.4	3.7	3.9	4.2	4.5	4.7	5.0	5.2	5.5	5.7
7	1.1	1.3	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9
8	1.1	1.3	1.4	1.6	1.7	1.9	2.1	2.3	2.4	2.6	2.8	3.0	3.2	3.3	3.5	3.7	3.9	4.0	4.2	4.3
9	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.8	2.9	3.1	3.2	3.4	3.5	3.6	3.8	3.9
10	1.1	1.2	1.3	1.5	1.6	1.7	1.9	2.0	2.2	2.3	2.4	2.6	2.7	2.8	3.0	3.1	3.2	3.3	3.4	3.6
11	1.1	1.2	1.3	1.4	1.6	1.7	1.8	1.9	2.1	2.2	2.3	2.4	2.5	2.7	2.8	2.9	3.0	3.1	3.2	3.3
12	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.0
13	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.9
14	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.3	2.4	2.5	2.6	2.6	2.7
15	1.1	1.2	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.5
16	1.1	1.1	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.9	1.9	2.0	2.1	2.1	2.2	2.3	2.3	2.4	2.4
17	1.1	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.2	2.3	2.3
18	1.1	1.1	1.2	1.3	1.3	1.4	1.5	1.6	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2
19	1.1	1.1	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.1	2.1
20	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.0	2.0

Appendix of Authorities C

LEXSEE 2005 EPA APP. LEXIS 14

In re: City of Marlborough, Massachusetts Easterly Wastewater Treatment Facility

NPDES Permit No. MA-0100498; NPDES Appeal No. 04-13

United States Environmental Protection Agency
Environmental Appeals Board

2005 EPA App. LEXIS 14

August 11, 2005

HEADNOTE:
[*1]

Syllabus

In a petition dated October 18, 2004, the Town of Sudbury, Massachusetts ("Sudbury") seeks review of a final National Pollutant Discharge Elimination System Permit ("Permit") issued to the City of Marlborough, Massachusetts on September 16, 2004. The Permit, issued jointly by United States Environmental Protection Agency, Region I (the "Region") and the Massachusetts Department of Environmental Protection authorizes continued discharges from Marlborough's Easterly Wastewater Treatment Facility. Sudbury seeks review of certain conditions in the Permit relating to limitations on phosphorus discharges, and asserts that certain permit conditions, also concerning limitations on phosphorus, were improperly omitted from the Permit.

In particular, Sudbury raises the following seven objections to the final permit decision: (1) the use of a 60-day rolling average to measure compliance with the Permit's final phosphorus limitation of 0.1 mg/l between the months of April and October is not sufficiently stringent to achieve water quality standards; (2) the Permit's interim phosphorus limit of 0.5 mg/l between the months of April and October is not sufficient to meet water quality standards; **[*2]** (3) the Permit's use of an "interim seasonal average" limit to measure compliance with the Permit's 0.5 mg/l interim seasonal phosphorus discharge limit is not sufficiently stringent to meet water quality standards; (4) the Permit's phosphorus limit of 0.75 mg/l from November 1 through March 31 is not sufficient to achieve water quality standards; (5) the Permit should contain a winter discharge limitation applicable to orthophosphorus (dissolved phosphorus) from November 1 through March 31; (6) the Permit impermissibly fails to require adaptive management measures to control phosphorus discharges; and (7) the Permit erroneously fails to provide opportunities for public review, participation, or comments on the deliverables required by the Permit's compliance schedule.

Held: The Permit is remanded. On remand, the Region must either provide an explanation for including the requirement that the Permit's interim phosphorus discharge limitation be measured using an "interim seasonal average phosphorus limit" or modify this requirement of the Permit (issue 3 above). The Region added this requirement to the final permit without specifying its reasons. Under 40 C.F.R. § 124.17(a)(1), in **[*3]** responding to public comments, the Region must specify the reasons for any changes to the draft permit. The Region has failed to do so. Further, absent such an explanation, it does not appear that the record reflects the "considered judgment" necessary to support the applicable permit determination.

In addition, on remand, the Region must either demonstrate how, in light of the potential for releases of phosphorus from sediment in the Hop Brook ponds, the Permit, as written, will ensure compliance with applicable water quality standards, or modify the Permit to satisfy the regulatory requirements of 40 C.F.R. § 122.4(d), which prohibits issuing a permit when permit conditions cannot ensure compliance with applicable water quality standards (issue 6 above). Although the Permit states that the facility's discharge "shall not cause a violation of the water quality standards of the receiving waters," the record before the Board does not indicate whether the Permit's 0.1 mg/l phosphorus limitation, by itself, will meet the state's water quality standards. With regard to the likelihood that imposition of the 0.1 mg/l phosphorus limitation will be sufficient to meet water quality standards, **[*4]** the Region states that such a result may be possible. A mere possibility of compliance, however, does not "ensure" compliance.

Sudbury's petition for review is denied in all other respects, either because the issues were not raised during the comment period, Sudbury failed to adequately specify why the Region's responses to these issues during the comment period were clearly erroneous, or because Sudbury has failed to convince the Board that the Region's permit determination was clearly erroneous or otherwise warrants review.

PANEL:

Scott C. Fulton, Kathie A. Stein, and Edward E. Reich, Environmental Appeals Judges

OPINION-BY:

Opinion of the Board by Judge Stein

OPINION:

ORDER DENYING PETITION FOR REVIEW IN PART AND REMANDING IN PART

I. *INTRODUCTION*

In a petition dated October 18, 2004, which it filed with the Board on October 19, 2004, n1 the Town of Sudbury, Massachusetts ("Sudbury") seeks review of a final National Pollutant Discharge Elimination System ("NPDES") n2 Permit ("Permit") issued to the City of Marlborough, Massachusetts ("Marlborough") on September 16, 2004. *See* Petition for Review (Oct. 19, 2004) ("Petition"). The Permit, issued jointly by United States Environmental Protection **[*5]** Agency, Region I (the "Region") and the Massachusetts Department of Environmental Protection ("MADEP"), n3 authorizes continued discharges from Marlborough's Easterly Wastewater Treatment Facility ("Facility"). n4 Sudbury, which is located downstream from the Facility, seeks review of certain conditions in the Permit relating to limitations on phosphorus discharges, as well as asserting that certain permit conditions, also concerning limitations on phosphorus, were improperly omitted from the permit. *See* Petition at 2. In a response filed on December 3, 2004, the Region argues, *inter alia,* that the Board should deny the Petition because Sudbury has not satisfied its burden of demonstrating that review is warranted under 40 C.F.R. § 124.19. *See* Response to Petitions for Review of Permit Determination at 17-24 (Dec. 3, 2004) ("Region's Response"). For the reasons stated below, the Permit is remanded in part and the Petition is denied in part. n5

n1 Documents are "filed" with the Board on the date they are *received.*

n2 Under the Clean Water Act ("CWA"), persons who discharge pollutants from point sources into waters of the United States must have a permit in order for the discharge to be lawful. CWA § 301, *33 U.S.C. § 1311.* The National Pollutant Discharge Elimination System is one of the principal permitting programs under the CWA. *See* CWA § 402, *33 U.S.C. § 1342.*

[*6]

n3 Although EPA issues NPDES permits in Massachusetts, the state maintains permitting authority under Massachusetts law. *See* Mass. Gen. L. ch. 21, § 43 (2004); Mass. Regs. Code tit. 314 (2004). When the Region issues an NPDES permit in Massachusetts, MADEP jointly issues a permit under state law. *Id.; see also In re Westborough, 10 E.A.D. 297, 300 n.2 (EAB 2002).*

n4 Until issuance of the present permit on September 16, 2004, Marlborough had been operating under a permit issued in September of 1988.

n5 In an unpublished order dated March 11, 2005, the Board denied another petition for review of the Permit in this matter, filed by the City of Marlborough, Massachusetts. *See In re City of Marlborough,,* NPDES Appeal No. 04-12 (Order Denying Petition for Review) (EAB, March 11, 2004). For convenience, and to the extent relevant in the present context, the Board will repeat the factual and procedural background provided in the March 11 order.

II. *FACTUAL AND PROCEDURAL BACKGROUND*

The Facility is a 5.5 million gallon per day ("mgd") wastewater treatment **[*7]** facility discharging wastewater effluent into Hop Brook. Hop Brook then flows northeast through four instream ponds - Hager Pond, Grist Mill Pond, Carding Mill Pond, and Stearns Mill Pond ("the ponds") -- until it reaches the Sudbury River. *See* 2004 Fact Sheet at 1-3, Exhibit 10 to Region's Response ("Fact Sheet"). n6 The Facility's effluent comprises between 50% and 99% of the flow in Hop Brook, depending on the time of year, and approximately 95% of the phosphorus load. *Id.* at 3. It is undisputed that both Hop Brook and the ponds suffer from eutrophication, driven primarily by nutrients such as phosphorus entering the Brook. *Id.* Eutrophication is a process by which a water body suffocates from receiving more nutrients (such as phosphorus) than it can assimilate. The excess nutrients promote the growth of nuisance algae and aquatic plants that then decay in a process generating strong odors and resulting in lower dissolved oxygen levels. *See id.* When left unchecked, eutrophication is a serious problem that can deplete the oxygen necessary for aquatic life to survive. In the present case, the problems associated with this condition include reduced aesthetic value, **[*8]** odor from decaying vegetation, severely limited usability of the ponds for recreational activities, and the degradation of the system as a suitable habitat for fish and other desirable aquatic fauna. *See* ENSR International *Nutrient Impact Evaluation of Hop Brook in Marlborough and Sudbury, Massachusetts* at 1(Oct. 2000) (R. Exh. 6).

n6 The exhibits accompanying the Region's Response will be referred to as "R. Exh." followed by the exhibit number.

MADEP has designated the portion of Hop Brook into which the Facility discharges as a "Class B" water body. Fact Sheet at 2. Under Massachusetts water quality standards, Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Further, the waters "shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses * * * [and] shall have consistently good aesthetic value." Mass. Regs. Code tit. 314, § 4.05(3)(b) (2004); Fact Sheet at 2. In addition **[*9]** to water quality criteria specific to Class B waters, Massachusetts imposes minimum narrative water quality criteria applicable to all surface waters. In relevant part, the narrative criteria provide:

(a) Aesthetics - All surface waters shall be 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.
(b) Bottom Pollutants or Alterations - All surface waters shall be 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.
(c) Nutrients - Shall not exceed the site-specific limits necessary to control accelerated or cultural eutrophication * * *.

Mass. Regs. Code tit. 314, § 4.05(5)(a)-(c). n7 During the permitting process, the Region determined that eutrophication caused by phosphorus loading has resulted in violations of the Massachusetts **[*10]** water quality standards for Hop Brook, including the above-cited narrative water quality criteria. *See* Fact Sheet at 3. The Region found that although both storm water runoff and sediment also released phosphorus into Hop Brook, "the vast majority of phosphorus entering Hop Brook is from the facility." *Id.* at 4. Because of the impairment, and after evaluating technical guidance as well as studies about the effects of phosphorus on Hop Brook, the Region determined that a phosphorus effluent limitation of 0.1 milligrams per liter ("mg/l") for the period of April 1 through November 30 was necessary to achieve the state's water quality standards. *See* Permit Cond. I.A.1 (R. Exh. 13). The Permit also contains a compliance schedule for meeting the phosphorus limit. n8 *See* Permit Conds. I.A.1 and .2 n.6, I.E.

n7 The state anti-degradation provisions contain an additional requirement related to cultural eutrophication (i.e., over-enrichment of nutrient levels caused by human activities) requiring that any existing point source discharge containing nutrients in concentrations that encourage eutrophication apply the "highest and best practical treatment to remove such nutrients." Mass. Regs. Code tit. 314, § 4.04(5) (2004).

[*11]

n8 Under the compliance schedule, full compliance with the Permit's total phosphorus limitation of 0.1 mg/l is required within forty-eight months of the issuance date.

On November 13, 2001, the Region and MADEP issued a draft permit for public comment. *See* R. Exh. 20. After receiving comments, the Region, in consultation with MADEP, notified interested parties that they would revise the draft permit and distribute a new draft permit for public comment. *See* Letter from Elizabeth F. Mason, Senior Assistant Regional Counsel, EPA Region I (Mar. 18, 2002) (R. Exh. 22). The Region and MADEP issued a revised draft permit on December 12, 2003 (hereinafter "Draft Permit"), and sought public comment. *See* Draft Permit (R. Exh. 23). The Region and MADEP held a public hearing on January 14, 2004. *See* Hearing Transcript (Jan. 14, 2004) (R. Exh. 25). On September 8, 2004, MADEP certified the Draft Permit in accordance with section 401(a) of the CWA, *33 U.S.C. § 1341*(a). *See* Letter from Glen Haas, Director, Division of Watershed Management, MADEP, to Brian **[*12]** Pitt, Chief, Massachusetts NPDES Permit Program Unit, U.S. EPA Region I (Sept. 8, 2004) (R. Exh. 27). n9 Thereafter, on September 16, 2004, the Region and MADEP issued the Permit along with a response to comments. Sudbury's petition for review followed. n10

n9 Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency that the permit will comply with all applicable federal effluent limitations and state water quality standards. *See* CWA § 401(a)(1), *33 U.S.C. § 1341*(a)(1). The regulations provide that EPA may not issue a permit until the state in which the discharge originates grants or waives certification. 40 C.F.R. § 124.53(a).

n10 With the Board's permission, the Conservation Law Foundation filed an amicus brief in this matter. Brief of Conservation Law Foundation, Amicus Curiae (Jan. 28, 2005).

III. *DISCUSSION*

A. *Standard of Review*

In proceedings under 40 C.F.R. § 124.19(a), the Board **[*13]** generally will not grant review unless the petition for review establishes that the Permit condition in question is based on a clearly erroneous finding of fact or conclusion of law, or involves an exercise of discretion or an important policy consideration that the Board determines warrants review. 40 C.F.R. § 124.19(a); *see In re Carlota Copper Co.*, NPDES Appeal Nos. 00-23 & 02-06, slip op. at 21 (EAB, Sept. 30, 2004), 11 E.A.D. ; *In re Gov't of D.C. Mun. Separate Storm Sewer Sys., 10 E.A.D. 323, 333 (EAB 2002).* The Board analyzes NPDES permits guided by the preamble to the part 124 permitting regulations, which states that the Board's power of review "should be only sparingly exercised." *45 Fed. Reg. 33,290, 33,412* (May 19, 1980); *accord In re Teck Cominco Alaska, Inc.*, NPDES Appeal No. 03-09, slip op. at 21 (EAB, June 15, 2004), 11 E.A.D. . Agency policy favors final adjudication of most permits at the regional level. *45 Fed. Reg. at 33,412; see also Carlota,* slip op. at 21, 11 E.A.D. ; *Teck Cominco,* slip op. at 21-22, 11 E.A.D. . The petitioner bears **[*14]** the burden of demonstrating that review is warranted. 40 C.F.R. § 124.19(a)(1)-(2); *see In re Amerada Hess Corp.*, PSD Appeal No. 04-03, slip op. at 11 (EAB, Feb. 1, 2005), 12 E.A.D. .

In addition, a petitioner must demonstrate that any issues being raised before this Board were preserved for review. In so doing, a petitioner must, among other things, show that any issues being raised were raised with sufficient specificity during the public comment period. 40 C.F.R. § § 124.13, .19(a); *Carlota,* slip op. at 45-46, 11 E.A.D. . This burden rests squarely with the petitioner - "'It is not incumbent upon the Board to scour the record to determine whether an issue was properly raised below.'" *Amerada Hess,* slip op. at 11, 12 E.A.D. (quoting *In re Encogen Cogeneration Facility, 8 E.A.D. 244, 250 n.10 (EAB 1999)).* Further, as the Board has repeatedly stated, to obtain review, "petitioners must include specific information in support of their allegations. It is not sufficient simply to repeat objections made during the comment period; instead, a petitioner 'must demonstrate why the [permit issuer's] response to those objections **[*15]** (the [permit issuer's] basis for its decision) is clearly erroneous or otherwise warrants review.'" *In re Steel Dynamics, Inc., 9 E.A.D. 740, 744 (EAB 2001)* (quoting *In re LCP Chems., 4 E.A.D. 661, 664 (EAB 1993)); see also Amerada Hess,* slip op at 11, 12 E.A.D. ; *Carlota Copper,* slip op. at 22, 11 E.A.D. .

B. *Sudbury's Petition*

Sudbury asserts that certain Permit limitations relating to phosphorus discharges are clearly erroneous because they are not adequate to satisfy state water quality standards. *See* Petition at 17-28. In particular, Sudbury raises the following seven objections to the final Permit decision: (1) the use of a 60-day rolling average to measure compliance with the Permit's final phosphorus limitation of 0.1 mg/l between the months of April and October is not sufficiently stringent to achieve water quality standards, Petition at 18-19; (2) the Permit's interim phosphorus limit of 0.5 mg/l between the months of April and October is not sufficient to meet water quality standards, *id.* at 19; (3) the Permit's use of an "interim seasonal average" limit to measure compliance **[*16]** with the Permit's 0.5 mg/l interim seasonal phosphorus discharge limit is not sufficiently stringent to meet water quality standards, *id.* at 20; (4) the Permit's phosphorus limit of 0.75 mg/l from November 1 through March 31 is not sufficient to achieve water quality standards, *id.* at 20-21; (5) the Permit should contain a winter discharge limitation applicable to ortho (dissolved) phosphorus from November 1 through March 31, *id.* at 21-22; (6) the Permit impermissibly fails to require adaptive management measures to control phosphorus discharges, *id.* at 22-23; and (7) the Permit erroneously fails to provide opportunities for public review, participation, or comments on the deliverables required by the Permit's compliance schedule, *id.* at 24. We will address each of these issues in turn.

1. *60-Day Rolling Average*

Condition I.A.1 of the final Permit includes a final phosphorus discharge limitation of 0.1 mg/l for the period of April 1 through November 30. *See* Final Permit (R. Exh. 13). Although Sudbury does not contest this limit, it objects to a footnote to this limit stating that compliance will be measured using a 60-day rolling average limit. *See* **[*17]** Petition at 18 (citing Permit Conds. I.A.1 and .2 n.6). According to Sudbury, by using a 60-day rolling average limit, "compliance with the Permit during April and May cannot be determined until the June monitoring report is submitted. Thus, applying the 60-day rolling average limit to the months of April and May results in there being effectively no applicable compliance measure during those months." *Id.* Sudbury argues that the 60-day rolling average limit is therefore insufficient to meet applicable water quality standards and should be changed to require that compliance with the 0.1 mg/l phosphorus limit be measured according to either a monthly average or a 60-day continuous rolling average "which is reported continuously and which applies year-round." *Id.* at 19.

As the Region points out, however, the Response to Comments addresses Sudbury's concerns regarding the Permit's 60-day rolling average limitation. In particular, in response to a comment questioning whether the 60-day rolling average limit was sufficiently protective and how compliance would be determined during the first 59 days, the Region stated:

> The 60 day rolling average allows some flexibility for infrequent **[*18]** short term exceedances of the permit limit that may be difficult to prevent. Short term exceedances are unlikely to result in a significant response in the receiving water relative to aquatic plant growth. Long term exceedances would likely result in a violation of the rolling average limit. While compliance with the permit cannot be determined until the June discharge monitoring report is submitted, compliance for the month of June and July will depend upon good performance in April and May. The permit language has been clarified relative to reporting requirements for April and May. For April and May, in addition to reporting the maximum daily value for the month, the monthly average value must be reported (*see* footnote 6 for Conditions I.A.1 and I.A.2 of the permit). For all other months, the maximum daily value for the month and the maximum 60 day rolling average value for the month shall be reported.

Response to Comments at 17 (R. Exh. 30). Thus, the Region appears to address Sudbury's concerns by providing a rationale for the rolling average and adding a requirement to the Permit for monthly reporting. Because Sudbury has failed to indicate why the Region's response is **[*19]** clearly erroneous or otherwise warrants review, review is denied on this issue. n11 *See In re Amerada Hess Corp.*, PSD Appeal No. 04-03, slip op. at 11 (EAB, Feb. 1, 2005), 12 E.A.D. (petitioners may not simply repeat objections made during the comment period but must demonstrate why the response to the objections is clearly erroneous or otherwise warrants review).

n11 To the extent that Sudbury is objecting to any use of a 60-day rolling average, Sudbury has failed to establish that the Permit condition at issue was clearly erroneous or otherwise warrants review.

2. *Interim Phosphorus Limit*

Permit Condition I.A.1 establishes a limitation on total phosphorus discharges of 0.1 mg/l. The Permit, however, contains an interim limit of 0.5 mg/l. In particular, the Permit states:

> The permittee shall comply with the 0.1 mg/l limit in accordance with the schedule contained in Section E below. Upon the effective date of the permit, and until the date specified in Section E below for compliance with the **[*20]** final limit of 0.1 mg/l, an interim seasonal average total phosphorus limit of 0.5 mg/l shall be met. Consistent with Section B.1 of Part II of the Permit, the Permittee shall properly operate and maintain the phosphorus removal facilities at the Facility to obtain the lowest effluent concentration possible.

Permit Cond. I.A.1 and .2 n.6. While conceding that this condition allows for only a transitional limit, Sudbury nevertheless contends that the condition is erroneous and that any interim limit should be at least as stringent as the Facility's current operating phosphorus discharges. Petition at 19-20. Sudbury also states that there is no basis in the administrative record for the selection of the 0.5 mg/l interim discharge limit. *Id.* at 20.

In its Petition, Sudbury states that it, along with the Hop Brook Protection Association ("HBPA"), submitted comments during the comment period. *See* Petition at 4-5 (citing "Written Correspondence of Town of Sudbury Containing Comments on 2003 Draft Permit, dated January 23, 2004" ("Town's Comments") (attached as Exhibit C to Petition), and "Written Correspondence of the [HBPA] Containing Comments on 2003 Draft Permit, dated January **[*21]** 23, 2004" ("HBPA Comments") (attached as Exhibit D to Petition)). The Petition states that "the Town's Comments and the HBPA Comments collectively raised the issues presented in this Petition, and provided support for those issues as outlined below." Petition at 5. Therefore, it is to these two documents that we look to determine whether Sudbury's objections to the 0.5 mg/l interim phosphorus limitation were raised during the comment period.

After reviewing both Sudbury's and HBPA's Comments, we conclude that Sudbury's objections to the 0.5 mg/l interim phosphorus limitation were not raised below. Sudbury's comments make no mention of the interim limit. The only mention of the interim limit in HBPA's comments concerns the length of time the interim limitation will remain in effect. In particular, HBPA takes "specific issue" with, among other things, "the permit requirement which grants to the City an inordinately long time to reduce phosphorus levels in the discharge to the [applicable] discharge limitations * * *." HBPA Comments at 7. HBPA asserted that the permit should accelerate the deadlines for compliance with the more stringent limitation. *Id.* at 13. n12 Nowhere in its **[*22]** comments does HBPA raise the specific issues on which Sudbury now seeks Board review. Because these issues were reasonably ascertainable but were not raised during the public comment period on the Draft Permit, the issues have not been preserved for review by the Board. 40 C.F.R. § 124.19(a); *In re BP Cherry Point,* PSD Appeal No. 05-01, slip op. at 14-15 (EAB, June 21, 2005), 12 E.A.D. ; *see also In re Encogen Cogeneration Facility, 8 E.A.D. 244, 250 n.10 (EAB 1999)* (burden is on the petitioner to establish that issues were raised during the comment period; "It is not incumbent upon the Board to scour the record to determine whether an issue was properly raised below."). Accordingly, review is denied on these issues. n13

n12 In its Response to Comments, the Region responded to HBPA's comments regarding acceleration of the deadline for compliance with the Permit's 0.1 mg/l phosphorus limitation as follows:

> While we acknowledge the long delay in issuing the permit, the agencies believe that the 48 month schedule is a reasonable schedule. Within 24 months the permittee must appropriate funding, complete planning and design of the necessary facility upgrades, and initiate construction. The permittee then has 24 months to complete construction and learn how to operate the upgraded facility in order to achieve the permit limits. While it might be possible to reduce the

schedule by a few months, it is unlikely that it could be reduced enough such that the 0.1 mg/l phosphorus limit could be achieved during the critical growing season in 2007.

Response to Comments at 13-14. Sudbury does not assert, and the record does not reflect, that the Region's response on this issue was clearly erroneous or otherwise warrants review.

[*23]

n13 As the Board has recently stated, the requirement that an issue must have been raised during the comment period in order to preserve it for review is not an arbitrary hurdle placed in the path of potential petitioners. *See In re BP Cherry Point,* PSD Appeal No. 05-01, slip op. at 14-15 (EAB, June 21, 2005), 12 E.A.D. . Rather, the requirement serves an important function related to the efficiency and integrity of the overall administrative permitting scheme. *Id.* The intent of the rules is to ensure that the permitting authority first has the opportunity to address permit objections and to give some finality to the permitting process. *In re Sutter Power Plant, 8 E.A.D. 670, 687 (EAB 1999).* As we have explained, "'the effective, efficient and predictable administration of the permitting process demands that the permit issuer be given the opportunity to address potential problems with draft permits before they become final.'" *In re Teck Cominco, Alaska, Inc,* NPDES Appeal No. 03-09, slip op. at 31 (EAB, June 15, 2004), 11 E.A.D. (quoting *In re Encogen Cogeneration Facility, 9 E.A.D. 244, 249-50 (EAB 1999)).* "In this manner, the permit issuer can make timely and appropriate adjustments to the permit determination, or, if no adjustments are made, the permit issuer can include an explanation of why none are necessary." *In re Essex County (N.J.) Res. Recovery Facility, 5 E.A.D. 218, 224 (EAB 1994).*

[*24]

3. *Interim Seasonal Average Limitation*

As indicated in the above-quoted portion of Permit Condition I.A.1 note 6, compliance with the Permit's 0.5 mg/l interim phosphorus limitation from April through October is measured using an "interim seasonal average." Permit Cond. I.A.1 and .2 n.6 (R. Exh. 13). Sudbury states that this provision was not present in the Draft Permit, and is not sufficiently stringent to achieve compliance with applicable water quality standards. Petition at 20. According to Sudbury, compliance should be measured using a monthly average. Sudbury also asserts that this requirement is impermissibly vague. *Id.*

Sudbury is correct that the phrase "interim seasonal average" did not appear in the Draft Permit. Rather, the Draft Permit stated only that on the effective date of the permit, "an interim limit of 0.5 mg/l shall be met." Draft Permit Cond. I.A.1. and .2 n.6 (R. Exh.23). Presumably, under the Draft Permit, compliance with the interim limit was to be measured in the same way as the Permit's 0.1 mg/l phosphorus limit, i.e., using a 60-day rolling average limit. *See id.* The final Permit maintains the use of the 60-day rolling average for measuring **[*25]** the 0.1 discharge limit, but would measure compliance with the 0.5 mg/l interim limit using an "interim seasonal average total phosphorus limit." *See* Permit Cond. I.A.1 and .2 n.6 (R. Exh.13).

The only explanation for the change consists of one sentence in the Region's Response to Comments. In particular, in responding to a comment by Marlborough expressing concern that the 0.5 mg/l interim limit would "open[] the City to potential violations, despite its best effort," the Region and MADEP stated that "the agencies have modified the language relative to the interim limit to indicate that the 0.5 mg/l limit is a seasonal average limit." Response to Comments at 6. Under 40 C.F.R. § 124.17(a)(1), in responding to public comments, the Region must specify the reasons for any changes to the draft permit. By so doing, "the Region ensures that interested parties have an opportunity to adequately prepare a petition for review and that any changes in the draft permit are subject to effective review." *In re Amoco Oil Co., 4 E.A.D. 954, 980 (EAB 1993).* Because the Region has failed to explain why it apparently agreed with Marlborough's above-quoted comment and **[*26]** decided to change the terms of the permit, we believe a remand is appropriate. *See id.* (remanding permit where the Region's mere concurrence with a comment failed to provide adequate explanation for a change in draft permit and, thus, failed to provide the parties "with an opportunity to prepare an adequately informed challenge to the permit addition"). Further, absent such an explanation, it does not appear that the record reflects the "considered judgment" necessary to support the applicable permit determination. *See In re Austin Powder Co., 6 E.A.D. 713, 720 (EAB 1997).* As the Board has previously stated, a permit issuer must articulate with reasonable clarity the reasons for its conclusions and must adequately document its decision making. *See In re Ash Grove Cement Co., 7*

E.A.D. 387, 417-18 (EAB 1997) (remanding RCRA permit because permitting authority's rationale for certain permit limits was not clear and therefore did not reflect considered judgment required by regulations); *Austin Powder, 6 E.A.D. at 720* (remand due to lack of clarity in permitting authority's explanation).

Because **[*27]** the Region has failed to provide a sufficient explanation for the apparent change in the manner in which compliance with the Permit's interim phosphorus limit will be measured, the Permit is remanded. On remand, the Region must either provide an explanation for requiring that the Permit's interim phosphorus limitation be measured using an "interim seasonal average total phosphorus limit," or modify this provision of the Permit.

4. *Winter Phosphorus Limit*

Permit Condition I.A.2 establishes a phosphorus limitation of 0.75 mg/l for the months of December through March. n14 In its Petition, Sudbury alleges that this limitation is not sufficiently stringent to meet applicable water quality standards, and should be at least as stringent as the Permit's 0.5 mg/l interim seasonal phosphorus limitation for the months of April through October. *See* Petition at 20-21. In addition, Sudbury argues that once the final discharge limit of 0.1 mg/l goes into effect, this limit should apply all year in order to ensure compliance with water quality standards. *Id.* at 21.

n14 The Fact Sheet contains the following explanation for the winter phosphorus limitation:

> The permit also establishes a monthly average phosphorus limit of 0.75 mg/l from December 1 through March 31 (the "winter limit"). This limit is the same as that contained in the 1988 permit and is being maintained both for anti-backsliding purposes and to minimize the accumulation of phosphorus in receiving water sediments. According to [an October 2000 report prepared by ENSR International for MADEP on nutrient loadings in Hop Brook (R. Exh. 6)], the pattern of total phosphorus in pond sediment suggests that the sediments are highly nutrient-enriched and will support dense rooted plant growth if other factors (mainly light) are favorable. Due to the lack of plant growth in the winter period that can accumulate dissolved phosphorus in the impoundments, the primary concern is to minimize particulate phosphorus that could settle and accumulate in the impoundment sediments. Accordingly, an orthophosphorus (dissolved phosphorus) monitoring requirement has also been included in order to determine the particulate fraction of phosphorus that is being discharged and to ensure that it is minimal.

Fact Sheet at 7 (R. Exh. 10).

[*28]

In response to comments on the Draft Permit questioning whether the higher winter phosphorus limitation was sufficiently protective of water quality standards, the Region stated as follows:

> The intent of the winter phosphorus limit is to ensure that the particulate fraction of the total phosphorus discharged is very small in order to minimize the potential for any significant accumulation of phosphorus in the sediments. This is based on the assumption that the dissolved fraction of the total phosphorus will pass through the system given the short detention time of the ponds and the lack of plant growth during the winter period. It is the agencies' expectation that with a winter limit of 0.75 mg/l total phosphorus, the particulate fraction will be less than 10% of the total. If the data indicates that the particulate fraction is greater than 10% of the total, the winter phosphorus limit may be reduced in future permitting actions. In addition, if a mass balance analysis of the fate of phosphorus in the Hop Brook system during the winter period indicates that dissolved phosphorus could be accumulating in the ponds, the winter period phosphorus limit may be reduced in future permitting **[*29]** actions. The agencies will pursue the necessary resources in order to conduct the mass balance analysis. If necessary, the permittee may be asked to conduct the analysis through the authority of Section 308 of the Clean Water Act.

Response to Comments at 13. Because Sudbury has failed to articulate why the Region's response is clearly erroneous or otherwise warrants review, review is denied on this issue. *See In re Amerada Hess Corp.*, PSD Appeal No. 04-03, slip op. at 11 (EAB, Feb. 1, 2005), 12 E.A.D. . Moreover, as the Board has previously stated, the Board traditionally assigns a heavy burden to petitioners seeking review of issues that are essentially technical in nature. *See In re Teck Cominco Alaska, Inc.*, NPDES Appeal No. 03-09, slip op. at 22 (EAB, June 15, 2004), 11 E.A.D. . Although Sudbury disagrees with the Region's rationale for including a lower winter phosphorus discharge limitation, Sudbury has failed to meet its burden of demonstrating that this determination is clearly erroneous or otherwise warrants Board review. Review is therefore denied.

5. *Winter Ortho (Dissolved) Phosphorus Limitation*

Sudbury objects to the absence of a discharge **[*30]** limitation applicable to ortho (dissolved) phosphorus in the final Permit. Petition at 21-22. Although Permit condition I.A.2 includes a reporting requirement for ortho phosphorus during the months of December through March, it does not include a discharge limitation during this period. n15 According to Sudbury, the Region has failed to justify the absence of a discharge limitation. *Id.* at 21.

n15 The Permit does not contain an ortho phosphorus limitation for the period of April 1 through November 30.

Because this issue was not specifically raised during the comment period, it was not preserved for review. *See In re BP Cherry Point*, PSD Appeal No. 05-01, slip op. at 11, 14-15 (EAB, June 21, 2005), 12 E.A.D. . Although both Sudbury and HBPA objected to the Permit's higher winter phosphorus discharge limitation and to the rationale for such a limitation, n16 the comments did not raise a specific objection to the lack of discharge limitation on ortho phosphorus. Accordingly, review is denied on this issue. **[*31]** n17

n16 As the previously quoted portions of the Response to Comments and Fact Sheet make clear, part of the Region's rationale for including a higher winter phosphorus discharge limitation is that, according to the Region, the winter discharge will have a higher proportion of dissolved oxygen that will flow through the watershed without causing further significant nutrient accumulation in the ponds. While HBPA objected to the Region's conclusions in this regard during the comment period, this objection related to the Permit's inclusion of the higher winter phosphorus limit rather than the absence of a limitation on dissolved phosphorus. Moreover, as stated above, although Sudbury disagrees with the Region's determination relating to dissolved phosphorus, Sudbury has failed to meet its burden of establishing that this determination is clearly erroneous or otherwise warrants Board review. *See In re Teck Cominco Alaska, Inc.*, NPDES Appeal No. 03-09, slip op. at 22 (EAB, June 15, 2004), 11 E.A.D. (the Board traditionally assigns a heavy burden to petitioners seeking review of issues that are essentially technical in nature).
[*32]

n17 We note that the Region has stated that the winter phosphorus limit may need to be reduced in the future "if the data indicates that the particulate fraction [of total phosphorus] is greater than 10% of the total." Response to Comments at 13 (R. Exh. 30). In such a circumstance, we would expect that, if appropriate, the Region will take steps to modify the Permit.

6. *Adaptive Management*

Sudbury argues that by failing to include additional mandatory control measures, such as a mandatory adaptive management program in the receiving waters to control eutrophication, the Permit fails to ensure compliance with applicable water quality standards. n18 Petition at 22-23. In particular, Sudbury argues that in order to meet state water quality standards the Permit must include additional measures designed to remove the phosphorus in the sediment of the affected ponds. *Id.* at 23.

n18 As described in the Fact Sheet, the Permit's "adaptive management" approach includes the 0.1 mg/l phosphorous limitation, followed by further voluntary studies to be conducted "as soon as possible" after permit issuance. After further study, the Region and MADEP will determine whether additional measures are necessary to meet water quality standards. *See* Fact Sheet at 6-7. According to Sudbury, this process should be a mandatory part of the Permit.

[*33]

In responding to comments on this issue during the comment period, the Region stated:

> The agencies concur that there is a potential for water column release of phosphorus that has accumulated in the sediments to affect both the magnitude and timing of algal reductions. *The likelihood of achieving water quality standards, and therefore avoiding the need for additional treatment, would be enhanced by remediating the sediment sources of phosphorus.* The purpose of the adaptive management approach, as described in the fact sheet, is to allow the permittee to pursue the most cost effective means of achieving water quality standards.
>
> If the [Permittee] ultimately chooses not to pursue sediment remediation, and if water quality standards are still not being met, the permit may be reissued with a lower phosphorus limit in order to enhance recovery of the sediments. Also, as stated in the fact sheet, for the agencies to look favorably upon a proposal to pursue sediment remediation, the evaluation and implementation plan must be developed as soon as possible. *The agencies will make a determination upon expiration of this permit relative to the need for a lower phosphorus limit* * **[*34]** * *. Therefore, although the agencies are not requiring any studies related to sediment remediation at this time, it is in the [Permittee's] interest to conduct those studies prior to its next permit reissuance.
>
> We recommend in the fact sheet that the permittee consider what additional treatment technologies may be necessary in the future while determining what treatment technologies to pursue in order to achieve the 0.1 mg/l phosphorus limit.

Response to Comments at 12 (R. Exh. 30) (emphasis added). In discussing the Permit's 0.1 mg/l final summer phosphorus discharge limit and the need for additional remediation measures, the Fact Sheet states:

> Because the state water quality standards do not have numeric instream criterion for phosphorus, there is some discretion available to the permitting agencies for determining the instream phosphorus level needed to meet the narrative criteria and the designated uses. At the same time, there is strong evidence in the record that in order to fully support the designated uses, total phosphorus concentrations in the Hop Brook system have to be significantly reduced. *EPA and [MADEP] believe it may be possible to meet the numeric and* **[*35]** *narrative criteria and attain [designated] uses if the discharge is limited in the summer months to 0.1 mg/l.* The [EPA and MADEP] propose to take an "adaptive management" approach in this case and to require the permittee to reduce its phosphorus to 0.1 mg/l, after which the [EPA and MADEP] will evaluate whether additional treatment is needed. Because tighter limits and additional treatment could be necessary in the future, EPA and [MADEP] recommend that the Permittee seriously consider the following points.
>
> First, [EPA and MADEP] strongly recommend that the Permittee design and construct treatment facility improvements necessary to achieve the 0.1 mg/l phosphorus limit that are technically and economically compatible with adding additional treatment that may be necessary in the future. Treatment to achieve effluent phosphorus levels less than 0.1 mg/l typically requires a combination of treatment technologies allowing for the phased implementation of facility improvements.

> Second, a significant amount of the phosphorus discharged by the [Facility] has accumulated in the sediment of the Hop Brook Ponds. The accumulated phosphorus can be released from the sediment during the **[*36]** summer growing season through chemical processes and/or physical disturbances. It is widely agreed that internal recycling of phosphorus will affect both the magnitude and the timing of algal reductions. *The Permittee's potential to meet water quality standards with a seasonal limit of 0.1 mg/l, and to avoid the need for additional treatment, will be enhanced by taking steps to reduce sediment phosphorus recycling.* The Permittee is strongly encouraged to complete a comprehensive evaluation of the sediment remediation/dam removal alternatives. Implementing a comprehensive sediment management program, in conjunction with achieving total phosphorus concentrations of 0.1 mg/l, would maximize the potential for water quality improvements sufficient to preclude the need for additional treatment facility improvements.
>
> *In order for EPA and [MADEP] to make a determination relative to attainment of water quality standards prior to reissuance of the next permit, any evaluation of sediment remediation alternatives, and development of an implementation plan and schedule should be completed as soon as possible after issuance of this permit.*

Fact Sheet at 6-7 (R. Exh. 10) (emphasis added). **[*37]**

Based on the record before us, it is unclear whether the Permit complies with the regulatory prohibition on issuing a permit "when imposition of conditions cannot *ensure* compliance with the applicable water quality requirements." 40 C.F.R. § 122.4(d) (emphasis added). Although the Permit itself states that the Facility's discharge "shall not cause a violation of the water quality standards of the receiving waters," (Permit Cond. I.A.1), the record does not indicate whether the Permit's 0.1 mg/l phosphorus limitation, by itself, will meet the state's water quality standards. With regard to the likelihood that imposition of the 0.1 mg/l phosphorus limitation will be sufficient to meet water quality standards, the Region states that such a result may be possible, n19 but a mere possibility of compliance does not "ensure" compliance.

> n19 *See* Fact Sheet at 6; *see also* Response to Comments at 4 ("The agencies believe that the 0.1 mg/l phosphorus limit in conjunction with the 'adaptive management' approach described in the fact sheet, *may* improve water quality to the point where achieving water quality uses is possible. * * * In the absence of sediment remediation, it *may be necessary* to further reduce the point source phosphorus limit.") (emphasis added); Fact Sheet at 7 (stating that the potential to meet water quality standards with a seasonal limit of 0.1 mg/l "will be enhanced by taking steps to reduce sediment phosphorus recycling."); Response to Comments at 12 (same).

[*38]

The Region has conceded that significant amounts of phosphorus have accumulated in the sediment of the Hop Brook ponds and that this phosphorus can be released during the summer season. Fact Sheet at 7. The Region has further stated that the phosphorus discharge limitation may not be sufficient to control nutrient levels due to "the significant amount of phosphorus that will continue to recycle from the sediments for many years" and that "it may be necessary to further reduce the point source phosphorus limit." Response to Comments at 4. Without further explanation, this text would suggest that the Region harbors concern that a discharge limitation, by itself, may not be sufficient to meet water quality standards. Nonetheless, the Permit does not contain any provisions requiring that Marlborough study or otherwise address the potential for phosphorus releases from the sediment in the Hop Brook ponds during the term of this Permit; nor does the Permit contain any provisions requiring further action, evaluation, or modification in the event that water quality standards are not achieved despite compliance with the 0.1 mg/l phosphorus limitation. n20 Rather, as indicated above, the Region **[*39]** merely states that "it is in the [Permittee's] interest" to conduct studies relating to sediment remediation, with the need for lower phosphorus limits to be determined at the expiration of the permit. Response to Comments at 11-12. Although the Region states that, upon Permit expiration, it will determine whether additional treatment is needed to attain water quality standards, it is simply unclear from the record before us whether this Permit will ensure compliance with water quality standards. n21

n20 The Permit itself does not clearly require modification if water quality standards are not met by the end of the Permit's four-year compliance schedule, but rather states that the Permit may be modified upon a demonstration that a presumably lower "alternative permit limit will achieve water quality standards." Permit Cond. I.A.1 and .2 n.6.

n21 Our concern is magnified by the recognition that Marlborough for almost two decades operated under a permit issued in 1988. Thus, it is possible that Marlborough might operate under the terms of this Permit for many years.

[*40]

Although, as previously stated, the Board traditionally assigns a heavy burden to petitioners seeking review of issues that are essentially technical in nature, *see, e.g., In re Teck Cominco Alaska, Inc.,* NPDES Appeal No. 03-09, slip op. at 22 (EAB, June 15, 2004), 11 E.A.D. , we nonetheless do look to determine whether the record demonstrates that the Region duly considered the issues raised in the comments and whether the approach ultimately adopted by the Region is rational in light of the information in the record. *See In re Gov't of D.C. Mun. Separate Storm Sewer Sys., 10 E.A.D. 323, 342 (EAB 2002)* ("DCMS4"). Under the circumstances of this case, the Region has failed to demonstrate, in response to specific comments on this issue, that the Permit will "ensure" compliance with applicable Massachusetts water quality standards. Accordingly, the Permit is remanded. On remand, the Region must either demonstrate that the Permit, as written, will ensure compliance with water quality standards, or make appropriate modifications to the Permit. n22 *See In re Teck Cominco,* slip op. at 48-51, 11 E.A.D. (remanding permit modification where **[*41]** the Region failed to satisfy its duty of ensuring compliance with applicable water quality standards); *DCMS4, 10 E.A.D. at 343* (remanding permit where the Region failed to support its conclusion that the permit would "ensure" compliance with water quality standards and questioning whether the Region's statement that the permit is "reasonably capable" of achieving water quality standards comports with prohibition against issuing permits that do not ensure compliance with water quality standards).

n22 Although, as stated earlier, MADEP certified the Draft Permit in accordance with section 401(a) of the CWA, *33 U.S.C. § 1341*(a), *see supra* note 9 and accompanying text, when the Region reasonably believes that a state water quality standard requires a more stringent permit limitation than that reflected in a state certification, the Region has an independent duty under section 301(b)(1)(C), *33 U.S.C. § 1311*(b)(1)(C), to include more stringent permit limitations. *See In re City of Moscow, 10 E.A.D. 135, 151 (EAB 2001); see also* 40 C.F.R. § 122.44(d)(1), (5). Moreover, as we stated in *DCMS4,* the Region cannot rely exclusively on the state certification where, as here, there is countervailing evidence in the record. *See DCMS4, 10 E.A.D. at 343.*

[*42]

We emphasize that we are not concluding that a supportable basis for the Region's permit determination on this issue does not exist. Rather, we conclude only that if such a basis exists, the Region has not sufficiently explained where or how it is reflected in the record before us.

7. *Public Review and Participation*

Permit Condition I.E contains a compliance schedule for meeting the Permit's 0.1 mg/l final phosphorus discharge limitation. The condition requires that the Permittee submit periodic status reports to EPA and MADEP on the progress of Facility improvements required to achieve the final phosphorus limitation. Sudbury argues that this Permit condition should also require the Permittee to provide such status reports to interested members of the public and allow for public comments. Petition at 24. However, as this argument was not raised during the comment period, it was not preserved for review. *See In re BP Cherry Point,* PSD Appeal No. 05-01, slip op. at 11, 14-15 (EAB, June 21, 2005), 12 E.A.D. . Moreover, as the Region states in its response, "citizens already have a right to inspect or obtain copies of publically available material maintained by EPA, **[*43]** subject to certain exceptions [not applicable here]." Region's Response at 83. Review is therefore denied.

IV. *CONCLUSION*

For the reasons stated above in Parts III.B.3 and III.B.6, the Permit is remanded. On remand, the Region must either provide an explanation for including the requirement that the Permit's interim phosphorus discharge limitation be measured using an "interim seasonal average phosphorus limit" (*see* Permit Condition I.A.2 n.6) or modify this requirement

of the Permit. In addition, on remand, the Region must either demonstrate how, in light of the potential for releases of phosphorus from sediment in the Hop Brook ponds, the Permit, as written, will ensure compliance with applicable water quality standards, or modify the Permit to satisfy the regulatory requirements of 40 C.F.R. § 122.4(d). If the Region decides to modify these Permit conditions, then, depending on the nature of the modifications and to the extent required by law, it should provide the public with an opportunity to comment on the proposed modifications. n23 Sudbury's petition for review is denied in all other respects.

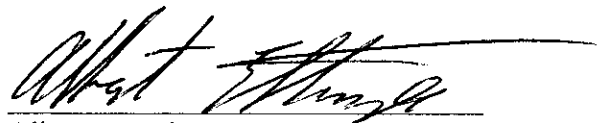
n23 Although 40 C.F.R. § 124.19 contemplates that additional briefing typically will be submitted upon a grant of review, a direct remand without additional submissions is appropriate where, as here, it does not appear as though further briefs on appeal would shed light on the issue. *See, e.g., In re Amerada Hess,* PSD Appeal No. 04-03, slip op. at 29 n.39 (EAB, Feb. 1, 2005), 12 E.A.D. . An administrative appeal of the determination on remand is required to exhaust administrative remedies under 40 C.F.R. § 124.19(f)(1). Any such appeal shall be limited to the issues on remand.

[*44]

So ordered.

CERTIFICATE OF SERVICE

I, Albert F. Ettinger, certify that on April 21, 2006, I filed the attached PETITIONERS' POST HEARING MEMORANDUM. An original and 9 copies was filed, on recycled paper, with the Illinois Pollution Control Board, James R. Thompson Center, 100 West Randolph, Suite 11-500, Chicago, IL 60601, and copies were served via United States Mail to those individuals on the included service list.



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