

**RESPONSE TO COMMENTS
REGARDING THE REISSUANCE OF THE FOLLOWING NPDES PERMIT
GREATBAY AQUACULTURE, LLC
NH0110078**

INTRODUCTION

On July 17, 2008, the New England office of the U.S. Environmental Protection Agency (EPA) submitted for public notice a draft National Pollution Discharge Elimination System (NPDES) permit (draft permit) to GreatBay Aquaculture LLC. EPA solicited public comments on the draft permit from July 17, 2008 through August 15, 2008.

The draft NPDES permit would authorize and set limits for the discharge of filtered fish culture water from the GreatBay Aquaculture facility. The facility proposes to discharge to the Piscataqua River.

During the public-notice (comment) period EPA received comments in writing from George Nardi, Chief Technical Officer of GreatBay Aquaculture LLC, and Thomas F. Irwin on behalf of Conservation Law Foundation.

In accordance with the provisions of 40 C.F.R. § 124.17, this document presents EPA's responses to comments, including all significant comments, received on the draft permit and details any changes made to the permit as a result of the comments.

EPA's decision-making for this permit has benefited from the comments submitted. The information and arguments submitted in the comments resulted in a number of improvements to the permit. In addition, EPA noted some errors in the permit which were corrected. Changes from the Draft Permit, summarized below, are reflected in the Final Permit. These changes do not represent significant changes from the Draft Permit.

Changes Made in the Final Permit

1. The monitoring frequency for Enterococci has been reduced from weekly to monthly. See Part I.A.1 of the Final Permit.
2. The monitoring frequency for Total Nitrogen has been increased from quarterly to twice monthly. See Part I.A.1 of the Final Permit.

RESPONSE TO COMMENTS

Comment 1 from GreatBay Aquaculture

The pH of salt water (ocean water at 34 ppt salinity) is typically 8.2 to 8.3. The Piscataqua River's salinity varies from as low as 8 ppt as evidenced during a 100 year storm, such as the Mother's Day storm a couple of years back to as high as 32 ppt during

a dry month, such as during October. The incoming pH varies from 7.4 to 8.0 and with some of our systems the water is buffered and the system effluent may be 8.1. Normally this is diluted with the other plant water at a lower pH which brings this down to 7.8 to 8.0, but we feel that it is logical to request a pH level of 8.2 rather than 8.0 as this is reflective of the receiving water's normal range of pH.

Response to Comment 1

The draft permit authorized the permittee to demonstrate that “(1) the range should be widened due to naturally occurring conditions in the receiving water or (2) that the naturally occurring receiving water pH is not significantly altered by the permittee's discharge.” Also see page 14 of the Fact Sheet. These conditions, which allow the permittee to request a range outside of the permitted range if due to natural causes (see Env-Wq 1702.37 and RSA 485-A:8 II), are also included in the final permit (Final Permit Part I.C). If issues arise in the future with complying with the current limit, GBA should follow the pH adjustment procedure outlined in Section I.C of the final permit.

Comment 2 from GreatBay Aquaculture

The draft permit requires us to test both fecal coliform and enterococci bacteria. We have tested fecals all along and rarely have anything detected. Fish do not produce fecal coliforms and we do not understand the need to continue this testing. In Rhode Island we had permitted a much larger operation and received a RIPDES permit with no requirement for coliform testing as one would expect, even though the state has a strong shellfish industry. The draft permit continues the fecal coliform requirement and adds enterococci monitoring. I strongly disagree with the need for enterococci testing. The area of discharge is not used for swimming and the likelihood of any discharge from the hatchery of these bacteria is highly unlikely as has been shown from our fecal coliform results. GBA is a small company and requiring testing simply for gathering a data point would be considered an economic hardship, we assume the state would be doing this testing or the Newington Waste Water Treatment Plant. In summary we request EPA to eliminate the requirement to test for fecal coliform and enterococci from our permit. Neither of these are a result of our activity of fish culture and other regional permitting agencies for the same activity have not required these to be tested for.

Response to Comment 2

The fecal coliform limit included in the draft permit is based on State Water Quality Standards at Env-Wq 1703.6 and RSA 485-A:8 II, and has been carried forward from current permit. As stated in Section V.C (page 7) of the Fact Sheet, the permit may not be renewed, reissued or modified with less stringent limitations or conditions than those conditions in the previous permit unless in compliance with the antibacksliding requirement of the CWA [See Sections 402(o) and 303(d)(4) of the CWA and 40 CFR §122.44(l)(1 and 2)]. EPA's antibacksliding provision found in 40 CFR §122.44(l) prohibits the relaxation of permit limits, standards, and conditions unless the circumstances on which the previous permit was based have materially and substantially

changed since the time the permit was issued. Antibacksliding provisions apply to effluent limits based on technology, water quality, BPJ, and State Certification requirements. Relief from antibacksliding provisions can only be granted under one of the defined exceptions [See 40 CFR Part 122.44(1)(i)].

GBA had 10 violations of the maximum daily fecal coliform limit between October 1998 and March 2006. Based on these results, fecal concentrations from the facility can be high and warrant continued testing with limits based on water quality standards. Another New Hampshire aquaculture facility on the Taylor River, also in tidal waters with shellfishing potential, included limits and reporting requirements for fecal coliform and enterococci with greater monitoring frequency than is required in GBA's draft permit.

The report-only limit for enterococci is required because this segment of the Piscataqua River is impaired for enterococci. Enterococci monitoring has been required from other facilities in tidal waters in New Hampshire (e.g., City of Portsmouth and Aquatic Research Organisms, Inc.). Under RSA 485-A:8.II Class B waters shall be considered acceptable for fishing, swimming, and other recreational purposes and, after adequate treatment, for the use as water supplies. While there are no obvious swimming areas on the Piscataqua River in the area of the outfall or immediately downstream, it is the duty of EPA to ensure that any permit issued will protect and maintain the designated uses of the receiving water. Monitoring will ensure that the discharge meets water quality standards and ensures designated uses are supported. However, in response to this comment the monitoring frequency for enterococci required in the final permit has been reduced from weekly to monthly.

Comment 3 from Conservation Law Foundation

EPA has a legal duty under the Clean Water Act to ensure that the discharge from GreatBay Aquaculture does not cause or contribute to the violation of water quality standards.¹ As EPA's fact sheet acknowledges: "the NPDES permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that causes or has 'reasonable potential' to cause or contribute to an excursion above any water quality criterion." Fact Sheet at 6 (citing 40 CFR § 122.44(d)(1)). See also 40 CFR § 122.4(d). In other words, the permit must ensure that the proposed discharge will not cause or contribute to the violation of water quality standards, including narrative standards. See also [40] CFR § 122.44(d)(1), 40 CFR § 122.4(d).

As discussed above, the Piscataqua River and other hydrologically related waters within the Great Bay estuary are likely to be listed as impaired in the pending Section 303(d) listing cycle. The Fact Sheet fails to in any way acknowledge or address this fact, or the significant data currently being assessed by the EPA and NHDES as part of the Section 303(d) listing process for these water bodies. In particular, the draft NPDES permit

¹ To be clear, neither CLF nor any other commenter bears the burden of establishing that the proposed discharge will cause or contribute to water quality violations. Rather, EPA, as the permitting authority, has the duty to ensure that permitted discharges will *not* cause or contribute to such violations.

contains no discharge limits for total nitrogen, which may cause or contribute to impairments associated with significant eelgrass loss in the Piscataqua River and Little Bay and, potentially, other waters expected to be listed as impaired for eelgrass loss and elevated nitrogen levels. Nor does the Fact Sheet indicate that EPA and NHDES have assessed the impact of proposed TSS limits on eelgrass resources in the Piscataqua River, Little Bay, and other waters. Absent such limits and analysis, EPA cannot fulfill its duty of ensuring that the proposed discharge will not cause or contribute to the violation of water quality standards.² EPA must specifically address these issues – including but not limited to, the impacts of nitrogen, total suspended solids, and biological oxygen demanding materials on eelgrass habitats, and eelgrass-dependent species – and must include the most stringent nitrogen limits achievable by the limits of technology, and other effluent limits, including appropriate limits for TSS and BOD₅, to ensure the proposed discharge does not cause or contribute to a violation of water quality standards.

Response to Comment 3

The draft permit, at Part I.A.3, states “The discharges shall not cause a violation of the water quality standards of the receiving water.” EPA is aware that the lower Piscataqua River is likely to be listed as impaired in the pending Section 303(d) listing cycle. The 2008 Draft 303(d) List of Impaired Waters lists several impairments for the Lower Piscataqua River, including polychlorinated biphenyls (PCBs), mercury, dioxin, and enterococcus. In addition, NHDES anticipates that the Lower Piscataqua will also be listed as impaired for eelgrass loss, which is based on the loss of 82 percent of eelgrass cover from historical reference periods to 2002-2005 monitoring period. NHDES does not anticipate that the Lower Piscataqua River will be listed as impaired for nutrients because there is no impairment of chlorophyll-a, which is the primary symptom of eutrophication (NHDES 2008, Draft; Attachment 1 of CLF Comments).

The TSS and BOD₅ limits in the draft permit were based on best professional judgment and carried forward from the previous permit. The average maximum daily BOD₅

² Although New Hampshire has not yet adopted numeric criteria relative to nitrogen (though it is in the process of doing so), it nonetheless has two narrative water quality standards that are directly applicable to EPA’s review. First, New Hampshire’s water quality standards specifically provide, with respect to nutrients, that “Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring,” and that “[e]xisting discharges containing either phosphorous or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorous or nitrogen to ensure attainment and maintenance of water quality standards.” Rule Env-Ws 1703.14. New Hampshire’s water quality standards also include to following narrative standards designed to protect biological and aquatic community integrity:

Biological and Aquatic Community Integrity

- (a) The surface waters shall support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.
- (b) Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function.

Rule Env-Ws 1703.19 (“BACI Standard”). There is no evidence in the Fact Sheet or draft NPDES permit that EPA has considered either of the above water quality standards.

concentration during the monitoring period (October 1998 through March 2006) was 12.6 mg/l and the BOD₅ maximum daily limit was only exceeded two times; the average maximum daily TSS concentration was 45.6 mg/l. The maximum daily TSS limit was exceeded 23 times, but 15 of these violations (65 percent) occurred between August 2003 and January 2005 and were caused by a failure to effectively rinse testing filters. See Fact Sheet page 12. GBA also cleaned the wastewater treatment system and installed a new drum microscreen to prevent TSS violations. There were no TSS violations from January 2005 to March 2006.

Neither New Hampshire nor EPA has guidance for setting quantitative TSS and BOD₅ limits for aquaculture facilities, however, the maximum daily limits of 50 mg/L for each pollutant are equal to the most stringent maximum daily limit required for secondary treatment of wastewater under 40 CFR § 133.102. In addition, the draft permit includes narrative requirements from the effluent limit guidelines (ELGs) for concentrated aquatic animal production (40 CFR Part 451) for solids treatment, including minimizing discharge of uneaten feed and waste through feed management, minimizing discharge of accumulated solids during routine cleaning practices, and enhancing solids removal. Finally, the draft permit requires weekly TSS and BOD₅ monitoring due to the sensitive nature of the receiving water and pending impairment for eelgrass loss, which is more frequent than similar facilities in New Hampshire. EPA believes that these limits will be protective of the eelgrass habitat in the Piscataqua River.

In general, NPDES permit limits are based on either technology requirements or water quality requirements, whichever are more stringent for any given pollutant. The ELGs for concentrated aquatic animal production contain no technology-based limits for nutrients. New Hampshire has not as yet adopted a numeric criterion for nitrogen, although the New Hampshire Estuary Program (NHEP) has agreed to lead an effort to develop water quality criteria for estuarine waters. Data from NHEP indicators such as dissolved oxygen, chlorophyll-*a*, total suspended solids, and eelgrass biomass are being reviewed to better understand nutrient dynamics and impacts in the Great Bay Estuary. The outcome of this analysis will be recommendations to the State Water Quality Standards Advisory Committee for specific criteria to protect the water quality of New Hampshire's estuaries from the effects of excess nutrients.³ Currently, the water quality standards provide that "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair existing or designated uses, unless naturally occurring." Env-Ws 1703.14(b). Excess nitrogen can affect water quality by causing algae blooms and/or low dissolved oxygen levels, both of which can impair eelgrass habitat. While the commenter has provided information that eelgrass habitat in the Great Bay Estuary is generally declining, this information is insufficient to indicate that GBA's current or future discharge will cause, has the reasonable potential to cause, or contributes to an excursion of water quality standards.

When determining whether a discharge has the reasonable potential to violate the nutrient-related water quality standards, EPA uses available effluent and receiving water data. In preparing this response to comment, EPA noted that the available dilution values

³ See State of the Estuaries, 2006, New Hampshire Department of Environmental Services, pg. 13.

reported in the Fact Sheet (p. 15) were incorrect. The Fact Sheet will not be reissued, but this Response to Comments serves as an addendum to the Fact Sheet, including the corrections herein, in the administrative record. The dilution of GBA's effluent in the Newington Station discharge canal is 21.1 at an average monthly flow of 0.252 million gallons per day (MGD), and 14.7 at a maximum daily flow of 0.36 MGD.

Dilution of GBA's discharge is 14.7 under a worst-case scenario, which includes a maximum daily discharge from GBA during a period when Newington Station is off-line (i.e., at an estimated pumping rate of 400 gallons per minute). Typically, GBA's maximum daily discharge of 0.36 MGD will be diluted in Newington Station's discharge of 325 MGD, providing substantially greater dilution of GBA's effluent before it mixes with the receiving water. The flow of the Piscataqua River will offer even further dilution of the facility's discharge, even under a worst-case scenario. At this time, EPA believes it is not advisable to include a quantitative nitrogen limit in the final permit, but has instead increased the frequency of monitoring to twice monthly (See Response to Comment 4). The total nitrogen collected by GBA, coupled with any further instream monitoring collected during the term of the permit, will be used to help inform a future permit decision concerning the need to limit the discharge of total nitrogen from the facility.

At this time, EPA does not have sufficient justification to impose more stringent TSS or BOD₅ limits, or a numeric nitrogen limit for this discharge. However, under § 122.62 and § 122.63 of the CWA, if new information shows that GBA's discharge has the reasonable potential to cause or contribute to violations of water quality standards, the permit may be reopened and modified to include more stringent or additional limits.

Comment 4 from Conservation Law Foundation

The draft NPDES permit requires monitoring for total nitrogen on a quarterly basis. Given the serious issues facing the Piscataqua River and Great Bay estuary relative to nitrogen, CLF urges a much more aggressive monitoring requirement. We note, for example, that EPA has required the Town of Farmington, New Hampshire's WWTF to monitor total nitrogen two times per month. Given the proximity of the proposed discharge to areas that have experienced significant eelgrass losses, EPA should require monitoring on a once-per-week basis.

Response to Comment 4

Monitoring frequency is determined on a case-by-case basis. According to the NPDES Permit Writers' Manual, the intent is to establish a frequency of monitoring that will detect most events of noncompliance without requiring needless or burdensome monitoring (p 119). In establishing monitoring frequency, the permit writer estimates the variability of the concentration of the parameter by reviewing effluent data for the facility, or in the absence of such data, by reviewing data from similar dischargers. In the case of this permit, the existing ammonia (as nitrogen) levels are consistently between 1 and 3 mg/l and have been as high as 7.7 mg/l, and monitoring is required twice monthly.

The monitoring frequency for total nitrogen should be consistent with monitoring of ammonia. The monitoring frequency in the final permit has been increased from quarterly to twice monthly. This frequency was chosen to obtain enough data to develop a characterization of total nitrogen levels at the facility, while at the same time not requiring overly burdensome monitoring requirements.