

Response to Public Comments

From September 25, 2008 to October 24, 2008, the United States Environmental Protection Agency (“EPA”) and the Massachusetts Department of Environmental Protection (“MassDEP”) (together, the “Agencies”) solicited public comments on a draft NPDES permit developed pursuant to a permit renewal application from the Lowell Cogeneration Company, L.P. (the “Permittee”) for the reissuance of a National Pollutant Discharge Elimination System (“NPDES”) permit to discharge cooling tower blowdown, boiler blowdown, demineralizer wastewater and water softener regeneration wastewater from Outfall 001 and boiler blowdown, storm water, and building floor drain water from Outfall 002 to the Pawtucket Canal in Lowell, Massachusetts.

After a review of the comments received, EPA and MassDEP have made a final decision to issue this permit authorizing these discharges. The final permit is identical to the draft permit that was available for public comment with the exception of the following changes.

1. Footnote 5 on page 3 of 10 has been revised to provide more detail regarding how the permittee could comply with the priority pollutant (PP) requirement. (See Comment A3)
2. Footnote 5 on page 3 of 10 has been revised to distinguish between the sampling frequencies for the priority pollutant (PP) scan and the metals chromium and zinc. The PP scan frequency is once per year and the frequency for chromium and zinc is four times per year. Language has been added to footnote 5 that would allow the permittee to certify after the first year’s PP scan that no new chemicals or waste streams have been added and that the engineering demonstrations are still valid. This certification could be substituted for the annual PP scan. In addition, the words “Sampling shall be” at the end of footnote 5 were unintentional and have been removed from the final permit. (See Comment A4)
3. The method of compliance regarding the PP scan described in revised footnote 5, does not apply to the metals chromium and zinc, as was indicated in the draft permit.
4. Footnote 6 has been added to specify the sampling requirement and frequency for the metals chromium and zinc. (See Comment A4)
5. A one time monitoring requirement for certain volatile organic compounds (VOCs) has been established for Outfall 001 and discussed in revised footnote 7. (See Comment A3)
6. The final permit has added total suspended solids (TSS) limits for Outfall 001 and footnote 12 has been added to describe the TSS sampling requirement. (See Comment B4)
7. Footnotes 6 through 9 have been renamed footnotes 8 through 11, in the same order.
8. Part I.C.3 was added to require WET testing and monitoring with changes to treatment chemical use and the previous Part I.C.3 was designated as Part I.C.4. (See Comment B2)

Copies of the final permit may be obtained by writing or calling EPA's NPDES Industrial Permits Branch (CIP), Office of Ecosystem Protection, 1 Congress Street, Suite 1100, Boston, MA 02114-2023; Telephone: (617) 918-1579.

Comments submitted by Envirobusiness, Inc., on behalf of the permittee:

Comment #A1: The draft permit retains our prior flow limits for Outfall 001 of 86,500 GPD (monthly average) and 115,000 GPD (daily maximum). The daily maximum of 115,000 GPD is adequate to cover plant operations. However, we are requesting that the monthly average limit of 86,500 GPD be increased to 95,000 GPD. The reason for this is that our prior monthly average flow limit (86,500 GPD) did not reflect the higher amounts of demineralized water we need for NO_x control to meet MADEP NO_x RACT limits that began in 1995 for our turbine. While the increased water injection flow is discharged to the atmosphere, the need to generate more demineralized water for the injection flow means we produce more demineralizer regeneration flow. We are requesting allowance for an additional full regeneration cycle per day (nominal 7000 gallons), which we are rounding up to a new total monthly average flow of 95,000 GPD.

Response #A1: The permittee has operated well below its permitted flow limits for several years. Although the permittee has noted that it may increase operations significantly in the coming years, it is not likely that they will immediately begin round the clock operation that would require an increase in flow limits. Since the 86,000 GPD limit is a monthly average, the facility would still be able to operate at flows up to 95,000 GPD for several days in a given month, without violating the 86,000 GPD limit.

If the permittee finds that increased electricity generation and other process changes would necessitate a flow increase during this permit term above what is currently authorized, it can request a permit modification. This would necessitate a review of the proposed flow increase, along with any corresponding increase in any pollutants. The MassDEP would then make a determination regarding whether or not to allow an increase, in consideration of whether such increase would be consistent with the receiving water's designated uses and the State's antidegradation policy.

Any flow increase would also trigger the antibacksliding provisions found at 40 CFR §122.44(l)(1 and 2). These provisions prohibit the relaxation of permit limits, standards, and conditions except under certain circumstances. It appears that this increase in flow could possibly be allowed by the "material and substantial alteration" exception, since the permittee needs to increase its demineralizer waste flow in order to comply with its air emissions requirement. Although the State's RACT limits were established in 1995, the permittee has operated well within its flow limits for several years and has not provided evidence that it needs this flow increase at this time.

Comment #A2: The permit references effluent limits for the pH range as 6.5 - 8.3 standard units (s.u.). Additionally, footnote 'b' states that the pH must also be limited to "not more than 0.5 units outside of the natural background range". Lowell Cogeneration Company L.P. (LCCLP) requests clarification as to how the "natural background range" is to be interpreted for this receiving water. We have researched available in-stream pH measurements for the Merrimack River near Lowell, MA. The USGS Website (<http://nwis.waterdata.usgs.gov/usa/nwis/qwdata>) has a historic record of water quality data for 1969-1995 for the Merrimack River above Lowell MA (# USGS 01096550, 42° 38' 20" N, 71°, 22', 17" W). This location is approximately 0.8 miles upstream of the Rourke Bridge. The pH data in the USGS database indicates a measured pH range of 5.2 – 8.0, with an average pH of 6.7. We propose that the NPDES permit stipulate that "natural background of pH" for the Merrimack River at Lowell, for purposes of compliance, be specified as 5.2 – 8.0. Also, we believe that an upper limit on the discharge pH for Lowell Cogen of 8.3 is not necessary to ensure compliance with the Class B water quality limit of 8.3. We believe that an upper limit of pH for the Lowell Cogen discharge of 9.0 will be sufficient to maintain the in stream pH \leq 8.3. Therefore, we request that the allowable discharge pH range be modified to 6.5 - 9.0.

Response #A2: For clarification, the State water quality standards requirement that the pH is within 0.5 standard units (s.u.) of the background range is in addition to the pH range requirement, not a substitute for it. Although the background range of the receiving water could be characterized as being within 5.2 to 8.0 s.u., this discharge must be within the permitted range of 6.5 to 8.3 s.u.

Since January 2005, the permittee has not violated its pH range requirement of 6.5 - 8.0 s.u. for Outfall 001. For Outfall 002, which has a monitor only requirement for pH, the range of values was also within the 6.5 - 8.0 range for this time period. The draft permit changed the upper end of the pH range from 8.0 to 8.3 s.u. to reflect a change in the MA surface water quality standards and this change will remain in the final permit. The permittee cites Merrimack River data which shows instream pH levels in the range of 5.2 – 8.0. Although the permittee had previously withdrawn water for its facility from the Pawtucket Canal, a tributary of the Merrimack River, the permittee currently uses city water for its makeup water. The City of Lowell's 2007 Water Quality Report notes that the pH range of finished water was between 7.2 – 8.5 s.u. Since the city water that the permittee uses for its make-up water is generally kept close to the permitted range and since there have been no violations of the permitted pH range for several years, EPA believes that there is no basis for further extending the pH range for this permit at this time.

Comment #A3: We request that footnote 5 on page 3 of 10 specifically state that this effluent requirement applies to any of the 126 priority pollutants *contained in chemicals added for cooling tower maintenance (Steam Electric ELGs, 40 CFR 423.)* LCCLP will determine compliance with the limitations for the 126 Priority Pollutants as well as zinc and chromium by using engineering calculations (mass balance). The method we propose to use, as has been approved by EPA Region 1 for other ELGs, is to take samples of our cooling tower maintenance chemicals, and make a solution in distilled water at the normal chemical dosage concentration in the cooling tower basin. We will then test this solution for any detectable amounts of the 126

priority pollutants in comparison with standard EPA detection limits. This approach will remove any impact of any of the priority pollutants that may be found in the tower makeup water, which is not regulated under 40 CFR Part 423 (Steam Electric ELGs). This is a very important distinction for how the determination of compliance with these limits is satisfied.

Response #A3: The permittee is correct. The regulations at 40 CFR Part 423 that pertain to steam electric power plants and that were used as a basis for this cooling tower blowdown requirement, state that there shall be no detectable amounts of priority pollutants (with the exception of chromium and zinc) in cooling tower blowdown resulting from the use of cooling tower maintenance chemicals. Therefore, it is acceptable for the permittee to demonstrate compliance with this provisions as it proposes. Therefore, footnote 5 on Page 3 has been changed to reflect this correction. In addition, upon receipt of written approval from EPA, the permittee is not required to sample for the demonstrated pollutants after this first year.

However, this compliance approach does not apply to the metals chromium and zinc, as was noted in the draft permit. The regulations at 40 CFR 423 required limits for these metals because they are believed to be present in these discharges.

Additionally, the final permit has established a one time monitoring requirement for volatile organic compounds (VOCs) for Outfall 001, some of which had been previously detected as noted in the fact sheet. This sampling shall be conducted during the first year of the permit for the VOCs listed in EPA's Form 2C application, classified as GC/MS fraction – volatile compounds and designated as pollutants 1V through 31V. In the draft permit, there was not a separate VOC requirement, because EPA believed that the PP scan would sample for these VOCs. However, the data cited in the fact sheet indicated the presence of VOCs in Outfall 001 in addition to the cooling tower basin. Therefore, EPA determined that a one time VOC monitoring requirement at Outfall 001 was necessary which would encompass all waste streams discharging to Outfall 001.

Comment #A4: With respect to testing frequency, since this test will be specific to the cooling tower treatment chemicals themselves, we believe it is adequate to do this test a single time for our current treatment chemicals and dosage rates. Then, we will repeat the test if the cooling tower chemical treatment program changes. We request that this change be made in the Table for Outfall 001 (page 2 of 10) and in footnote 5 on page 3 of 10. We do not believe it is necessary to conduct this test annually for the 126 priority pollutants and quarterly (for Cr and Zn) as indicated in the Table on page 2 of 10 of the draft Permit, or certainly not quarterly for all tests as indicated in footnote 5 on page 3 of 10. (Note that in the current draft Permit, footnote 5 is not consistent with the Table on page 2 of 10 with respect to testing frequency.

Response #A4: The permittee has pointed out a discrepancy in footnote 5. Although the effluent limitations page shows that the priority pollutant (PP) scan is required once per year, the footnote seems to require that the scan be required quarterly. The intention of the draft permit was to have the scan conducted once per year and the monitoring for chromium and zinc to be conducted once per calendar quarter, as shown on Page 2. However, EPA may grant an

exemption from this annual PP scan as noted in Response to A3. Therefore, footnote 5 on Page 3 has been revised to reflect this distinction in sampling frequency between the PP scan and for the metals chromium and zinc and be consistent with Page 2 of the permit, as was originally intended. The chromium and zinc requirement is detailed in revised footnote 6.

Since chromium and zinc are limited in this cooling tower blowdown and we would expect the characteristics of this blowdown to vary depending on the source water (City of Lowell) and the frequency of blowdowns, EPA believes that quarterly sampling is required initially to assure that the chromium and zinc levels are consistent with the permit limits. After several samples have shown that the levels of chromium and zinc are meeting the permit limits, the permittee may seek a reduction in this monitoring frequency through a permit modification request.

Comment #A5: We do not believe it is warranted to conduct the whole effluent toxicity (WET) test every other year, per footnote 6 on page 3 of 10. We believe it is adequate to conduct this test once per permit cycle, in the first year of each 5-year NPDES permit cycle. We therefore request that this change be made in footnote 6 on page 3 of 10.

Response #A5: Since there is no whole effluent toxicity data available for this discharge, EPA determined that conducting this sampling every other year would provide information to assess the toxicity potential of this discharge. WET testing is commonly required for power plant discharges on a regular basis, as there may be several pollutants present in the discharge at varying levels over time. As explained in the fact sheet, there are several chemicals used at the facility and although some may exhibit toxic effects individually, the toxicity potential of the combination of these chemicals in the discharge is not known and must be assessed. Once this permit expires, the EPA will consider reducing the WET testing frequency based on the previous testing results.

Comments submitted by Tracie Sales of the Merrimack River Watershed Council:

Comment #B1: According to the Fact Sheet for Draft Permit No. MA0031071, the temperature change calculations for the current permit are based on the information and conditions contained in the original 1987 permit. In the older permit, the un-referenced summer canal water temperature used in the ΔT calculations is 72 °F, and the canal is assumed to contain few fish based on testimony from canal users. Both of these assumptions should be reassessed.

First, in August 2007, MRWC's water quality monitoring teams measured the water temperature in the mainstem of the Merrimack River near the mouth of the canal as high as 80.6 °F. Using this temperature value, holding all other temperatures and flows the same as in the original calculations, the canal equilibrium temperature becomes 81.9 °F, very close to maximum level set by the state of 83 °F for a warm water fishery such as the Merrimack. At this time we do not know if the summer water temperature in the Pawtucket Canal is comparable to that in the mainstem, higher, or lower, but reducing the maximum effluent temperature to 95 °F would create a margin of error and reduce the canal water temperature by 0.5 °F until this determination

can be made. For this reason, we suggest that the permittee be required to measure the temperature of the water in the Pawtucket Canal near the discharge point once per month when no discharge is occurring, reporting this information along with the other required monitoring data.

Second, in only the past few months, MRWC staff have spoken with several fishermen who fish in the Lowell canals and regularly catch fish. Also, over the past decade a significant effort has been made by state and federal agencies in both Massachusetts and New Hampshire to re-establish or improve populations of Atlantic Salmon, American Shad and River Herring in the Merrimack River. Whether any of these threatened species use the Pawtucket Canal is unknown, but if they do even small temperature variations can significantly affect the survival of young fish making their way to the ocean. Again, reducing the maximum effluent temperature to 95 °F would provide a margin of error and reduce the ΔT in the canal waters until a formal study can determine if and to what extent the canal is used by fish. As such, we recommend a study be sponsored by the permittee to determine the species and seasonal presence of fish in the canal so that a temperature limit relevant to the populations present can be set.

Response #B1: Since the previous modeling has shown that the facility will increase the receiving water temperature by less than 2°F, even if the receiving water temperature was 80.6 °F, full operation of the facility would not be expected to exceed the instream standard of 83°F. This modeling also assumed low flow conditions and the discharge of cooling tower blowdown at 105°F. Therefore, since it would not appear likely that the 83°F standard would be violated, this would also be protective of any fish that are present in the Pawtucket Canal.

The MassDEP's 1999 Merrimack River basin Water Quality Assessment Report notes that all three of the species mentioned in the comment are present in the Merrimack River, but Atlantic salmon would not be present at the Pawtucket Dam because they are removed by USFWS downstream at the Essex Dam in Lawrence, MA. In this report, MassDEP noted that fish counts at the Pawtucket Dam in 2001 found 58 river herring and 7,740 American shad. It is not clear that these fish enter the Pawtucket Canal and there are no data on the presence of fish species in the Canal. Regarding a fish study, EPA would prefer to require such a study if and when the permittee constructs and operates a CWIS, which would be coupled with studies for entrainment and impingement of aquatic life. These studies would assess the presence and abundance of aquatic life in the Pawtucket Canal as well as the impact that the CWIS operation would be having on such populations.

Comment #B2: The draft permit currently requires testing Outfall 001 for Whole Effluent Toxicity (WET) once during the first full calendar year of the permit and every other year thereafter. MRWC recommends that an additional WET test be performed any time the permittee modifies the use of its chemical additives in a way that would require the permittee to notify the EPA of the change, as allowed in the permit. This includes substituting a new chemical for one on the current list, adding a new chemical to the list, or increasing the dosage of an existing listed chemical over the approved amount. The effluent used in these additional WET tests should reflect the altered chemical usage and is necessary to determine that neither

the new mix of chemicals is toxic nor that the new chemicals in combination with residual amounts of the old chemicals are toxic.

MRWC also suggests that the permit be modified so that if the results of any WET test determine that the effluent is toxic, the permittee be required to correct the problem and perform additional WET tests at least once every six months until two consecutive tests indicate that the effluent is not significantly toxic, before returning to testing every other year.

Response #B2: EPA believes that WET testing every other year is sufficient to assess the toxicity potential of this discharge. However, changes in treatment chemicals could change the toxicity potential of the discharge. Therefore, EPA has revised the final permit to add a requirement (Part I.C.3) that conditionally approves a treatment chemical change provided that the permittee can show that this change would not result in any detection of priority pollutants in the effluent and that the discharge reflecting the change in treatment chemicals passes a WET test within thirty (30) days of such change. A similar requirement was established for the NPDES permit that was recently issued to the Newington Energy, LLC facility in Newington, New Hampshire.

If a review of any WET test indicates a toxic effluent, EPA may modify this permit to increase the frequency of WET testing and/or require the permittee to conduct an evaluation to determine the cause of such toxicity through a compliance action.

Comment #B3: The permit also needs to state where the dilution water used for the WET test is collected. If the receiving waters are used and it is determined that they are toxic, the Massachusetts Department of Environmental Protection and MRWC should be notified of this fact so that follow-up action can be taken to address the water quality problems.

Response #B3: As required by the WET test protocol in Permit Attachment A, the permittee is required to collect dilution water upstream of the outfall location. If a WET test is unacceptable due to a toxic or unreliable control (in this case the receiving water), the permittee must re-run such WET test within a reasonable time frame. The WET test protocol also allows for the use of an alternate dilution water if the receiving water is found to be toxic or otherwise unreliable. The permittee must follow the procedure outlined in Footnote 10 on Page 4 of the permit to be able to use an alternate dilution water for WET testing. If the permittee is authorized to use an alternate dilution water, it must still run the WET test with a minimum of two sets of controls, one of which must be the receiving water.

Comment #B4: In the current version of the draft permit, Total Suspended Solids (TSS) is only measured in outfall 002 four times per year during storm events that are greater than 0.10 inches in magnitude, and it appears that TSS has never been in outfall 001. Because there appears to be no data indicating that TSS is not a problem in either outfall 001 or in outfall 002 during dry weather, we suggest that TSS be monitored in both outfall 001 and 002 during dry weather on a monthly basis for at least the first year of the permit or longer until TSS can be shown not to

exceed 100 mg/l in the effluent during the normal operations of the plant. These measurements should be in addition to the quarterly TSS monitoring in outfall 002 during storm events.

Response #B4: EPA agrees with the commenter that there must be a TSS requirement established in the final permit for Outfall 001. Since storm water is not listed as an authorized discharge from Outfall 001, sampling for this outfall can only be conducted during dry weather. In the fact sheet of this draft permit, EPA wrote “There is no TSS monitoring required during dry weather, since the levels of TSS have been very low or not detected”. EPA acknowledges that this statement is incorrect as the previous permit required only wet weather TSS monitoring at Outfall 002 and no monitoring requirement during dry weather for either outfall. In the draft permit, EPA continued the TSS monitoring requirement during wet weather at Outfall 002. The permit application noted a TSS value of 25 mg/l at Outfall 001, presumably taken during dry weather. In addition, in preparing the draft permit, EPA did not acknowledge that the ELGs for steam electric facilities also include limits for TSS for certain low volume waste streams. Since it was determined that boiler blowdown and demineralizer wastewater are classified as low volume waste streams, the draft permit should have limited TSS for Outfall 001. Therefore, the final permit has established a monthly average TSS limit of 30 mg/l and a daily maximum limit of 100 mg/l, consistent with the steam electric ELGs. Monitoring for TSS shall be conducted during dry weather and at any time that boiler blowdown and demineralizer wastewaters are being discharged, but not while cooling tower blowdown is being discharged.

December 4, 2008