

RESPONSE TO COMMENTS – FEBRUARY 22, 2007
REISSUANCE OF NPDES PERMIT NO. NH0100650
TOWN OF PETERBOROUGH WASTEWATER TREATMENT FACILITY
PETERBOROUGH, NEW HAMPSHIRE

The U.S. Environmental Protection Agency (EPA-New England) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) solicited public comments from August 24, 2006 through September 22, 2006 on the draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to the Town of Peterborough Wastewater Treatment Facility.

EPA-New England received comments during the public notice (comment) period from the Town of Peterborough and Merrimac River Watershed Council, Inc. The following is a list of the responses to those comments and any changes made to the public-noticed permit as a result of those comments. A copy of the final permit may be obtained by writing or calling Dan Arsenault, United States Environmental Protection Agency, 1 Congress Street, Suite 1100 (CMP), Boston, Massachusetts 02114-2023; Telephone (617) 918-1562. Copies may also be obtained from <http://www.epa.gov/region1/npdes/index.html>.

COMMENTS FROM THE TOWN OF PETERBOROUGH

PERMIT COMMENTS:

GENERAL

COMMENT NO. 1:

“The Draft Permit does not discuss the receipt of septage at the WWTF. In recent planning activities the Town has decided to participate in the State of New Hampshire’s program that provides additional funding for the construction of facilities that provide treatment for septage generated in the region. This decision will require that the WWTF be allowed to receive septage in the amount of about 12,000 gallons per day (gpd) under average conditions to meet the anticipated regional requirements under 2025 design conditions.”

RESPONSE NO.1:

EPA-New England understands Peterborough’s intent to receive up to 12,000 gpd of septage and this has been noted in the record. While EPA does not specifically regulate the amount of septage that a POTW may receive, the Town should carefully monitor the effect of receiving septage on the treatment plant effluent so that the limits and conditions of the permit are not exceeded. If the Town receives septage which significantly changes the character of pollutants being introduced into the treatment plant (e.g. industrial septage) then EPA and NHDES must be notified pursuant to Part I.A.6.b. of the permit.

COMMENT NO. 2:

“The Draft Permit does not include a compliance schedule or refer to a schedule for the construction of improvements to the WWTF. As you know, the present lagoon system is not able of meeting the proposed requirements of this permit. The Town is in the process of planning, designing, and constructing improvements to the facility that will allow the Town to meet the permit limits outlined. We anticipate that the design and construction of these improvements will take place over the next two years with the completion of construction some time in 2009. We anticipate that the start up and shake out period will occur in 2009 and that by the end of the year we will be in a position to be in compliance with these limitations. The permit and fact sheet should reflect this reality and support the Town in their efforts to improve the water quality of the Contoocook River.”

RESPONSE NO. 2:

New Hampshire Surface Water Quality Regulations do not authorize compliance schedules in NPDES permits. Thus, EPA cannot incorporate a compliance schedule into the final permit. However, once permit violations are documented, a compliance schedule and interim effluent limits may be established through an EPA issued compliance order. The Town of Peterborough should contact Joy Hilton (617-918-1877) of EPA’s Office of Environmental Stewardship to discuss the development of an administrative order including a reasonable compliance schedule.

SPECIFIC COMMENTS

COMMENT NO. 1:

“On page 4 of 9 Paragraph A4: This paragraph requires that the WWTF maintain 85% removal of BOD₅ and TSS. We request that this requirement be modified to allow lower removal rates for low concentration influents that may occur during the spring time high flow periods.”

RESPONSE NO. 1:

Pursuant to 40 C.F.R. § 133.103(d), the Regional Administrator is authorized to substitute either a lower percent removal requirement or a mass loading limit for the percent removal requirements provided that the permittee satisfactorily demonstrates the following three provisions:

1. The treatment works is consistently meeting, or will consistently meet, its permit effluent concentration limits but its percent removal requirements cannot be met due to less concentrated influent wastewater.
2. To meet the percent removal requirements, the treatment works would have to achieve significantly more stringent limitations than would other wise be required by the concentration-based standards.

3. The less concentrated influent wastewater is not the result of excessive I/I.

The table below summarizes violations for BOD₅ and TSS percent removals as well as monthly average BOD₅ and TSS mass and concentration violations for the period January 2001 through November 2005. Based on the information below it can be seen that the Peterborough treatment plant has not consistently met its concentration limits.

Additionally, the Town has not demonstrated that the less concentrated influent is not the result of excessive I/I. Therefore, the 85% removal requirement for BOD₅ and TSS shall remain in the permit.

Peterborough Percent Removal Data							
Date	BOD₅ % Removal	TSS % Removal	Monthly Ave. Flow	BOD₅ Monthly Ave.; lb/d	BOD₅ Monthly Ave.; mg/l	TSS Monthly Ave.; lb/d	TSS Monthly Ave.; mg/l
2/28/01	85	89	0.432	150 (20) ¹	38 (27)	64	17
3/31/01	67	96	0.759	239 (91)	71 (137)	46	13
4/30/01	83	86	1.00	98	29	65	19
2/28/02	93	95	0.339	104	31 (3)	80	24
4/30/02	83	58	0.635	133 (6)	37 (23)	181 (45)	48 (60)
3/31/03	67	90	0.320	124	41 (37)	52	20
4/30/03	81	91	0.355	117	38 (27)	86	27
5/31/03	90	83	0.535	98	20	147 (18)	31 (3)
2/29/04	80	90	0.398	158 (26)	47 (57)	73	23
3/31/04	81	92	0.313	108	41 (37)	41	16
4/30/04	78	74	0.485	165 (32)	39 (30)	134 (7)	31 (3)
5/31/04	82	94	0.408	91	24	48	13
6/30/04	85	94	0.493	128 (2)	31 (3)	110	24
3/31/05	80	85	0.355	108	34 (13)	62	20
4/30/05	80	55	0.338	212 (70)	70 (136)	102	43 (44)
6/30/05	83	86	0.491	96	23	61	15
10/31/05	73	97	0.387	103	30	12	3

¹ Numbers in parentheses represent the percent by which the monthly average limit was exceeded.

COMMENT NO. 2:

“On page 9 of 9: Please consider modifying the Re-opener Clause as below:

- In the first sentence consider the following...if future analysis...demonstrates the need for more (I suggest we add “or less”) stringent...
- In the second sentence, consider the following: Results of these studies...basis for additional (I suggest we strike “additional” and insert “modified”) permit...”

RESPONSE NO. 2:

The Reopener Clause on Page 9 of the permit has been modified to read as follows:

“This permit may be modified, or alternatively revoked and reissued, if a future analysis of a Total Maximum Daily Load (TMDL) or any other water quality based study of the Contoocook River performed by EPA New England and/or NHDES-WD demonstrates the need for additional or **modified** permit pollutant limits. Results from these studies will serve as the basis for additional **or modified** permit limits. Any of these additional **or modified** limits could be expressed in terms of concentration and/or mass where appropriate. Furthermore, should any of these studies result in a revision of the available dilution, current limits based on dilution could be revised. Results from a TMDL or any other water quality study not available at permit reissuance are considered “new information”. Modification of a permit based on new information is provided at 40 C.F.R. § 122.62(a)(2).” (emphasis added)

FACT SHEET COMMENTS:

The Fact Sheet explains the basis for limits and conditions in the draft permit. It is not part of the final permit action so a corrected or modified document is not produced. The comments received are presented here so that they are part of the administrative record for the permit. Any changes to the final permit based on these comments is noted.

COMMENT NO. 1:

“On page 2, Section III.: As noted above there is no implementation schedule included.”

RESPONSE NO. 1:

Refer to Response #2 above under General Permit Comments.

COMMENT NO. 2:

“On page 6, Section IV.E, 7Q10 Flow and Available Dilution: The 7Q10 calculation presented shows a flow below the Peterborough WWTF of 11.82 cfs. We believe that this represents the flow upstream of the WWTF as indicated in the TMDL analysis

presented by the NHDES. A review of the calculations presented in this paragraph shows that the WWTF flow was not added into the river flow to create the downstream flow. Review of the calculations presented in Attachment D indicates that if the WWTF flow of 0.5 mgd (0.77 cfs) is added to 11.82 cfs the calculation results in a dilution ratio of 16.32:1 or 14.72:1 after consideration of the 10% reserve.”

RESPONSE NO. 2:

After consultation with the New Hampshire Department of Environmental Services, EPA agrees that an error was made in the calculation of the dilution factor. The fact sheet identified the 7Q10 flow of 11.82 cfs as being just downstream of the Peterborough outfall when in fact this flow is just upstream of the outfall. As a result, the plant flow of 0.5 mgd (0.77 cfs) has been added to the numerator of the dilution calculation. This results in an increase of the dilution factor from 13.8 to 14.7. The calculation of the revised dilution factor is shown below.

$$\text{Dilution} = \frac{7\text{Q10} + \text{Design Flow}}{\text{Design Flow}} * (0.9)$$

where:

7Q10 = Flow just upstream of the treatment plant = 11.82 cfs

Design Flow = Design flow of the treatment plant = 0.5 mgd = 0.77 cfs

0.9 = Factor to reserve 10% of assimilative capacity.

$$\text{Dilution Factor} = \frac{11.82 \text{ cfs} + 0.77 \text{ cfs}}{0.77 \text{ cfs}} * (0.9) = 14.7$$

This dilution factor was used to re-calculate water quality based limits in the permit.

COMMENT NO. 3:

“Also on page 6, Section IV.E, Total Residual Chlorine: The change in dilution ratio changes the average monthly and maximum daily values to: 0.16 mg/l and 0.28 mg/l, respectfully.”

RESPONSE NO. 3:

As a result of the change in the dilution factor from 13.8 to 14.7, the average monthly and maximum daily limits for total residual chlorine have been recalculated. The revised average monthly limit is 0.16 mg/l (14.7 x 0.011 mg/l) and the revised maximum daily limit is 0.28 mg/l (14.7 x 0.019 mg/l).

COMMENT NO.4:

“On page 17, Attachment C: The plant design flow calculation is shown wrong, but the correct value is used in subsequent calculations”

RESPONSE NO. 4:

This item has been noted in the record.

COMMENT NO.5:

On page 18, Attachment D: As noted earlier the 7Q10 flow just downstream of the WWTF should include the flow from the facility which results in a dilution of 14.72:1 after consideration of the 10% reserve.

RESPONSE NO.5:

Please refer to Response No. 2 above.

COMMENT NO. 6:

“On page 20 Attachment F: The calculation of P_{eff} in this Attachment should be modified to reflect the appropriate upstream flow value (Q_{up}) of 11.82 cfs. The downstream value (Q_{down}) also needs to be adjusted (the appropriate value is 11.33 cfs considering the reserve). In addition, the upstream concentration (P_{up}) used in the calculation appears to be an instream result from sampling station 25Y-Ctc (see page 8), which represents a single sample. If reference is made to the recent modeling report for the upper Contoocook River the NHDES has identified a target upstream concentration of 0.028 mg/l and with the required improvements anticipated a concentration of 0.015 mg/l. It seems appropriate that these values be considered in this analysis.

If these changes are made the resultant P_{eff} is as noted below:

Flow, Q_{up}, cfs	Upstream P, P_{up}, mg/l	Effluent P, P_{eff}, mg/l
11.82	0.035	0.934
11.82	0.028	1.04
11.82	0.015	1.24

All of these calculations result in a value that is just below or above the winter value proposed in the draft permit. It seems that this value is too low and that a value of 1.5-2.0 mg/l might be more appropriate.”

RESPONSE NO. 6:

As a result of the revised dilution calculations the summer time phosphorus limit has been recalculated. The resulting limit is 0.93 mg/l. The calculation of this limit is shown below.

$$(Q_{UP})(P_{UP}) + (Q_{EFF})(P_{EFF}) = (Q_{Down})(P_{Down})$$

Where:

- Q_{UP} = 7Q10 flow just upstream of the discharge = 11.82 cfs
- P_{UP} = Upstream phosphorus concentration = 0.035 mg/l
- Q_{EFF} = Flow from treatment plant = (0.5 mgd)(1.547) = 0.77 cfs
- P_{EFF} = Phosphorus concentration of the treatment plant effluent necessary to meet the instream target of 0.1 mg/l.
- Q_{Down} = Downstream flow of the Contoocook River after mixing with the treatment plant effluent. Need to reserve 10% of flow for reserve capacity. Therefore, Q_{Down} equals (0.9)(11.82 + 0.77) = 11.33 cfs
- P_{Down} = Instream phosphorus concentration target = 0.1 mg/l

$$(11.82 \text{ cfs})(0.035 \text{ mg/l}) + (0.77 \text{ cfs})(P_{EFF}) = (11.33 \text{ cfs})(0.1 \text{ mg/l})$$

$$P_{EFF} = 0.93 \text{ mg/l}$$

Although modeling for the upper Contoocook identified a target upstream concentration of 0.028 mg/l and an anticipated concentration of 0.015 mg/l with required improvements, EPA believes it is appropriate to utilize the measured upstream phosphorus for two reasons. First, the draft TMDL for the Upper Contoocook is still in draft form and it is unknown how it will change as a result of the public comments period. Secondly, it is unknown when required improvements will occur.

COMMENTS FROM THE MERRIMAC RIVER WATERSHED COUNCIL, INC.

COMMENT NO. 1:

“According to the Draft NPDES Permit No. NH0100650, effluent limitation and monitoring requirements on Page 4 of 9 Item No. 5 states the following:

When the effluent discharged for a period of three consecutive months exceeds 80 percent of the 0.5 MGD design flow (0.4 MGD) the permittee shall submit to the permitting authorities a projection of the loadings up to the time when the design capacity of the treatment facility will be reached and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans. Before the design flow

will be reached, or whenever the treatment necessary to achieve permit limits cannot be assured the permittee may be required to submit plan for facility improvement.

We have reviewed data taken from monthly Discharge Monitoring Reports of the Town of Peterborough Wastewater Treatment Facility retrieved from EPA's Permit Compliance System (PCS) for November 2005 through April 2006, which shows that the monthly average effluent discharge of 0.056, this is more than 80 percent of the design effluent flow of 0.5 MGS (0.4 MGD). Due to the above fact, we have the following questions:

- Was this clause included in the expired permit?
- If so, what program has the permittee submitted for maintaining satisfactory treatment levels consistent with approved water quality management plans?"

RESPONSE NO. 1:

The previous permit, issued on September 28, 2000, contained the following condition:

“When the effluent discharged for a period of 90 consecutive **days** exceeds 80 percent of the design flow or 0.40 MGD, the permittee shall submit to the permitting authorities, within 90 days following the occurrence of this period (90 consecutive **days**) a projection of loadings up to the time when the design capacity of the treatment facility will be reached and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans. Before the design flow will be reached, or whenever treatment necessary to achieve permit limits cannot be assured, the permittee may be required to submit plans for facility improvements.” (emphasis added)

A review of daily discharge reports from January 2005 through September 2006 shows that the Peterborough treatment plant exceeded 80% of the design flow for November 2005, December 2005, January 2006, and February 2006. This is a period of 120 days which is in violation of the above referenced condition in the previous permit.

The Town of Peterborough has been proactive in addressing deficiencies at the existing treatment plant. The Town has designed a new treatment plant on which it hopes to begin construction in 2007. The anticipated startup of the new facility is in 2009. At present, neither EPA nor the NHDES has taken an enforcement action against the Town for exceeding 80% of the design flow for 90 consecutive days. However, this item will be addressed in the administrative order discussed above in the response to comments to issues raised by the Town of Peterborough.

COMMENT NO. 2:

“When calculating the average monthly, weekly mass limits and daily maximum for BOD and TSS in Attachment C, the Plant Design Flow of 0.5 MGD is used. As discussed in the previous section, the effluent through this facility for the six consecutive months from November 2005 through April 2006 was more than the (monthly average of 0.56 MGD). Therefore, we believe that these limits do not represent actual circumstances

and that new limit calculations need to be specified based upon actual monthly average flow rates.”

RESPONSE NO. 2:

Pursuant to 40 C.F.R. § 122.45(b), in the case of POTWs, permit effluent limitations, standards, or prohibitions shall be calculated based on design flow. If the permit limits for BOD₅ and TSS were based upon actual flows, which at times are greater than the design flow, then the permittee would receive higher (i.e. less stringent) mass limits.

COMMENT NO. 3:

“The dilution factor of 13.8 is calculated using the treatment plant design flow of 0.5 MGD in Attachment D. We believe that the actual dilution factor is less than this due to the higher effluent discharges from this facility and that a new dilution factor needs to be specified based upon actual monthly average flow rates.”

RESPONSE NO. 3:

As stated above, 40 C.F.R. § 122.45(b) requires, in the case of POTWs, that permit effluent limitations, standards, or prohibitions shall be calculated based on design flow.

COMMENT NO. 4:

“The calculation of the phosphorus concentration of the treatment plant effluent necessary to meet the in-stream target of 0.1 mg/l in Attachment F is overestimated due to these high discharges. Thus, we believe that the phosphorus concentration calculation needs to be recalculated based upon actual monthly average flow rates.”

RESPONSE NO. 4:

The total phosphorus limit of 0.88 mg/l in the draft permit was derived using the design flow from the treatment plant, the flow of the Contoocook River, the background total phosphorus concentration, and the Gold Book instream target of 0.1 mg/l total phosphorus. The limit of 0.88 mg/l is applicable from April 1 through October 31 of each year. The table below presents the average months flows from April 1 through October 31 from 2001 through 2005.

April through November Average Monthly Flows (MGD): 2001 - 2005					
	2001	2002	2003	2004	2005
April	1.00	0.635	0.355	0.485	0.338
May	0.639	0.387	0.535	0.408	0.418
June	0.816	0.621	0.430	0.493	0.491
July	0.398	0.389	0.406	0.389	0.404
August	0.275	0.404	0.394	0.374	0.418
September	0.334	0.414	0.440	0.389	0.381
October	0.327	0.488	0.413	0.378	0.387
Average	0.541	0.477	0.425	0.417	0.405

From 2002 through 2005 the actual average flow through the Peterborough treatment plant during April through October, was less than the treatment plant design capacity of 0.5 MGD. In fact, the average monthly flow for this period has decreased each year since 2001. In this case, using actual average flows for the calculation of the summer time total phosphorus limit would result in a higher limit (i.e. less stringent) than using the design flow of 0.5 MGD. Additionally, 40 C.F.R. § 122.45(b) requires, in the case of POTWs, that permit effluent limitations, standards, or prohibitions shall be calculated based on design flow.