

February 26, 2010



Mr. Eric Beck, P.E.
Supervising Engineer
Rhode Island Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02908-5767

Re: Comments on the Warren Draft RIPDES Permit
No. RI0100056

Dear Mr. Beck:

The following letter is written on behalf of the Town of Warren to respond to the draft Rhode Island Pollutant Discharge Elimination System (RIPDES) permit that was provided by the Rhode Island Department of Environmental Management (RIDEM) to the town under a cover letter dated January 6, 2010. The town sincerely appreciates RIDEM's consideration in involving them early-on in the permitting process and taking the time to meet and discuss the questions and concerns. The comments provided herein are based on our February 16, 2010 meeting at the RIDEM offices and are organized as comments related to the new total nitrogen limit (TN) and "additional comments" not related to the TN limit.

Comments on the New Total Nitrogen Limit:

The town recognizes that nitrogen enrichment is a problem in Narragansett Bay and is committed to working together with RIDEM to see that the Warren Wastewater Treatment Facility (WWTF) operates in an environmentally responsible manner. The town is also challenged because the improvements needed to achieve nitrogen reduction will have a significant capital cost and there are very real financial constraints that they must work within. The town is, therefore, very interested in working with RIDEM to accomplish the needed nitrogen reduction in a way that is financially feasible.

As RIDEM is aware, the required treatment for the specified TN concentration changes at certain "technology breaks" which are typically recognized to be 8 milligrams per liter (mg/l), 5 mg/l and limits lower than 5 mg/l. At each of these technology breaks, the cost for treatment goes up by an exponential factor. This is particularly important for Warren because during several months of the year, the monthly average flow to the Warren WWTF exceeds the current RIPDES permit limit for flow (2.01 MGD), with the highest average month being 3.3 MGD for data from 2005 to 2008. Therefore, as the draft permit is currently written, to meet the specified TN load limit requires an effluent concentration of approximately 3 mg/l (versus the 5 mg/l TN limit indicated in the draft permit). This lower effluent TN concentration (3 mg/l) results in capital cost that may be \$5 to \$10 million greater than the next treatment technology break (5 mg/l).

Due to the significant implications to cost, the town has an obligation to the residents, who bear this cost, to confirm that: (1) there is a high level of certainty that the limit is needed to achieve specific water quality goals; (2) the limits are equitable with limits for other communities; and (3) there are no alternative, lower-cost, TN limit scenarios which could achieve RIDEM's goals for nitrogen removal. To that end, the we are respectfully requesting that RIDEM give careful consideration to the following:



1. Certainty that TN Limit is Needed to Achieve Specific Water Quality Goals:

It is well known that there is a great deal of complexity and uncertainty surrounding the relationship between nitrogen loading and the resulting effect on estuary water quality. From the town's perspective, the uncertainty of the predicted results from nitrogen reductions indicated in the draft permit are made more ambiguous because they are based on a somewhat subjective point scale developed for a different estuary (Buzzards Bay in Massachusetts). From Woodard & Curran's review of the Buzzards Bay Project eutrophication index (EI) method, it seems that a small change in the assigned point value results in a very large change in corresponding assimilative capacity of the water body.

In addition to the concerns with the uncertainty of the science and the EI method, we have some specific questions on the information provided in the RIDEM report, *Evaluation of Nitrogen Targets and Load Reductions for the Palmer River*, which could impact the calculation for the assimilation capacity of the River, as follows:

- a. It is not clear why the in-stream nitrogen data presented in Table 2 is significantly different from the data presented in Tables 5 and 6?
- b. Based on the text presented on page 10, is the TN concentration presented in Table 7 (annual load) based on summer data?
- c. On page 15, Section 4.3, does the existing annual load calculated for the Watershed (86,620 kg/yr) include loading from the point sources?
- d. On page 15, the analysis assumes that all of the nitrogen from the point sources enters the Palmer River based on a dye study. The dye study found that 98-percent of the Warren River enters Palmer River which appears to be calculated as the ratio of dye concentration in the Palmer River to the dye concentration in the Barrington River. However, it is not indicated if there was dye remaining in the Warren River and what that concentration of the dye was. If there was dye remaining in the Warren River would this change the calculated percentages and the assumption that all TN loading from the point sources enters the Palmer River?
- e. The EI is based on the Massachusetts designation for an Outstanding Natural Resource Water (ONRW). The report indicates that this is essentially the same for the Palmer River because it has the Rhode Island designation of Special Resource Protection Water (SRPW). Could RIDEM provide a specific comparison between the water quality goals for an ONRW versus an SRPW?

Based on the uncertainty and questions surrounding the basis for the required nitrogen loading, the town is requesting that RIDEM consider placing less emphasis on a load limit and taking an approach that is guided more by selection of a reasonable technology break.

2. TN Limits for Other Communities:

In review of the draft RIPDES permit, Woodard & Curran looked at the TN limits for WWTFs in other Rhode Island communities. Based on this review, with the exception of a few outliers (WWTFs that either had no limit, a 10 mg/l limit, or had voluntarily requested a lower TN limit), it was our determination that all of the communities which ultimately contribute to Narragansett Bay had summer TN limits of 8 mg/l or 5 mg/l and a "meet to the maximum extent" for the winter season. In addition, the permit development documents identify the uncertainty of the tools available to analyze the effects of



nitrogen reduction and the cost associated with implementation as basis for selection of a phased approach with concentration limits based on available technology.

Therefore, based on the TN limits for other RIDEM communities, the town is requesting that RIDEM consider taking the same phased approach for the Warren RIPDES permit with a technology based TN concentration limit of 8 mg/l or 5 mg/l (with load calculated at the actual highest average monthly flow) for the summer and a "meet to the maximum extent" limit for the winter.

3. Alternative TN Limit Scenarios:

Woodard & Curran developed some alternative TN limit scenarios which would be less costly to implement, would meet the State's goals of 50 percent reduction in nitrogen and would further protect water quality in the Palmer River and Narragansett Bay. In addition, from our perspective, these alternatives are more equitable with the requirements for other Rhode Island communities. The town requests that RIDEM consider the following alternatives:

- a. Set the summer TN load such that, at the actual highest average monthly flow of 3.3 MGD, the required TN concentration is 5 mg/l. As shown in Table 1, at a summer concentration of 5 mg/l and a winter concentration of 10 mg/l, the calculated annual watershed load is 88,189 kilograms per year (kg/yr). We wish to highlight that this annual loading corresponds to a loading rate of 55.1 mg m⁻³ Vr⁻¹ and an EI score of 62 which appears to be a negligible change from the EI score of 65 that is assigned in the report, *Evaluation of Nitrogen Targets and Load Reductions for the Palmer River*. It is also noted that the actual annual load to the River will be less than 88,189 kg/yr as described in paragraph b.

Table 1

	Maximum Average Monthly Flow	Effluent TN Concentration	Calculated Load
Summer	3.3 MGD	5 mg/l	11,509 kg/yr
Winter	3.3 MGD	10 mg/l	22,643 kg/yr
Total for Warren (Calculated)			34,152 kg/yr
Total for Palmer River Watershed (Calculated)			88,189 kg/yr

- b. Specify a nitrogen mass load limit averaged over the entire summer season. The advantage of utilizing a seasonal average load is it reflects the actual resulting loads to the River. Based on the TN concentrations specified, the actual loading to the River would meet the allowable seasonal loadings presented in the report, *Evaluation of Nitrogen Targets and Load Reductions for the Palmer River*. Table 2 summarizes the seasonal loads that were calculated for the maximum seasonal average flow from 2005 through 2008.



Table 2

	Actual Maximum Seasonal Average Flow	Effluent TN Concentration	Actual Load
Summer	2.0 MGD	5 mg/l	6,975 kg/yr
Winter	2.8 MGD	10 mg/l	19,212 kg/yr
Total for Warren (Actual)			26,188 kg/yr
Total for Palmer River Watershed (Actual)			80,225 kg/yr

- c. As was discussed during our meeting, Woodard & Curran evaluated the scenario of balancing an increased summer load against a decreased winter load. It was determined that this scenario would be very onerous because, at the actual maximum monthly average flow (3.3 MGD), the summer load at a 5 mg/l concentration would require a winter concentration of 6.5 mg/l to balance. Achieving a 6.5 mg/l concentration during the winter could prove to be more challenging than the lower summer concentration.

It is noted that during our meeting, RIDEM suggested exploring the possibility of Warren accepting flow from the Blount WWTF as possibly having a mutual benefit for both facilities. The town agrees that this is worth evaluation and plans to begin discussions with Blount. However, there may be political obstacles and we will need to carefully review the Blount WWTF data to be sure we are comfortable that their wastewater characteristics do not have unintended negative impacts on the Warren WWTF.

Additional Comments:

The following are additional comments on the draft RIPDES permit that are not related to the new TN Limit:

4. (pg. 2) can BOD & TSS sampling 3/week be reduced based upon excellent compliance record?
5. (pg. 2) settleable solids monitoring - permit states it is an operational item and not a permit item. Therefore can it be removed from the permit and left to the WWTP operational plan?
6. (pg. 3) will fecal coliform be replaced by enterococci and could the daily maximum value have the "...10% of samples not to exceed..." language to be equivalent to the water quality standards?
7. (pg. 3) is the membrane filtration test in cfu/100 ml an acceptable alternative to MPN which is more expensive and not conducted at all labs?
8. (pg. 5) permit has limits for Cd, Cr, Pb, Zn, Ni but permit documents note they are monitoring requirements. Since there is no reasonable potential risk, should permit include monitor and report only as part of the WET testing with no limits?
9. (pg. 5) can the influent testing for metals be removed from the permit?
10. (pg. 5) why is there an increase in cyanide sampling (from 2/year to 1/month) when cyanide has historically been non-detect for many years?
11. (pg. 6) WET results are all 100% or greater. Could the testing frequency be reduced from 4 to 2 per year?

12. (pg. 8) WET dilution water; why URI and not local Warren River water?



We want to thank you for meeting and for the town's opportunity to provide input in this process. We are requesting a second meeting with RIDEM to discuss the comments in this letter prior to RIDEM issuing the draft RIPDES Permit for public notice. Woodard & Curran will contact you in the next week to coordinate this meeting

Sincerely,

WOODARD & CURRAN INC.


Jonathan E. Himlan, PE
Project Manager

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cc. Richard Paduch, Warren Town Manager
J. Haberek, RIDEM
D. Komeiga, United Water