Tighe&Bond
Consulting Engineers
Environmental Specialists

EB-341-5-50
July 8, 2005

OVERNIGHT DELIVERY – ELECTRONIC SIGNATURE TRACKING

Environmental Appeals Board
MC 1103B, U.S. EPA, Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Hearing Clerk
Office of Administrative Appeals
Commonwealth of Massachusetts
Department of Environmental Protection
1 Winter Street, 3rd Floor
Boston, MA 02108

Re: Belchertown, MA
NPDES No. MA0102148
Permit Appeal
Request for Adjudicatory Hearing

Dear Environmental Appeals Board and Office of Administrative Appeals:

On behalf of the Town of Belchertown, Massachusetts, Department of Public Works, we are writing this letter for two purposes: 1) to file an appeal of the final NPDES Permit issued to the Town of Belchertown on June 10, 2005 with the Environmental Appeals Board; and 2) to file an appeal and request an adjudicatory hearing from the Massachusetts Department of Environmental Protection Office of Administrative Appeals.

The Town of Belchertown is concerned that certain conditions of the draft NPDES Permit, which the Town believes are unnecessarily stringent, may not be attainable even with the newly reconstructed tertiary treatment facilities paid for by the Town at a cost of approximately $8.7 million.

The Town of Belchertown was issued a NPDES permit in January 2001. The Town appealed many of the permit limitations in that Permit and EPA withdrew the Permit. The draft Permit and the June 2005 final NPDES permit that is the subject of this appeal contained virtually the same

permit limitations as had been included in the January 2001 withdrawn permit. A suggestion was made to meet with EPA to discuss the issues under appeal, but EPA did not accept this invitation.

We urge the Board of Environmental Appeals and the Office of Administrative Appeals to undertake full and independent reviews of this appeal.

Requester Information

This request is being filed by the Permit Holder:

Town of Belchertown Department of Public Works
Mr. Steven J. Williams, Director
290 Jackson Street, P.O. Box 670
Belchertown, MA 01007-0670
(413) 323-0415
(413) 323-0470 fax

The requestor is being represented by:

Tighe & Bond, Inc
Consulting Engineers
Omer H. Dumais, Jr., P.E., Vice President
53 Southampton Road
Westfield, MA 01085
(413) 572-3236
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A letter from Town of Belchertown Department of Public Works is attached authorizing Tighe & Bond, Inc. to represent the requestor.

Service

Simultaneous with the service of this appeal, the requestor's representative certifies that copies have been sent by United States Mail – Certified Mail to all parties addressed above as well as all parties listed as copied at the end of this letter.

Statement of Interest - Specific Permit Conditions Under Appeal

The Town of Belchertown, through this letter, requests appeal of the following NPDES Permit conditions.

1. **Part I A.1 – Page 2 of 10 - Flow limit**

The Town of Belchertown does not appeal the specific numeric limitations for flow. However, the Town of Belchertown appeals EPA's decision not to clarify in the permit that the modification of the permit limit from a monthly average basis to an annual average basis is a correction and not a change resulting in less stringent limitations and also appeals the use of the annual average flow limit for calculation of monthly and weekly mass-based limits.

2. **Part I A.1 – Page 2 of 10 – Mass Loading Limits (BODs and TSS)**

The Town of Belchertown appeals a) the inclusion of mass based limits for five-day Biochemical Oxygen Demand (BOD5) and Total Suspended Solids (TSS) and b) the method used to calculate the limits and c) the policy used by U.S. EPA Region I to establish such limitations.

3. **Part I.A.1- Page 3 of 10 – Phosphorus Limits**

The Town of Belchertown appeals a) the inclusion of mass based limits for phosphorus and b) the method used to determine mass-based phosphorus limitations.

4. **Part I A.1 – Page 3 of 10 - Copper Limit**

The Town of Belchertown appeals a) the inclusion of copper limits in the Permit; b) the methods used to establish such limitations; c) the methods used to demonstrate a need to include such permit limitations d) the specific numeric limits included in the permit and e) the denial of the request to establish copper limitations based on the effluent discharge hardness.

5. **Part I.A.1 – Page 3 of 10 – Whole Effluent Toxicity Limitations**

The Town of Belchertown appeals the permit and monitoring requirements for chronic toxicity. Recent data indicate that the effluent is generally not toxic.

Background Into Development Of The Permit

Copies of previous NPDES Permits, Administrative Orders as well as copies of comments submitted on draft NPDES permits are attached in the Appendices as listed below:

Appendix A – July 8, 2005 Authorization to Represent

Appendix B – June 10, 2005 Final NPDES Permit

Appendix C – October 28, 2003 Comments on October 1, 2003 Draft NPDES Permit

Appendix D – October 1, 2003 Draft NPDES Permit

Appendix E - January 10, 2001 Final NPDES Permit (Withdrawn)

Appendix F – February 8, 2001 Appeal of January 10, 2001 Final NPDES Permit (without appendices)

Appendix G – July 11, 1997 Final NPDES Permit (Current)

Appendix H – July 19, 2004 Administrative Order

Appendix I – June 12, 2000 Draft MADEP-DWM NPDES Permit Program Policies Related to Flow and Nutrients in NPDES Permits.

Appendix J – October 25, 1995 Tighe & Bond Memorandum regarding Evaluation of In stream Dissolved Oxygen.

Previous documents provided with the February 8 2001 NPDES appeal of the January 10, 2001 NPDES Permit not directly relating to the current appeal include:

September 27, 1991 NPDES Permit

December 4, 1996 Draft NPDES Permit

Comments on December 4, 1996 Draft NPDES Permit

September 30, 1997 Administrative Order and Amendments

September 6, 2000 Draft NPDES Permit

Comments on September 6, 2000 Draft NPDES Permit

The Belchertown wastewater treatment facility was previously owned by the Commonwealth of Massachusetts Department of Mental Health. Ownership of the facility was transferred to the Town of Belchertown on October 3, 1994 and the NPDES permit in effect at the time was transferred to the Town on January 13, 1995. That permit expired on September 26, 1995 but remained in effect in accordance with the Administrative Procedures Act.

After taking ownership of the wastewater treatment facility, the Town entered into discussion and correspondence with the U.S. EPA Region I and the Massachusetts Department of Environmental Protection regarding the feasibility of upgrading and expanding the treatment facilities to allow for extension of the Town's sewer system to serve areas with failing septic systems and to significantly improve treatment performance.

Several different design alternatives were evaluated. The design evaluation included estimates for the long-term sewage treatment needs for Belchertown. Final design flows for the facility as

presented to the U.S. EPA, including senior permitting staff, and the Massachusetts Department of Environmental Protection were established as follows:

Total Annual Average Daily Flow	1.00 mgd
Total Maximum Daily Flow	2.5 mgd
Total Peak Hourly Flow	3.5 mgd

Facilities plans for the project were evaluated and approved by the Massachusetts Department of Environmental Protection. The project ranked high in the State's list for funding for environmental improvements. The Town was awarded a grant from the Massachusetts Water Pollution Abatement Trust to complete the project.

On July 11, 1997 the NPDES Permit was reissued. The reissued permit authorized an increase in the permitted flow from 0.5 to the design flow of 1.0 mgd, along with a decrease in the permitted phosphorus concentration to 0.25 mg/L, and the inclusion of a limit on copper. Because the existing wastewater treatment facility would not be able to meet the new (1997) NPDES Permit limits, the U.S. EPA Region I issued an Administrative Order (AO) requiring that the Town comply with a construction schedule for completion of the new treatment facilities. The Administrative Order as subsequently amended required that the Town complete construction by September 16, 2000. Thus, within less than six years of taking ownership of a poorly operated and deteriorating treatment facility, the Town has turned the facility into a modern state of the art tertiary treatment facility.

However, ten days before the completion deadline for the new facilities, EPA Region I issued the new draft NPDES permit that contained new permit conditions that the treatment facility cannot reasonably be expected to meet. The Town of Belchertown raised objections and presented technical arguments against the inclusion of these requirements during the comment period. U.S.EPA Region I chose not to revise the permit conditions of concern. Therefore, the Town of Belchertown filed an appeal of the January 10, 2001 Final NPDES Permit.

On October 1, 2003 a Draft NPDES Permit was issued. This draft contained permit conditions that were essentially unchanged from the January 10, 2001 Permit that had been withdrawn by EPA following appeal.

On October 28, 2005 the Town submitted comments on October 1, 2003 Draft NPDES Permit. Including reiteration of many of the same comments raised in the appeal of the January 2001 permit that were not adequately or properly addressed in the Fact Sheet to explain why the withdrawn limits were being reissued largely unchanged. The comment letter included specific recommendations for permit modifications that would make the permit acceptable to the Town.

The October 28, 2003 comment letter also included a request to set up a meeting with EPA to address proposed modifications to the permit. EPA did not agree to this request to meet to discuss the permit issues and, with minor exception, the same issues remain unresolved and are the subject of this current appeal of the June 10, 2005 NPDES Permit

Documentation of Standing to File Appeal

Regulations governing appeal of NPDES Permits (40 CFR 124.19) stipulate that "...any person who filed comments on that draft permit or participated in the public hearing may petition the Environmental Appeals Board to review any condition of the permit decision....Any person who failed to file comments or failed to participate in the public hearing may petition for administrative review only to the extent of the changes from the draft to the final permit decision....The petition shall include a statement of the reasons supporting the review, including a demonstration that any issues being raised were raised during the public comment period...".

Tighe & Bond, on behalf of the Town of Belchertown, filed comments on the October 1, 2003 draft NPDES Permit, by letter dated October 28, 2003. A copy of this letter is included in Appendix C as demonstration that the issues being raised were raised during the public comment period. Tighe & Bond's comment letter presented objections to each of the items of appeal.

Comments on the October 2003 Draft Permit

By letter dated October 28, 2003 on behalf of the Town of Belchertown, Tighe & Bond provided comments on the draft NPDES Permit. These included comments on the flow limit, mass loading limits for BOD and TSS, mass based phosphorus limits, copper limits and whole effluent toxicity testing requirements and limits. However, each of these issues has yet to be resolved and are the subject of this appeal.

For reference, the comments on the draft NPDES permit which are relevant to the items under appeal in this letter are restated below along with EPA's response and a more detailed discussion of the basis of appeal for each item.

Appeal Item 1 - Part I A.1 – Page 2 of 10 - Flow limit

Tighe & Bond Comment on Draft Permit:

Comments relating to flow and use of the flow limit for calculation of other limits are included under the subject headings for BOD and TSS Mass loadings and phosphorous loadings.

EPA Response:

Responses to the comments on the latest draft relating to flow and use of the flow limit for calculation of other limits are included under the subject headings for BOD and TSS Mass loadings and phosphorous loadings.

Appeal: The Town of Belchertown appeals the flow limit for flow on the grounds that EPA and MADEP have incorrectly used the annual flow limit to establish unnecessarily stringent mass-based limitations for other parameters and on the grounds that EPA and MADEP have incorrectly argued that the flow limit has been relaxed and therefore other limitations have been made more stringent to address anti-backsliding concerns.

The Town of Belchertown had previously made the request for a clarification that the change in the flow limit from a monthly limitation to an annual limitation in the permit was not a modification, but was a correction, for a final NPDES permit issued by EPA and MADEP on January 10, 2001 The January 2001 Permit was subsequently withdrawn by EPA in response to an appeal filed by the Town of Belchertown. Copies of the withdrawn NPDES Permit and Belchertown's appeal of that permit are provided as attachments. The Town made this request specifically because of the potential for incorrectly interpreting and applying flow limits in light of anti-degradation and anti-backsliding provisions.

In previous response to comments on the September 6, 2000 Draft NPDES Permit, EPA and MADEP stated:

> "EPA and MA DEP have instituted a policy change in the way flow limits in NPDES permits for POTWs are calculated. The change in the Belchertown WRF's permit is not only to this permit, but is taking place in all POTW permits as they are reissued, and is in recognition that the design flows expressed in facilities plans, which were previously limited as monthly average flows are actually expressed as annual averages. The annual average flow will be a twelve month running average which will allow variation in flows at WWTPs, particularly during the spring time runoff events. Footnote 1 in the draft permit provide clarification on how to calculate the annual average flow, and it is now a part of the standard language in permits. We hope this clarifies the reason for the change in the flow limit. We did not however, add the requested footnote because it is not necessary to clarify the limit."

The Town of Belchertown does not take exception to the specific numeric limitations for the annual average flow limit included in the permit. However, because EPA's response to comments on the draft for the current permit indicates that the flow limit was changed from a monthly limit to an annual limit, and EPA further uses this assertion to argue that there is the need for certain mass-based limits to address anti-backsliding provisions (contrary to their response to comments on the 2000 draft), the Town of Belchertown appeals the flow limit and EPA's decision not to clarify in the permit that the modification of the permit flow limit from a monthly average basis to an annual average basis is a correction and not a change resulting in less stringent limitations. As discussed below, this issue relates directly to whether or not other provisions of the permit are subject to federal anti-backsliding and state anti-degradation provisions.

The second half of the second sentence of EPA's response quoted above clearly indicates that EPA's policy to modify flow limits in NPDES permit from monthly limits to annual limits (without a change in numeric value) is a correction to permit conditions rather than a modification resulting in less stringent limitations ("... in recognition that the design flows expressed in facilities plans, which were previously limited as monthly average flows are actually expressed as annual averages.").

We strongly disagree that the use of the annual average flow for computing monthly and weekly BOD and TSS mass based limits as well as phosphorus mass based limitations is required to address antidegradation or anti-backsliding requirements and contend that the U.S.EPA and the Massachusetts Department of Environmental Protection have based the requirement for mass based limits and the method for determining mass based BOD and TSS limits on an erroneous conclusion of law directly relating to the interpretation of the change in the flow limit from an average monthly limit to an annual average limit. Furthermore, this erroneous conclusion could have been prevented if the permit had been modified as requested during the earlier comment period to clearly state that the change represents a correction to the previous permit, rather than a modification of permit requirements.

The antibacksliding and anti-degradation regulations allow administrative corrections to NPDES Permits without impacting anti-degradation or antibacksliding concerns. The U.S. EPA and the Massachusetts Department of Environmental Protection are in error in stating that the mass-based BOD and TSS limitations are required to address these issues. The requested permit modification to specifically recognize the change to the flow limit as a correction would eliminate the perceived need to impose more stringent discharge limitations than contained in the previous permit.

EPA indicates that they did not add the requested footnote because it is not necessary to clarify the limit. While the clarification is not needed to identify the numeric value of the flow limit or the method used to calculate compliance with the flow limit, the clarification is needed to demonstrate compliance with federal anti-backsliding provisions and EPA and MDEPs own conflicting comments between their responses to the two drafts clearly indicates that there is a benefit to adding this simple clarification.

Because EPA improperly presents anti-backsliding concerns relating specifically to the discharge flow rate as a basis for denying requests made by the Town to eliminate weekly massed based limitations for BOD and TSS, the Town requests that appeal of the flow limit be allowed on the grounds that EPA used the annual flow limit to improperly establish unnecessarily stringent mass-based weekly BOD and TSS limits.

The Town specifically appeals the use of the flow limit for establishing any weekly or monthly mass based limits and appeals the use of consideration of the flow limit to impose any constraints on the basis of anti-backsliding and anti-degradation. The Town of Belchertown is not asking that the numeric annual average flow limit be changed, only that the clarification be

made and that the correction to the limit not be allowed as an argument to be used to place unnecessary burdens on the Town.

Conclusion: Therefore, on behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals direct U.S. EPA Region I and Massachusetts Department of Environmental Protection to modify the permit as requested to indicate that the change to the flow limit is a correction, not subject to antidegradation or anti-backsliding requirements.

Appeal Item 2 - Part I A.1 – Page 2 of 10 – Mass Loading Limits (BODs and TSS)

Tighe & Bond Comment on Draft Permit:

> "Monthly and weekly mass loading limits for BODs and TSS are not included in the current permit, but had been proposed in the September 2000 draft permit. The current draft contains the same limits as the withdrawn 2000 draft permit. These limits were derived by multiplying the monthly and weekly concentration limits by the annual average flow rate (1.0 mgd) and a conversion factor of 8.34 to arrive at a mass loading value.
>
> As noted in our comments on the September 2000 draft permit, the Town of Belchertown takes exception to this approach as it uses an annual average flow to compute weekly mass limits. Since average weekly flows can be significantly greater than average annual flows, any mass limit would be more appropriately calculated based on flows that correspond with the loading frequency in question, i.e., maximum monthly flow and maximum weekly flow. Additionally, because the monitoring requirements in the new permit require sampling once per week, this effectively results in the weekly average condition being the equivalent of a daily maximum limit. The approved basis of design for this facility included a maximum daily peaking factor of 2.5 times the annual average flow. Based on this peaking factor for weekly flow conditions, a mass based BODs limit of 63 lbs/day would result in a required effluent concentration of 3.0 mg/L. An effluent BODs limit of 3.0 mg/L cannot be reliably achieved and was not included in the approved facilities plan and final design.
>
> Although the Town has previously contested the inclusion of weekly mass based limits, noting that imposing weekly and monthly mass limits would unreasonably restrict facility discharges without a technical basis for establishing the new limit, and had requested that the mass loading limits be either removed from the draft permit or adjusted to reflect the design maximum monthly and weekly flow conditions for the facility, the new draft permit includes the same proposed limits, calculated using the same methods, based on annual flow.

While the Town continues to disagree with the basis for the proposed based mass based limits for BOD and TSS, the proposed limits would be acceptable to the Town if clarifications are made to the permit to indicate that the calculations of discharge BOD and TSS mass for compliance monitoring purposes are to be made using the same methods used by EPA to derive the permit limits (i.e. permit compliance calculations should be made using the annual average flow rate as required to be reported in monthly monitoring reports and corresponding weekly or monthly average concentrations). This approach will allow direct comparison of the discharge monitoring data with the permit limitations using the same basis for establishing calculated mass values. This method would be more consistent with the basis for the proposed limits.

Suggested modifications to the permit are as follows:

Add footnote 10 to all mass based limitations for BOD and TSS to read as follows:

"10. The permittee shall use the annual average flow as shall be reported each month (see footnote 1) and corresponding weekly or monthly average concentrations in calculating compliance with all mass based limitations.""

EPA Response:

"MADEP adopted a policy establishing flow limits in POTW permits as an annual average in order to account for seasonal flow variations, particularly those associated with high flow and high groundwater which commonly occur in the spring time. See June 12, 2000, MADEP-DWM NPDES Permit Program Policies Related to Flow and Nutrients in NPDES Permits ("Flow Policy"). The calculation of the Belchertown flow is based on annual average flow rather than the monthly average flow calculation employed in the prior permit. Consistent with the Flow Policy, the Agencies have imposed weekly and monthly mass limits in order to maintain approximate overall pollutant loadings of BOD and TSS in the receiving water.

Mass limits are reasonable in light of the continuing severe impairment of the receiving waters – Lampson Brook, Weston Brook and Forge Pond – caused by Belchertown WRF effluent discharges and other inputs. Each of the receiving waters is each listed on the Massachusetts Year 2002 List of Impaired Waters under Category 5 as water quality limited segments requiring the calculation of a total maximum daily load of pollutants in order to implement water quality standards. Lampson Brook and Weston Brook are impaired by unionized ammonia, chlorine, excessive nutrients and organic enrichment/low DO, while Forge Pond is impaired by nutrients and noxious aquatic plants. As the Agencies explained in the Fact Sheet, the use of the annual average flow to calculate weekly and monthly mass loading limits will tend to offset any increase in

loading that might otherwise occur as a result of the new definition of the flow limit. On the other hand, the use of average weekly or monthly flows to calculate mass limits would compound the potential for greater pollutant loadings, because (as Permittee acknowledges) the magnitude of such flows in any given month or week can be significantly higher than average annual flow value. The permittee's compromise proposal of using the annual average flow as reported monthly to calculate limits would likewise result in a potential for a net increase in pollutant loadings. The Permittee has failed to demonstrate that its proposed calculation would not cause or contribute to further impairment of the receiving waters. Nor has it demonstrated that its revision would ensure compliance with the anti-degradation provisions of the Massachusetts Surface Water Quality Standards (314 CMR § 4.04)("Massachusetts WQS") to the extent that it may result in a lowering of water quality. Accordingly, the Agencies have retained the use of the annual average flow to calculate mass limits.

An effluent BOD limit of 3.0 mg/l would only be necessary if the facility discharged at the maximum daily design flow for an entire week in the June – October time period which is an unlikely scenario.

The Agencies consider the frequency of monitoring for BOD_5 and TSS to be appropriate given the ongoing impairment of the receiving water, specifically the cultural eutrophication of Weston Brook and Forge Pond and the attendant water quality impacts on dissolved oxygen, solids and color and turbidity. The sampling frequency in the Final Permit allows the Agencies to determine whether the permittee's treatment facility is meeting the permit requirements and to determine whether expected water quality improvements are being achieved and maintained. The Agencies disagree with the Permittee's contention that the weekly sampling condition in effect imposes daily maximum mass limits on BOD_5 and TSS. The monitoring frequency of once per week is a minimum monitoring frequency. The Permittee may monitor more frequently provided the monitoring frequency is consistent from week to week. The Permittee may continue to utilize the daily peaking factor so long as the weekly averages for the pollutants do not exceed the permit limits. In any event, the Permittee should note that the Agencies are not bound by the approved facility plan and design of the WRF in setting permit conditions and limitations. Rather, the Agencies are obligated to include in the Final Permit reasonable limitations and conditions with respect to pollutants that are necessary to ensure compliance with Massachusetts WQS. See 33 USC § 301(b)(1)(C); 40 CFR § 122.44(d)(1)(i). Permits must include limits as stringent as necessary to meet Massachusetts WQS irrespective of cost considerations or technological feasibility. In certain instances, permits limits or conditions may necessitate operational or technological improvements beyond an approved facility plan and design."

Appeal: The Town of Belchertown appeals a) the inclusion of mass based limits for five-day Biochemical Oxygen Demand (BOD5) and Total Suspended Solids (TSS) and b) the method used to calculate the limits and c) the policy used by U.S. EPA Region I to establish such limitations. This appeal is based on the use of incorrect assumptions used by EPA in developing such limitations, inconsistent application of such limitations, and the following errors made by EPA and/or MADEP in establishing such limitations and denying revision of the draft permit as requested by the Town.

1. **EPA and MADEP incorrectly interpreted requirements for anti-backsliding and anti-degradation in establishing the weekly mass-based limitations.**

In the response to comments on the draft permit EPA argues that the use of the annual average flow to calculate weekly and monthly mass loading limits will tend to off-set any increase in loading that might otherwise be occur as a result of the new definition of the flow limit. While this may be true for monthly average loadings, where the previous permit included a flow limit for monthly flow, there has never been any limitation on weekly flow limit, and this argument is not applicable to limitations for weekly discharge loadings. Establishing a weekly based mass discharge limitation is not necessary to address anti-back sliding and anti-degradation provisions as the previous discharge permit was not more stringent with respect to weekly BOD and TSS discharge requirements.

2. **EPA incorrectly interpreted Massachusetts Water Quality Certification Requirements.**

The Massachusetts Water Quality Certification attached to the Final Permit requires mass based monthly limits for BOD and TSS to meet the Massachusetts Water Quality Standards Antidegradation Provisions. The Water Quality Certification does not include any discussion or requirements with regard to establishing weekly discharge limitations for BOD and TSS. Weekly massed based limitations for BOD and TSS are not necessary for Water Quality Certification.

3. **EPA incorrectly applies a draft Massachusetts nutrient control policy for control of non-nutrient parameters.**

The response to comments on the draft permit references a June 12, 2000 MADEP-DWM NPDES Permit Program Policies Related to Flow and Nutrient in NPDES Permits as the basis for imposing weekly and monthly mass-based BOD and TSS limitations. This policy appears to have been issued as a draft only. MADEP was contacted on July 7, 2005 and no final policy was identified (see Appendix I). Paul Hogan of MADEP said that it is an "operative policy", meaning that it describes how DEP staffers write NPDES permits but it is not a formal policy that has been adopted for the public. It is not available through the web site.

The use of the referenced draft policy as a basis for establishing final NPDES permit limitations is not justified on four grounds. 1) The policy does not provide guidance on the flow value to be

used for establishing mass based limitations for monthly average and weekly average BOD and TSS limitations, contrary to EPA's response comment. 2) The policy is a draft policy and has not been finalized and therefore is an inappropriate basis for establishing final enforceable NPDES Permit limitations. 3) The policy has not been released for any public review or comment. 4) Neither EPA nor the Massachusetts Department of Environmental Protection have performed an analysis of the potential adverse impacts of the policy as drafted. Based on these considerations, the draft policy should be disallowed as a basis for establishing enforceable final NPDES discharge limitations.

The MADEP policy cited by EPA does not reference establishment of weekly or monthly based limitations. The policy discusses that flow limits should be based on annual average values (as presented in the permit) and then goes on in the same sentence in which annual flow limits are discussed to state that BOD and TSS limits should be expressed in both concentration and mass units. There is no mention of establishing weekly or monthly BOD or TSS limits. It does not follow from this draft policy that the annual average flow rate should be used for establishing monthly or weekly mass-based limits, especially given that the draft policy establishes that the intent of using an annual average flow rate is to address the variability inherent in wastewater treatment plant flows. There is nothing in the draft policy that addresses the need for or the method to be used to establish monthly or weekly mass limits. EPA is incorrect in applying the draft policy language developed for annual average limitations for establishing unnecessarily stringent weekly or monthly mass- based limitations and factually errs when referencing this policy as forming the basis for any decision to apply annual average flow limits to calculation of monthly or weekly mass-based limits.

The draft MADEP policy cited by EPA is intended to address control of nutrients as indicated in the title. The draft policy discusses only flow, total phosphorus and nitrogen. BOD and TSS are not generally considered to be nutrients and the policy does not indicate that they are considered as such for the context of the policy. The only reference to BOD and TSS in the draft policy is in relationship to determination of annual flow limits. The fact that the language of the policy lists BOD and TSS as separate from nutrients ("...BOD,TSS, and nutrients,...") further indicates that BOD and TSS are not considered nutrients for the purposes of the draft policy.

Use of this draft policy as the basis for establishing mass based permit limits for BOD and TSS is inappropriate and any permit limits for BOD and TSS established based on this use of the draft policy should be eliminated from the permit.

4. EPA may have failed to include documents cited in the response to comments in the administrative record as specified under Section 124.17.

Section 124.17 requires that EPA include documents cited in response to comments in the administrative record. No publicly available copies of the draft June 12, 2000 MADEP-DWM NPDES Permit Program Policies Related to Flow and Nutrient in NPDES Permits cited by EPA were identified by Tighe & Bond or the Town. MADEP employees indicated by telephone that

the issue was still under review by MADEP and EPA. A copy of the referenced document was not provided by EPA with responses to comments. EPA did not indicate in responses to comments that the referenced document was a draft document. The Town has no indication that this document has been properly cited in the administrative record as required.

5. EPA incorrectly asserts that the weekly based limits are established to maintain approximate overall pollutant loadings of BOD and TSS.

As indicated above, establishing a weekly based mass discharge limitation is not necessary to address anti-back sliding and anti-degradation provisions as the previous discharge permit was not more stringent with respect to weekly BOD and TSS discharge requirements. Weekly mass based limitations are not required to maintain approximate overall pollutant loadings of BOD and TSS. This is effectively accomplished through the use of monthly BOD and TSS limitations which establish loading limitations at least as stringent as those contained in the pervious permit. Establishing weekly massed based discharge limitations requires a reduction in loadings.

6. EPA incorrectly asserts that use of the annual flow rate for calculation of weekly and monthly mass limits will off-set increases resulting from the modification of the flow limit

EPA has not demonstrated that there will be any increase in loadings associated with corrections made to interpretation of the flow limit. Because the monthly mass based limitations are the same, there is no basis to assume that weekly loadings will increase.

7. EPA incorrectly links BOD and TSS with cultural eutrophication downstream of the wastewater treatment plant.

In response to comments made by the applicant regarding BOD and TSS mass based limitations, the Agencies make comments suggesting that there is a link between effluent BOD and TSS and downstream cultural eutrophication. There is no evidence to indicate that the observed eutrophication is linked to BOD or TSS. In responses to comments received Riverways staff, the Agencies state, "Concerns with organic enrichment/low DO are primarily related to the excessive phosphorus discharged by the facility." The Agencies appear to be internally inconsistent with regard to this issue. We also note that in no location do the Agencies make any distinction between "organic enrichment" and low DO This error lends itself to the assumption that observed low DO conditions are necessarily related to organic enrichment and presumably, therefore, to BOD. As documented in the attached 1995 Tighe & Bond memorandum, in stream DO levels are primarily a function of extensive natural wetland areas and, further down stream, diurnal depletion of DO due to aquatic cultural eutrophication that is believed to have phosphorus as the limiting nutrient.

8. EPA incorrectly asserts that the Town has not demonstrated that removal or recalculation of the weekly mass-based BOD and TSS permit limits would not cause

or contribute to further impairment of the receiving waters or result in the lowering of water quality.

EPA and DEP have previously been provided with documentation demonstrating that downstream Dissolved Oxygen (DO) concentrations are not impacted by the discharge from the POTW, but are directly related to the presence of large wetland areas through which Lamson Book flows which reduce oxygen levels due to the presence of naturally occurring anoxic soils. A copy of this information with out attachments is provided in Appendix J. Downstream dissolved oxygen concentrations are virtually the same as observed for a control wetland system that receives no wastewater discharges and is protected as a water supply area.

Eutrophication rates are controlled by nutrient availability rather than availability of organics measured by BOD. There is no technical justification to place extremely burdensome weekly mass based BOD limits in the permit when the concentration limits are as low as 5.0 mg/L for a monthly average and 7.5 mg/L for a weekly average.

9. EPA is inconsistent in its application of requirements for weekly mass-based BOD and TSS permit limitations.

Tighe & Bond and the Town of Belchertown are aware of at least one other Massachusetts NPDES Permits for POTW issued within the last year that contains weekly and maximum daily concentration limitations for BOD and TSS, but does not contain weekly or daily mass based limitations for BOD and TSS. While specifics of receiving water quality are different, there is no established requirement for EPA to express weekly BOD and TSS limitations in terms of both concentration and mass.

10. Methods used by EPA to establish limitations are inconsistent with methods required to be used by the Town for compliance monitoring.

The Town requested that the draft permit be modified so that the methods used to demonstrate compliance with the permit limits be equivalent to methods used to establish the limits. It is inappropriate for EPA to require a different and more stringent standard for enforcement of a limit than for establishing the limit. To use an analogy, this has the same effect as establishing a speed limit in miles per hour and enforcing that limit by measuring kilometers per hour. While that would ensure compliance with the limitation, it is clearly not justified and is unduly burdensome and legally indefensible. If the annual average flow is used for the development of a limit, the same parametric should be used for demonstrating compliance with the limitation. EPA has failed to provide any justification for denying the request to allow equivalency in calculation of permit compliance, and the permit conditions should be removed.

11. Agency comments disregarding the Facilities Planning Process are cause for concern for any publicly funded facility.

Agency comments disregarding the Facilities Planning Process are cause for concern for any publicly funded facility. It has been only 8 years since the facility planning process completed. There are no new conditions in the receiving waters that warrant conditions more stringent than included in the 1997 permit and accounted for in the design of the facility. The comments regarding use of peaking factors is also inconsistent, as the Agencies disallow consideration of a peaking factor for weekly limits, but indicate that the Town may use daily peaking factors at its discretion.

In summary, EPA Region I and the Massachusetts Department of Environmental Protection have issued incorrect findings of fact in stating that the proposed mass based limits represent no change to the previous permit. We believe that the conclusions that the mass based limits are required either for antidegradation / antibacksliding concerns or based on the requirements of 40 CFR 122.45 (f) (1) are also incorrect. The inclusion of the mass based limits is based on an un-reviewed draft policy which represents an important discretionary policy which warrants review by the Environmental Appeals Board and the Office of Administrative Appeals, not only for its impact on the Town of Belchertown but also as it relates to impacts to a wider community and the failure to provide adequate public notice and opportunity for comment and failure to adequately consider potential adverse impacts of such policy. We urge the Environmental Appeal Board and the Office of Administrative Appeals to review not only the content of the contested permit conditions but also the process by which EPA Region I and Massachusetts Department of Environmental Protection derived said conditions.

Conclusion: Pursuant to this appeal, on behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals direct U.S.EPA Region I and the Massachusetts Department of Environmental Protection remove the mass based limitations for weekly BOD and TSS included in the NPDES Permit. We also request that if mass based limitations are not removed, that the permit be modified to stipulate that the same flow parameter used for developing the limits (i.e. annual flow) be used for the purposes of demonstrating permit compliance.

Appeal Item 3 – Part I.A.1- Page 3 of 9 – Phosphorus Limits

Tighe & Bond Comment of Draft Permit:

> "As with BOD and TSS, the monthly average mass based limit for phosphorus has been calculated by EPA using the annual average flow permit limit. Citing the same concerns as noted above, permit compliance calculations should be made on the same basis as used for establishing the permit limit.
>
> **Suggested modifications to the permit are as follows:**
>
> *Add footnote 10 to mass based limitations for phosphorus to read as follows:*

"10. The permittee shall use the annual average flow as shall be reported each month (see footnote 1) and corresponding weekly or monthly average concentrations in calculating compliance with all mass based limitations.""

EPA Response:

"Mass based limits for phosphorus have been added to the permit in order to maintain loadings to the receiving water and to ensure compliance with Massachusetts WQS. Please see Response #1 above. Given that a major cause of impairment of the receiving water is phosphors-driven cultural eutrophication, the Agencies believe that it is appropriate to minimize the risk of increased phosphorus loading by opting for a limit based on the annual average flow rather than the less conservative alternatives set forth by the Permittee."

Appeal: The Town of Belchertown appeals a) the inclusion of mass based limits for phosphorus and b) the method used to determine mass-based phosphorus limitations.

The Town appeals the inclusion of a mass based limit on the basis that the Agencies have improperly denied the requested permit modification to allow use of the annual average flow for permit compliance consistent with its use for permit calculation.

The recently rebuilt tertiary treatment facility was designed to meet a phosphorus limitation of 0.25 mg/l during warm weather conditions when the facility is also required to meet very low BOD and TSS limitations. Meeting this limit on a year round basis, especially during cold weather will impose additional restrictions on the wastewater treatment facility. U.S. EPA and the Massachusetts Department of Environmental Protection have already indicated that it is appropriate to relax BOD and TSS restrictions during cold weather conditions. Use of an annual average value for flow for permit compliance would allow appropriate latitude in cooler months when phosphorus removals are more difficult to achieve and flows can be higher. The Agencies have failed to demonstrate a need for monthly phosphorus loading limits. Annual loadings are more meaningful in terms of downstream cultural eutrophication.

The second issue under appeal is the procedure itself used for determining mass based limits and compliance with those limits. As argued earlier for BOD and TSS limits as discussed above, the practice of developing limits by one set of standards and enforcing compliance through a separate set of standards is not legally defensible.

EPA, in their response to comments on an earlier draft permit acknowledges that the modification to the flow limit is a correction. They state that the purpose for correcting the flow limit is to "... allow variation in flows at WWTPs, particularly during the spring time runoff events." The method used to calculate a monthly average phosphorus mass limit is inconsistent with the correction of the flow limit to an annual average limit, and does not allow variation in flow as stated by U.S. EPA Region I.

Conclusions: On behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals direct U.S.EPA Region I and the Massachusetts Department of Environmental Protection to delete the mass based limitations for phosphorus from the permit or require that the permit be revised to indicate that compliance with the limit is to be determined using annual average flow.

Appeal Item 4 - Part I A.1 – Page 3 of 9 - Copper Limit

Tighe & Bond Comment of Draft Permit:

> "In 1999 EPA made modifications to the water quality criteria for copper. The new limits for copper have been calculated at lower values than contained in the 2000 draft and the 1997 permit. The proposed limits of 6.4 ug/l as a monthly average and 9.2 ug/l as a maximum daily limit are significantly below the range of values reported in the last two years of data reviewed.
>
> In comments presented to EPA on the September 2000 draft permit it was noted that the copper limit proposed at that time was extremely stringent and may be technically unachievable. In addition, there are numerous technical reasons why the need for copper limits remains in question including, the reduction of copper toxicity due to decreased copper bioavailability associated with complex formation with other materials, the limitations of commercial laboratory testing and the methods used for development of the Gold Book standards. For a number of years EPA has been working with Water Environment Federation (WEF) to develop a biotic ligand model for copper toxicity to account for the influences of wastewater characteristics with the reduction in copper toxicity. However, to date, EPA has not used the results of this research to address the problems numerous communities are facing in regard to extremely stringent copper limitations. For this reason, the Town of Belchertown requested that copper limits not be included in the previous draft permit until these issues were resolved.
>
> While it appears unlikely that EPA will soon modify the criteria values for copper based on the biotic ligand model, the calculation of the copper limit as currently presented by EPA in the Fact Sheet is a function of hardness. The higher the hardness, the less toxic copper is and the higher the allowable discharge limit. EPA has used a hardness value of 60 mg/l for calculating copper limits. The Fact Sheet does not provide a statement of basis for this value and we believe that it is inappropriately low. The data included in the toxicity tests from 2002 and 2003 indicate that this value is not reflective of typical in-stream hardness after mixing with the discharge. The average outfall hardness was 94.5 mg/l and the average in stream hardness above the outfall was 72.9 mg/l. Based on the 7Q10 dilution ratio of 1.065, the calculated hardness down stream of the outfall (the location used as the basis for calculating compliance with State Water Quality Standards)

is 93.2 mg/l. If the in stream hardness is assumed to be 93.2 mg/l, the calculated monthly average limit for copper would be 9.0 ug/l rather than 6.4 ug/l and the calculated maximum daily limit would be 13.4 ug/l rather than 9.2 ug/l.

While recalculating the copper limits based on the observed average hardness of 93.2 mg/l will not by itself bring the facility into compliance with the proposed limits, it would make a significant difference in the potential ability to comply with the limit.

Because hardness so strongly effects the theoretical toxicity values used for establishing copper discharge limitations, and because hardness is a parameter the POTW has the potential to control, we believe that POTWs should be allowed to control hardness through chemical addition as part of the treatment process in order to allow a higher discharge copper limits, much as alkalinity is allowed to be added in order to achieve pH limitations. For facilities that add sodium hydroxide for control of pH, an operational change to a magnesium hydroxide, for example, could be used to both control pH and add hardness to the effluent.

Given the large potential additional cost to provide treatment to remove copper through other forms of chemical addition, such as polyaluminum chloride to achieve the low limits included in the draft permit, it would be preferable to develop more flexible alternative permit limits that are expressed in the permit as a function of hardness, using the same equations used by EPA to develop the proposed discharge limitations. While the limitation could be expressed in the permit directly in the form of the equations used by EPA to develop the proposed limitations, for compliance monitoring and for operational evaluation, it may be simpler to express the limits in tabular form based directly upon EPA's equations as presented in the attached table 1.

While this may be a new approach for expressing copper discharge limitations in NPDES permits, the proposed method is based on establishing limitations using the same numeric methods used by EPA in the draft permit, but addresses the actual site specific discharge hardness at the time of permit compliance monitoring.

This approach will, necessarily require collection of additional discharge hardness data to determine compliance, and it is recommended that hardness data be collected at the same frequency and time as effluent copper discharge monitoring to allow direct evaluation of allowable copper discharges at the time of discharge. This approach retains a significant level of protective conservatism in that the limits are still based assuming annual average flow occurring at a time of minimum (7Q10) stream flow.

Furthermore, addition of hardness to the treatment process is expected to provide an incremental improvement in copper removal efficiency. While this alone is not expected to be sufficient to bring the facility into compliance with the limits currently contained in the draft permit, combined with the proposed mechanism for hardness based permit limits as discussed above, addition of hardness may be sufficient to

achieve permit compliance without the addition of further amounts of chemicals such as polyaluminum chloride which are known to cause problems with sludge processing and may also interfere with achieving the very low solids limits imposed on the Belchertown POTW. Use of polyaluminum chloride for copper control may also have an undesirable side effect of increasing aluminum concentrations in the final treated effluent.

Suggested modifications to the permit are as follows:

On page 3 of 10, replace the line beginning Total Recoverable Copper with the following:

"Total Recoverable Copper ug/l.

See attached Table 1 for limits		*1/month*	*24-hour composite[4].*
Hardness	*mg/l Report*	*1/month*	*24-hour composite[4]."*

Insert attached Table 1.

Tighe & Bond and the Town of Belchertown recognize that the inclusion of hardness based limitations for copper expressed directly in the permit may be a new concept. We are unaware of other similar discharge limits. However, we are aware that in other permits, specific limitations for pollutant parameters have been expressed as a function of other discharge parameters, such as if the flow is above a given value, a pollutant discharge limitation may be one value and if the flow is below the given value, the pollutant discharge limitation is another value. Therefore, there is precedent for establishing different permit limits to be complied with under different discharge conditions.

All of the modifications to the permit proposed in this letter are consistent with the specific methods used by EPA to determine the limits included in the draft permit. There are no adjustments or modifications to State Water Quality Standards used for development of the proposed revised limitations.

The expression of the limitations for copper is consistent with EPA's requirement to express limitations for toxic metals in terms of concentration limits.

While the development and inclusion of permit limitations are expressed as a function of hardness may present a minor additional level of effort for both the POTW and EPA to monitor and verify permit compliance, the potential benefits to the Town, including financial benefits, significantly outweigh this potential drawback.

Given the high level of importance in reaching agreement on the proposed modifications prior to finalizing the NPDES permit, on behalf of the Town of Belchertown, Tighe & Bond requests that a meeting be set up to discuss these issues directly with EPA prior to issuing the final permit. Please notify the undersigned of dates you may be available to meet to discuss these issues.

Table 1

Effluent Copper Concentrations as a Function of Hardness

POTW Hardness mg/l (minimum value)	Monthly Average Copper Limit ug/l	Daily Maximum Copper Limit (ug/l)
60	6.4	9.2
80	7.9	11.6
100	9.5	14.3
120	11.1	17.0
140	12.7	19.7
160	14.3	22.3
180	15.8	24.9
200	17.2	27.5
220	18.7	30.1
240	20.2	32.7
260	21.6	35.2
280	23.0	37.8
300	24.4	40.3

Notes:

Based on a receiving stream dilution factor of 1.065

Hardness used for determining limit shall be equal to or greater than stated value.

Hardness analyses must be performed on the same collected for copper monitoring.

EPA Response:

"The copper limit is based on national criteria recommendations promulgated by EPA under Section 304(a) of the Clean Water Act and adopted by Massachusetts as a part of its water quality standards. See EPA National Recommended Water Quality Criteria (2002 and 314 C.M.R. § 4.05(5)(e). Massachusetts WQS require that EPA criteria established pursuant to Section 304(a) be used for toxic constituents, including copper, unless site specific criteria have been established. The Agencies do not believe that it is advisable to defer permitting decisions based on the potential that a revised copper criterion value will be developed in the future. This is particularly true in the case of toxic pollutants, which can adversely impact aquatic life in the short-term. Accordingly, the copper limit will remain in the Final Permit.

The Agencies concur with the analysis of downstream hardness values, and have changed the permit accordingly. Based on the revised hardness value, the new copper limit is 9.4 ug/l monthly average and 14.0 ug/l maximum daily. Monthly average copper values, as documented in Attachment C of the fact sheet, range from 5.0 ug/l – 29.1 ug/l. These values represent a reasonable potential for the Belchertown WRF discharge to cause or contribute to an exceedance of the copper criteria. Under 40 CFR § 122.44(d) of the NPDES regulations, EPA is obligated to include the limit regardless of whether the treatment facility is capable of achieving it. At any time, the Permittee may pursue development of a site specific criterion, and upon approval by DEP and EPA, the permit can be modified to reflect the site specific criterion.

The Agencies do not concur with the proposal to establish a copper limit that varies with hardness. A variable copper limit would be administratively impractical from a compliance monitoring standpoint and is significantly more complex than the example provided by the Permittee. Given the Agencies' resource limitations and the extensive backlog in the NPDES permitting program, this additional level of complexity is not justified. In addition, the Agencies do not believe that it is practical from a facility operations standpoint to ensure compliance with a variable limit. Most POTW facilities achieve copper limits through a combination of source reduction efforts and operational changes at the treatment facility. It is not practical to implement a source reduction program or operational procedures to meet a limit that could regularly change. Furthermore, the Agencies do not consider it to be appropriate to artificially increase the effluent hardness to levels well above the natural in stream hardness in order to discharge higher levels of copper with little understanding of the fate and transport of this copper. For instance, copper discharged by the facility may accumulate in the sediments of Forge Pond downstream of the facility. Altering the natural chemistry of the receiving water is not consistent with the goals of the Clean Water Act to maintain the chemical, physical, and biological integrity of ambient waters.

> Alternatives for achieving copper limits, including potential indirect impacts of alternatives such as the chemical addition of poly aluminum chloride, may be addressed through an administrative compliance order if the Permittee is unable to meet the permit limit. A "monitor only" requirement of aluminum has been added to the permit in order to collect data on the potential for excessive amounts of aluminum in the treated discharge."

Appeal: The Town of Belchertown appeals a) the inclusion of copper limits in the Permit; b) the methods used to establish such limitations; c) the methods used to demonstrate a need to include such permit limitations d) the specific numeric limits included in the permit and e) the denial of the request to establish copper limitations based on the effluent discharge hardness.

The POTW cannot currently meet NPDES discharge limitations for copper. The facility serves mostly domestic households with a few commercial businesses. The water supply is not under the control of the Town, and there are few alternatives for further reduction in influent copper concentrations available to the Town. The Town completed the first Annual Copper Optimization Report as required in January 2005.The Town is currently meeting the interim limits for copper of 20 ug/L included in the Administrative Order. However, there is no mechanism to come out from under the Administrative Order without extremely costly treatment that may add other potentially toxic chemicals or modify the limits for copper, noting in particular that existing copper concentrations do not cause any observable effluent toxicity.

The water quality criteria for copper are expressed as a numeric function of hardness. Hardness is used to calculate the permit values included in the permit. EPA acknowledges that they are empowered to modify NPDES permit limits for copper based on the in stream water hardness and that the permit can be modified to reflect site specific criteria at any time. However, neither EPA nor MDEP has developed appropriate guidance documents, procedures, or protocols for adopting what they might consider to be allowable site specific criteria.

Absent such guidelines for development of site specific water quality criteria, and in light of EPA's and MDEP's historic unwillingness to seriously consider development of site specific limitations, the Town has presented an alternative that, in conjunction with ongoing efforts to minimize influent copper loadings, would meet all of the federal and state water quality standards, would provide a reasonable means to help the Town come into compliance with NPDES copper limitations, would not require use of expensive and potentially toxic chemicals to reach compliance, and would allow EPA, MDEP and the Town to reach closure on the Administrative Order.

The Agencies deny the proposed alternative because they claim that it would be administratively impractical. The proposed method is no more difficult than looking up two numbers on a table. This is certainly less administratively complex than the administrative effort on the part of the Town to design, build, operate and maintain any form of treatment system that could potentially consistently comply with the permit limits.

The Agencies deny the proposed alternative because they claim that given the Agencies' resource limitations and the extensive backlog in the NPDES permitting program, this additional level of complexity is not justified. The ability to clear out the large backlog of Administrative Orders for copper compliance alone that are currently placing a significantly large burden on EPA and DEP resources certainly outweighs any small additional burden that the slightly more complicated permit limits would have. Additionally, the small burdens placed on the Agencies must be weighed against the significantly greater burdens that will be imposed on a small public facility that has just recently expended in the order 8 million dollars to improve the treatment plant they inherited from the State.

The Agencies cite that most POTW facilities achieve compliance with copper concentrations through a combination of source reduction efforts and operational changes at the treatment facility. The Town is proposing to do exactly this. The Town has successfully implemented a copper optimization program for the POTW, including corrosion control programs, public outreach, system evaluations and a copper reduction assessment to be updated on an annual basis. Contrary to the implications included in the Agencies response, the existing source reduction program would not be modified to adjust to changing limits under the proposed permit limitations. One of the goals of the source reduction program would continue to be minimizing treatment costs, including costs for chemical addition, weather that is through addition of hardness or through addition of chemicals such as polyaluminum chloride.

The Agencies deny the proposed alternative because it would artificially raise the effluent hardness. It is not uncommon for NPDES permits to include requirements that alter the chemical or physical characteristics of a wastewater. Control to meet pH limits often requires artificial chemical addition. Disinfection with Chlorine artificially adds chlorides and increases specific conductance. Any other feasible treatment alternative for copper will add some form of additional chemical to the wastewater, and as the Agencies acknowledge, one of the most promising treatment alternatives (polyaluminum chloride) may have unintended consequences as well, with the potential for creating toxicity due to aluminum.

The Agencies raise concerns not previously presented regarding the potential for copper to accumulate in pond sediments. Because this concern was not raised in the draft permit and given the limited time to appeal the final permit, the Town has not had an opportunity to fully address or rebut this potential concern. We are unaware of this concern having been raised for development of enforceable discharge standards for any other POTW.

However, we do offer the following comments. First, effluent copper concentrations have been decreasing first through construction of the new wastewater treatment facilities and second through the ongoing source control efforts. Second, even with the historically higher copper concentrations there has been no indication that these have impaired downstream wetland and water resources or ecosystems. Third, the total flow and thus the dilution of the residual wastewater treatment flow at Forge Pond is substantially greater than in Lampson Brook at the outfall, which is almost negligible. By the time the effluent reaches Forge Pond,

the concentration of copper contributed by the POTW is significantly lower than at the outfall, and the concern for accumulation of copper in sediments should also be lessened. Finally, while there are many facilities with higher discharge limitations, we are not aware of any instances where higher permitted loadings have resulted in demonstrated harm to the environment due to accumulation of copper in soils.

Conclusion: Therefore, on behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals find that the Agencies have improperly denied the proposed alternative limits and direct U.S. EPA Region I and the Massachusetts Department of Environmental Protection to modify the Permit as requested.

Appeal Item 5 - Part I A.1 – Page 3 of 9 - – Whole Effluent Toxicity Limits (LC50 and C-NOEC)

Tighe & Bond Comment of Draft Permit:

> "The draft permit contains the same requirements for toxicity testing as contained in the current permit issued in 1999 and also as proposed in the September 2000 draft permit. These include requirements for both acute and chronic toxicity testing four times per year. A review of the last two years of toxicity test results indicates that treated effluent is generally not toxic as measured by both acute and chronic toxicity tests. Based on the review of the toxicity test data, on behalf of the Town of Belchertown, we request that the permit limitations and the monitoring requirements for acute [note typographical error should read chronic] toxicity be eliminated from the permit.
>
> **Suggested modifications to the permit are as follows:**
>
> *On page 3 of 10, delete the line beginning C-NOEC.*
>
> *On page 4 of 10, delete footnote 7.*
>
> *On page 4 of 10, edit footnote 8 to read as follows:*
>
> *"8. The permittee shall conduct modified acute toxicity tests four times per year using the specie Ceriodaphnia Dubai. The permittee shall conduct modified acute toxicity tests during the second week of the month (any day of the week but no later than Friday) of March, June, September, and December. Results are to be submitted by the 30th day of the month after the sample i.e. April, July, October and January. See Toxicity Test Procedure and Protocol on Attachment A.""*

EPA Response

> "A review of whole effluent toxicity test results from 2003 and 2004 indicates that while permit limits were met, the discharge is not free from chronic toxic effects. On two occasions the chronic permit limit was just met and on several other occasions when the chronic limit was met, there was some indication of chronic toxicity at dilutions less than the permit limit but a clear endpoint was obscured by significant variability amongst replicates. Given the lack of any significant dilution in the receiving water and the potential for POTWs to cause in stream toxicity, the requirements for toxicity testing are retained in the Final Permit in accordance with the EPA Policy for Development of Water Quality-Based Permit Limitations for Toxic Pollutants, 40 FR 9016 (March 9, 1984), and the MADEP Toxics Control Policy. These policies require acute toxicity limits of LC50 = 100% and chronic toxicity limits of NOEC = in stream waste concentration (1/dilution factor)."

Appeal - the Agencies incorrectly state that the referenced policies require acute and chronic toxicity limits. The policies provide recommendations as to how limits should be developed if they are to be included as permit conditions. Numerous POTW do not have chronic toxicity limitations included in their discharge permits.

The Agencies' comment that the on two occasions the chronic toxicity limit was "just" met. The current permit requires a chronic no observable effect concentration (C-NOEC) of 94 percent effluent. This includes no observed mortality and no decrease in the fecundity of the test organisms at this concentration. A sample having absolutely NO toxic effects would have only a slightly higher C-NOEC (100 percent effluent). To consistently pass a C-NOEC limit of 94 percent over a two year period adequately demonstrates that the effluent is consistently free from toxic effects. The variability observed in the test results was not significant enough to invalidate the test results. Variability in biological testing data can reasonably be expected to occur. This variability should not be used as a basis for denying the requested permit modification. The acute toxicity testing that is required as a separate permit requirement will continue to provide a sound measure for identifying any changes in effluent toxicity characteristics.

Conclusion: On behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals direct U.S. EPA Region I and the Massachusetts Department of Environmental Protection to modify the Final NPDES Permit to eliminate the chronic toxicity testing requirements from the permit.

Request for Stay

In requesting the appeal of the permit conditions as well as a formal hearing from the Office of Administrative Appeals on the above referenced NPDES Permit, we also, herby request a stay of the permit requirements for mass based limits for BOD, TSS and phosphorus as well as copper effluent concentrations and chronic toxicity monitoring requirements. If additional information, not already available, becomes available regarding this subject before such time as a hearing may be granted, we hereby request to be allowed to submit such additional information for purposes of conducting the hearing.

Statement to Provide Testimony

As required by 40 CFR 124.74(c)(4), the requester agrees to make available to appear and testify:

(i) the requester

(ii) all persons represented by the requester

(iii) all officers, directors, employees, consultants and agents of the requester and the persons represented by the requester.

On behalf of the Town of Belchertown Department of Public Works, we respectfully request that you grant the appeal and hearing on the above-referenced NPDES Permit. If you have any questions regarding this appeal or require additional information, please contact either Mr. Steven Williams, director of Public Works, Town of Belchertown at (413) 323-0415 or the undersigned at (413) 572-3236.

Very truly yours,

TIGHE & BOND, INC.

Omer H. Dumais, Jr., P.E.

Vice President

Copy by Certified Mail:

Gary L. Brougham, Town Administrator
Town of Belchertown
Lawrence Memorial Hall
2 Jabish Street, P.O. Box 670
Belchertown, MA 01007

Steven J. Williams, Director
Town of Belchertown Department of Public Works
290 Jackson Street, P.O. Box 670
Belchertown, MA 01007-0670

Rollin J. DeWitt , Operations Supervisor
Department of Public Works, Wastewater Treatment Plant
175 George Hannum Road, P.O. Box 670
Belchertown, MA 01007

Robert W. Golledge, Jr., Commissioner
Massachusetts Department of Environmental Protection
1 Winter Street – 2nd Floor
Boston, MA 02108

Arleen O'Donnell, Deputy Commissioner
Massachusetts Department of Environmental Protection
Bureau of Resource Protection
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Paul Hogan,
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Central Regional Office – Bureau of Resource Protection
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Worcester, MA 01608

Paul Nietupski
Massachusetts Department of Environmental Protection

Western Regional Office
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Springfield, MA 01103

Brian Pit, Chief MA NPDES Permits Unit
U.S. EPA Region I
1 Congress Street Suite 1100
Boston, MA 02114-2023

Victor Alvarez
Massachusetts Office of Ecosystem Protection - CPE
U.S. EPA Region I
1 Congress Street Suite 1100
Boston, MA 02114-2023

Appendix A

DEPARTMENT OF PUBLIC WORKS

290 Jackson Street • Post Office Box 306
Belchertown, Massachusetts 01007-0306
Telephone: (413) 323-0415 • Facsimile: (413) 323-0470

Steven J. Williams
Director

Cheryl A. Bishop
Office Manager

Environmental Appeals Board
MC 1103B, U.S. EPA. Ariel Rios Building
1200 Pennsylvania Avenue. N.W.
Washington, D.C. 20460

Hearing Clerk
Office of Administrative Appeals
Commonwealth of Massachusetts
Department of Environmental Protection
1 Winter Street. 3rd Floor
Boston. MA 02108

Re: Belchertown, MA
NPDES No. MA0102148
Permit Appeal
Request for Adjudicatory
Hearing

Dear Environmental Appeals Board and Office of Administrative Appeals:

This letter is to authorize the firm of Tighe & Bond, Inc., Consulting Engineers to act on behalf of the Town of Belchertown Department to act as our representative in filing an appeal of the Town's NPDES discharge Permit. If you need additional information regarding this authorization, please feel free to contact me at (413) 323-0415.

Sincerely yours

Steven Williams, Director
Department of Public Works
Town of Belchertown

Appendix B

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 10, 2005

Steven J. Williams, Director
Department of Public Works
290 Jackson Street, P.O. Box 670
Belchertown, Massachusetts 01007- 0670

Re: NPDES No. MA0102148 - Final Issuance

Dear Mr. Williams:

Enclosed is your final National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to the Clean Water Act (the "Federal Act"), as amended, and the Massachusetts Clean Waters Act (the "State Act"), 21 M.G.L. §§43-45, as amended. The Environmental Permit Regulations, at 40 C.F.R. §124.15, 48 Fed. Reg. 14271 (April 1, 1983), require this permit to become effective on the date specified in the permit.

Also enclosed is a copy of the Massachusetts State Water Quality Certification for your final permit, the Agency's response to the comments received on the draft permit, if any, and information relative to appeals and stays of NPDES permits. Should you desire to contest any provision of the permit, your petition should be submitted to the Environmental Appeals Board as outlined in the enclosure and a similar request should also be filed with the Director of the Office of Watershed Management in accordance with the provisions of the Massachusetts Administrative Procedures Act, the Division's Rules for the Conduct of Adjudicatory Proceedings and the Timely Action Schedule and Fee Provisions (see enclosure).

We appreciate your cooperation throughout the development of this permit. Should you have any questions concerning the permit, feel free to contact David Pincumbe at 617/918-1695.

Sincerely,

Roger A. Janson

Roger Janson, Chief
Municipal Permits Branch

Enclosures

EPA New England NPDES Permitting Staff

Listed below are the names and telephone numbers for EPA New England NPDES permitting staff. If you have questions on the enclosed permit, please call the permit writer indicated below. If you have a question on a specific permitting issue, feel free to contact the appropriate permit specialist.

Toll Free Number: (888) 372-7341
ask for extension number listed below

Questions on your permit? Please contact the permit writer.

Senior Managers
Roger Janson, Associate Director, Surface Water Branch (617) 918-1621

Brian Pitt, NPDES Permit Unit Team Leader (617) 918-1875

NPDES Permit Writers

Victor Alvarez	(617) 918-1572
Michele Barden	(617) 918-1539
Jon Britt	(617) 918-1563
Hosur Chikkalingaiah	(617) 918-1574
Doug Corb	(617) 918-1565
Betsy Davis	(617) 918-1576
Austine Frawley	(617) 918-1065
Fred Gay	617) 918-1297
John Paul King	(617) 918-1295
Janet LaBonte	(617) 918-1667
Mike O'Brien	(617) 918-1649
George Papadopoulos	(617) 918-1579
Soupy Sarker	(617) 918-1693
Bill Wandle	(617) 918-1605

Power Plant Permits

Damien Houlihan	(617) 918-1054
John Nagle, Biologist	(617) 918-1054
George Papadopoulos	(617) 918-1579
Sharon Zaya	(617) 918-1995

Specialists

Alternative Dilution Water
Joy Hilton (617) 918-1877

Analytical - Minimum Levels Reporting
Doug Corb (617) 918-1565

DMR Reporting
Diane Boisclair (617) 918-1762

General Permits & Exclusions
John Hackler (617) 918-1551

Permit Applications
Olga Vergara (MA) (617) 918-1519
Shelley Puleo (NH) (617) 918-1545

Permit Modifications
Contact The Individual Permit Writer

Public Notice of Draft Permits
Olga Vergara (MA) (617) 918-1519
Shelley Puleo (NH) (617) 918-1545

Pretreatment Issues
Jay Pimpare (617) 918-1531

Sludge Guidance
Thelma Murphy (617) 918-1615

Stormwater General Permits
Thelma Murphy (617) 918-1615
David Gray (617) 918-1577

Total Maximum Daily Load (TMDL)
Alison Simcox (617) 918-1684

Toxicity Test Protocol & Procedures
Joy Hilton (617) 918-1877

Water Quality Issues
Dave Pincumbe (617) 918-1695

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

MITT ROMNEY
Governor

KERRY HEALEY
Lieutenant Governor

ELLEN ROY HERZFELDER
Secretary

ROBERT W GOLLEDGE, Jr.
Commissioner

May 10, 2005

Brian Pitt, Chief
Massachusetts NPDES Permit Program Unit
USEPA – New England
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Re: Water Quality Certification
NPDES Permit MA0102148
Town of Belchertown Water Reclamation Facility

Dear Mr. Pitt:

Your office has requested the Massachusetts Department of Environmental Protection to issue a water quality certification pursuant to Section 401(a) of the Federal Clean Water Act ("the Act") and 40 CFR 124.53 for the above referenced NPDES permit. The Department has reviewed the proposed draft permit and has determined that the conditions of the permit will achieve compliance with sections 208(e), 301, 302, 303, 306, and 307 of the Federal Act, and with the provisions of the Massachusetts Clean Waters Act, M.G.L. c. 21, ss. 26-53, and regulations promulgated thereunder. The permit conditions are sufficient to comply with the antidegradation provisions of the Massachusetts Surface Water Quality Standards [314 CMR 4.04] and the policy [October 6, 1993] implementing those provisions.

The Massachusetts Department of Environmental Protection is requiring the following conditions in the permit as state certification requirements:

1. 12 month rolling average for flow [Part I.A.1- footnote 2; page 3]: the limit is established pursuant to the authority in 314 CMR 12.03(4) [Operation and Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers- "approval of wastewater treatment facility by Department"]

2. Mass monthly limits for BOD-5 and Total Suspended Solids [Part I.A.1; page 2]; the limits are established pursuant to 314 CMR 4.04(1) [Surface Water Quality Standards- "Antidegradation Provisions"]

The Department hereby certifies the referenced permit.

Sincerely,

Glenn Haas, Director
Division of Watershed Management
Bureau of Resource Protection

cc: Paul Hogan
file

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §26-53),

Town of Belchertown Department of Public Works
290 Jackson Street, P.O. Box 670
Belchertown, Massachusetts 01007 - 0670

is authorized to discharge from the facility located at

Belchertown Water Reclamation Facility
175 George Hannum Road
Belchertown, Massachusetts 01007

to receiving waters: **Lampson Brook to Connecticut River**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective sixty days after the date of signature.

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on July 11, 1997.

This permit consists of 10 pages in Part I including effluent limitations, monitoring requirements; Attachment A, and 35 pages in Part II including General Conditions and Definitions.

Signed this 9 day of June, 2006

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Division of Watershed Management
Department Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirement	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow	MGD	1.0[1]	---	Report	Continuous[2]	Recorder
BOD_5 (June 1 - October 31)	mg/l	5.0	7.5	Report	1/Week[3]	24 Hr. Composite[4]
	lbs/day	42	63	Report		
BOD_5 (May)	mg/l	15	15	Report	1/Week[3]	24 Hr. Composite[4]
	lbs/day	125	125	Report		
BOD_5 (November 1- April 30)	mg/l	30	30	Report	1/Week[3]	24 Hr. Composite[4]
	lbs/day	250	250	Report		
TSS (June 1 - October 31)	mg/l	15	15	Report	1/Week[3]	24 Hr. Composite[4]
	lbs/day	125	125	Report		
TSS (May)	mg/l	20	20	Report	1/Week[3]	24 Hr. Composite[4]
	lbs/day	167	167	Report		
TSS (November 1- April 30)	mg/l	30	30	Report	1/Week[3]	24 Hr. Composite[4]
	lbs/day	250	250	Report		
pH	s.u.	(See Condition I.A.1.b. on Page 5 of 10)			Daily	Grab

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirement	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Total Ammonia, as N						
(May)	mg/l	7	7	10	1/month	24 Hr. Composite[4]
(June 1 to October 31)	mg/l	1	1	1.5	1/month	24 Hr. Composite[4]
(November 1 to April 30)	mg/l	10	10	15	1/month	24 Hr. Composite[4]
Fecal Coliform[5]						
(April 1 - October 31)	cfu/100 ml	200	----	400	1/week	Grab
Nitrite+Nitrate Nitrogen	mg/l	Report	----	----	1/month	24 Hr. Composite[4]
Total Kjeldahl Nitrogen	mg/l	Report	----	----	1/month	24 Hr. Composite[4]
Dissolved Oxygen	mg/l	6	----	----	1/week	Grab
LC_{50}[6]	%	----	----	100	4/year [8]	See Protocol
C-NOEC [7]	%	----	----	94	4/year [8]	See Protocol
Copper	ug/l	9.4	----	14.0	1/month	24 Hr. Composite[4]
Aluminum	ug/l	Report	----	Report	1/month	24 Hr. Composite[4]
Phosphorus	mg/l	0.25	----	----	1/week	24 Hr. Composite[4]
	lbs/day	2.085	----	----		

Footnotes:

1. This limit is **annual average.** The permittee shall report the annual average flow each month. The annual average, shall be calculated using the monthly average flow from the reporting month and the monthly average flows from the previous 11 months.

2. For flow, report maximum and minimum daily rates and total flow for each operating date.

3. Sampling required for influent and effluent.

4. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during one working day (e.g. 6:00 AM - 5:59 AM, Monday - Tuesday).

5. This is a State certification requirement. The monthly average limit is expressed as a geometric mean and shall be measured and reported in colony forming units (cfu) per 100 milliliters.

6. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

7. C-NOEC is the highest effluent concentration at which No Observed Chronic Effect (e.g. growth, reproduction, mortality) will occur at continuous exposure to test organisms (in a life-cycle or partial life- cycle test). The "94% or greater" is defined as a sample which is composed of 94% (or greater) effluent, the remainder being dilution water.

8. The permittee shall conduct chronic (and modified acute) toxicity tests four times per year using the species Ceriodaphnia dubia. The permittee shall conduct chronic (and modified acute) toxicity tests during the second week of the month of February, May, August, and November. Results are to be submitted by the 30th day of the month after the sample i.e. March, June, September and December, See Toxicity Test Procedure and Protocol on Attachment A.

9. The minimum level (ML) for copper is defined as 5 ug/l. This value is the minimum level for copper using the Furnace Atomic Absorption analytical method (EPA Method 220.2). For effluent limitations of less than 5 ug/l, compliance/non-compliance will be determined based on the ML from this method, or another approved method that has an equivalent or lower ML, one of which must be used. Sample results of 5 ug/l or less shall be reported as zero on the Discharge Monitoring Report.

Part I.A.1. (Continued)

a. The discharge shall not cause a violation of the water quality standards of the receiving waters.

b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes.

c. The discharge shall not cause objectionable discoloration of the receiving waters.

d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.

f. When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the designed flow, the permittee shall submit to the permitting authorities 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.

2. All POTWs must provide adequate notice to the Director of the following:

a. Any new introduction of pollutants into that POTW from an indirect discharger in a primary industry category discharging process water; and

b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For purposes of this paragraph, adequate notice shall include information on:

(1) the quantity and quality of effluent introduced into the POTW; and

(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

3. Prohibitions Concerning Interference and Pass Through:

a. Pollutants introduced into POTW's by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

b. If, within 30 days after notice of an interference or pass through violation has been sent by EPA to the POTW, and to persons or groups who have requested such notice, the POTW fails to commence appropriate enforcement action to correct the violation, EPA may take appropriate enforcement action.

4. Toxics Control

   a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

   b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

5. Numerical Effluent Limitations for Toxicants

   EPA or DEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I A.1. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSO) if any, are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

   The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Infiltration/Inflow

   The permittee shall develop and implement a plan to control infiltration and inflow (I/I) to the separate sewer system. The plan shall be submitted to EPA and MA DEP within six months of the effective date of this permit (see page 1 of this permit for the effective date) and shall describe the permittee's program for preventing infiltration/inflow related

effluent limit violations, and all unauthorized discharges of wastewater, including overflows and by-passes due to excessive infiltration/inflow.

The plan shall include:

- An ongoing program to identify and remove sources of infiltration and inflow. The program shall include the necessary funding level and the source(s) of funding.
- An inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts. Priority should be given to removal of public and private inflow sources that are upstream from, and potentially contribute to, known areas of sewer system backups and/or overflows
- Identification and prioritization of areas that will provide increased aquifer recharge as the result of reduction/elimination of infiltration and inflow to the system.
- An educational public outreach program for all aspects of I/I control, particularly private inflow.

Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year shall be submitted to EPA and the MA DEP annually, by the anniversary date of the effective date of this permit. The summary report shall, at a minimum, include:

- A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year.
- Expenditures for any infiltration/inflow related maintenance activities and corrective actions taken during the previous year.
- A map with areas identified for I/I-related investigation/action in the coming year.
- A calculation of the annual average I/I, the maximum month I/I for the reporting year.
- A report of any infiltration/inflow related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Unauthorized Discharges section of this permit.

3. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall continue to provide an alternative power source with which to sufficiently operate its treatment works (as defined at 40 CFR §122.2).

D. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state or federal (40 CFR part 503) requirements.

3. The requirements and technical standards of 40 CFR part 503 apply to facilities which now perform or will in the future perform one or more of the following use or disposal practices.

   a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge only landfill

   c. Sewage sludge incineration in a sludge only incinerator at Belchertown's WRF.

4. The 40 CFR part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g. lagoons- reed beds), or are otherwise excluded under 40 CFR 503.6.

5. The permittee shall use and comply with the attached compliance guidance document to determine appropriate conditions. Appropriate conditions contain the following elements.
   - General requirements
   - Pollutant limitations
   - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
   - Management practices
   - Record keeping
   - Monitoring
   - Reporting

   Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the frequency indicated below. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year:

less than 290	1/ year
290 to less than 1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8

8. The permittee shall submit an annual report containing the information specified in the guidance by February 19. Reports shall be submitted to the address contained in the reporting section of the permit. Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge disposal. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such case, the permittee is required only to submit an annual report by February 19 containing the following information:

   - Name and address of contractor responsible for sludge disposal
   - Quantity of sludge in dry metric tons removed from the facility by the sludge contractor

E. MONITORING AND REPORTING

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the effective date of the permit.

Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

A copy of the Discharge Monitoring Reports and all other reports required herein, except for **toxicity test reports**, shall be submitted to MADEP at the following address:

Massachusetts Department of Environmental Protection
Western Regional Office - Bureau of Resource Protection
436 Dwight Street
Springfield, MA 01103

Copies of all Discharge Monitoring Reports and **toxicity test reports** required by this permit shall be submitted to MADEP at the following address:

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd floor
Worcester, Massachusetts 01608

F. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) under federal and state law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chap. 21, §43.

Each Agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as an NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

RESPONSE TO PUBLIC COMMENTS ON DRAFT NPDES PERMIT NO. MA 0102148 FOR THE BELCHERTOWN WATER RECLAMATION FACILITY(WRF) LOCATED AT 175 GEORGE HANNUM ROAD, MASSACHUSETTS, 01007

On October 1, 2003, the U.S. Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("MADEP") (together, the "Agencies") released for Public Notice and comment a draft National Pollutant Discharge Elimination System ("NPDES") permit to the Town of Belchertown Department of Public Works ("Belchertown" or "Permittee") authorizing discharges from the Belchertown Water Reclamation Facility ("WRF") to the Lampson Brook and Connecticut River. The public comment period for this draft permit expired October 30, 2003. This is a response to comments received during the comment period from Tighe & Bond, a consulting firm working on behalf of Belchertown, and from the Massachusetts Riverways Program ("Riverways").

<u>Belchertown Comments</u>

Comment #1: Part I.A.1 - Page 2 of 10 - Mass Loading Limits (BOD_5 and TSS)

Mass loading limits for monthly and weekly biochemical oxygen demand (BOD_5) and total suspended solids (TSS) were not included in earlier permits. These limits were derived by multiplying the monthly and weekly concentration limits by the annual average flow rate (1.0 MGD) and a conversion factor of 8.34 to arrive at a mass loading value.

We take exception to this approach since it uses an annual average flow to compute weekly mass limits. Since average weekly flow can be significantly greater than average annual flows, any mass limit should be based on flows that correspond with the loading frequency in question, i.e., maximum monthly flow and maximum weekly flow. Additionally, the monitoring requirements in the new permit require sampling once per week. This effectively results in the weekly average condition being the equivalent of a daily maximum limit. The approved basis of design for this facility included a maximum daily peaking factor of 2.5 times annual average flow. [Proposed maximum weekly flow conditions, with mass based BOD_5 limits of 63 lbs/day would result in a required effluent concentration of 3.0 mg/L. An effluent BOD_5 limit of 3.0 mg/L cannot be reliably achieved and was not included in the approved facilities plan and final design.]

While the Town continues to disagree with the basis for the proposed mass based limits for BOD and TSS, the proposed limits would be acceptable to the Town if clarifications are made to the permit to indicate that the calculations of discharge BOD and TSS mass for compliance monitoring purposes are to be made using the same methods used by EPA to derive the permit limits (i.e. permit compliance calculations should be made using the annual average flow rate as required to be reported in monthly monitoring reports and corresponding weekly or monthly

average concentrations). This approach will allow direct comparison of the discharge monitoring data with the permit limitations using the same basis for establishing calculated mass values. This method would be more consistent with the basis for the proposed limits.

Response #1:

MADEP adopted a policy establishing flow limits in POTW permits as an annual average in order to account for seasonal flow variations, particularly those associated with high flow and high groundwater which commonly occur in the spring time. See June 12, 2000, MADEP-DWM NPDES Permit Program Policies Related to Flow and Nutrients in NPDES Permits ("Flow Policy"). The calculation of the Belchertown flow is based on annual average flow rather than the monthly average flow calculation employed in the prior permit. Consistent with the Flow Policy, the Agencies have imposed weekly and monthly mass limits in order to maintain approximate overall pollutant loadings of BOD and TSS in the receiving water.

Mass limits are reasonable in light of the continuing severe impairment of the receiving waters–Lampson Brook, Weston Brook and Forge Pond–caused by Belchertown WRF effluent discharges and other inputs. Each of the receiving waters is each listed on the Massachusetts Year 2002 List of Impaired Waters under Category 5 as water quality limited segments requiring the calculation of a total maximum daily load of pollutants in order to implement water quality standards. Lampson Brook and Weston Brook are impaired by unionized ammonia, chlorine, excessive nutrients and organic enrichment/low DO, while Forge Pond is impaired by nutrients and noxious aquatic plants. As the Agencies explained in the Fact Sheet, the use of the annual average flow to calculate weekly and monthly mass loading limits will tend to offset any increase in loading that might otherwise occur as a result of the new definition of the flow limit. On the other hand, the use of average weekly or monthly flows to calculate mass limits would compound the potential for greater pollutant loadings, because (as Permittee acknowledges) the magnitude of such flows in any given month or week can be significantly higher than average annual flow value. The Permittee's compromise proposal of using of the annual average flow as reported monthly to calculate limits would likewise result in a potential for a net increase in pollutant loadings. The Permittee has failed to demonstrate that its proposed calculation would not cause or contribute to further impairment of the receiving waters. Nor has it demonstrated that its revision would ensure compliance with the anti-degradation provisions of the Massachusetts Surface Water Quality Standards (314 CMR § 4.04) ("Massachusetts WQS") to the extent that it may result in a lowering of water quality. Accordingly, the Agencies have retained the use of the annual average flow to calculate mass limits.

An effluent BOD limit of 3.0 mg/l would only be necessary if the facility discharged at the maximum daily design flow for an entire week in the June - October time period which is an unlikely scenario.

The Agencies consider the frequency of monitoring for BOD_5 and TSS to be appropriate given

the ongoing impairment of the receiving water, specifically the cultural eutrophication of Weston Brook and Forge Pond and the attendant water quality impacts on dissolved oxygen, solids and color and turbidity. The sampling frequency in the Final Permit allows the Agencies to determine whether the permittee's treatment facility is meeting the permit requirements and to determine whether expected water quality improvements are being achieved and maintained. The Agencies disagree with the Permittee's contention that the weekly sampling condition in effect imposes daily maximum mass limits on BOD_5 and TSS. The monitoring frequency of once per week is a minimum monitoring frequency. The Permittee may monitor more frequently provided the monitoring frequency is consistent from week to week. The Permittee may continue to utilize the daily peaking factor so long as the weekly averages for the pollutants do not exceed the permit limits. In any event, the Permittee should note that the Agencies are not bound by the approved facility plan and design of the WRF in setting permit conditions and limitations. Rather, the Agencies are obligated to include in the Final Permit reasonable limitations and conditions with respect to pollutants that are necessary to ensure compliance with Massachusetts WQS. See 33 USC § 301(b)(1)(C); 40 CFR § 122.44(d)(1)(i). Permits must include limits as stringent as necessary to meet Massachusetts WQS irrespective of cost considerations or technological feasibility. In certain instances, permits limits or conditions may necessitate operational or technological improvements beyond an approved facility plan and design.

Comment #2: Part I.A.1 - Page 3 of 10 - Phosphorus Limit, Mass Based Limit Calculation

As with BOD and TSS, the monthly average mass based limit for phosphorus has been calculated by EPA using the annual average flow permit limit. Citing the same concerns as noted above, permit compliance calculations should be made on the same basis as used for establishing the permit limit.

Response #2.

Mass based limits for phosphorus have been added to the permit in order to maintain loadings to the receiving water and to ensure compliance with Massachusetts WQS. Please see Response #1 above. Given that a major cause of impairment of the receiving water is phosphorus-driven cultural eutrophication, the Agencies believe that it is appropriate to minimize the risk of increased phosphorus loading by opting for a limit based on the annual average flow rather than the less conservative alternatives set forth by the Permittee.

Comment #3: Part I.A.1 - Page 3 of 10 - Whole Effluent Toxicity Requirements

The draft permit contains the same requirements for toxicity testing as contained in the current permit issued in 1999 and also as proposed in the September 2000 draft permit. These include requirements for both acute and chronic toxicity testing four times per year. A review of the last two years of toxicity test results indicates that treated effluent is generally not toxic as measured by both acute and chronic toxicity tests. Based on the review of the toxicity test data, on behalf

of the Town of Belchertown, we request that the permit limitations and the monitoring requirements for acute toxicity be eliminated from the permit.

Response #3:

A review of whole effluent toxicity test results from 2003 and 2004 indicates that while permit limits were met, the discharge is not free from chronic toxic effects. On two occasions the chronic permit limit was just met and on several other occasions when the chronic limit was met, there was some indication of chronic toxicity at dilutions less than the permit limit but a clear endpoint was obscured by significant variability amongst replicates. Given the lack of any significant dilution in the receiving water and the potential for POTWs to cause instream toxicity, the requirements for toxicity testing are retained in the Final Permit in accordance with the EPA Policy for Development of Water Quality-Based Permit Limitations for Toxic Pollutants, 40 FR 9016 (March 9, 1984), and the MADEP Toxics Control Policy. These policies require acute toxicity limits of LC50 = 100% and chronic toxicity limits of NOEC = instream waste concentration (1/dilution factor).

Comment #4: Part I.A.1 - Page 3 of 10 - Copper Limit

The copper limit proposed is extremely stringent and may be technically unachievable. In addition, there are numerous technical reasons why the need for copper limits remains in question including, the reduction of copper toxicity due to copper availability associated with complex formation with other materials, the limitations of commercial laboratory testing and the methods used for development of the Gold Book standards. For a number of years EPA has been working with Water Environment Federation (WEF) to develop a biotic ligand model for copper toxicity to account for the influences of wastewater characteristics with the reduction in copper toxicity. However, to date, EPA has not used the results of this research to address the problems numerous communities are facing in regard to extremely stringent copper limitations. For this reason, the Town of Belchertown requested that copper limits not be included in the previous draft permit until these issues were resolved.

While it appears unlikely that EPA will soon modify the criteria values for copper based on the biotic ligand model, the calculation of the copper limit as currently presented by EPA in the Fact Sheet is a function of hardness. EPA has used a hardness value of 60 mg/l for calculating copper limits. The Fact Sheet does not provide a statement of basis for this value and we believe that it is inappropriately low. During 2002 and 2003 the average outfall hardness was 94.5 mg/l and the average instream hardness above the outfall was 72.9 mg/l. Based on the 7Q10 dilution ratio of 1.065, the calculated hardness downstream of the of the outfall is 93.2 mg/l.

Because hardness so strongly effects the theoretical toxicity values used for establishing copper limitations, and because hardness is a parameter the POTW can control, we believe that POTWs should be allowed to control hardness through chemical addition in order to allow a higher

discharge limit. Given the large potential additional cost to provide treatment to remove copper through other forms of chemical addition, such as poly aluminum chloride to achieve the low limits included in the draft permit, it would be preferable to develop more flexible alternative permit limits that are expressed in the permit as a function of hardness, using the same equations used by EPA to develop the proposed limits. While the limitation could be expressed in the permit directly in the form of the equations used by EPA to develop the proposed limitations, for compliance monitoring and for operational evaluation, it may be simpler to express the limits in tabular form based directly upon EPA's equation as presented in the attached table 1.

The addition of hardness to the treatment process is expected to provide an incremental improvement in copper removal efficiency. While this alone is not expected to be sufficient to bring the facility into compliance with the limits currently contained in the draft permit, combined with the proposed mechanism for hardness based permit limits, addition of hardness may be sufficient to achieve permit compliance without the addition of further amounts of chemicals such as poly aluminum chloride which are known to cause problems with sludge processing and may also interfere with achieving the very low solids limits imposed on the Belchertown POTW. Use of poly aluminum chloride for copper control may also have an undesirable side effect of increasing aluminum concentrations on the final treated effluent.

The permittee recognizes that the inclusion of hardness based limitations for copper expressed directly in the permit may be a new concept. We are unaware of other similar discharge limits. However, we are aware that in other permits, specific limitations for pollutant parameters have been expressed as a function of other discharge parameters, such as if the flow is above a given value, a pollutant discharge limitation may be one value and if the flow is below the given value, the pollutant limitation is another value. Therefore, there is precedent for establishing permit limits to be complied with under different discharge conditions. All of the modifications to the permit proposed in this letter are consistent with the specific methods used by EPA to determine the limits included in the draft permit. There are no adjustments or modifications to State Water Quality Standards used for development of the proposed revised limitations.

The expression of the limitations for copper is consistent with EPA's requirement to express limitations for toxic metals in terms of concentration limits.

While the development and inclusion of permit limitations are expressed as a function of hardness may present minor additional level of effort for both the POTW and EPA to monitor and verify permit compliance, the potential benefits to the Town, including financial benefits, significantly outweigh this potential drawback."

Response #4:

The copper limit is based on national criteria recommendations promulgated by EPA under Section 304(a) of the Clean Water Act and adopted by Massachusetts as a part of its water

quality standards. See EPA National Recommended Water Quality Criteria (2002) and 314 C.M.R. § 4.05(5)(e). Massachusetts WQS require that EPA criteria established pursuant to Section 304(a) be used for toxic constituents, including copper, unless site specific criteria have been established. The Agencies do not believe that it is advisable to defer permitting decisions based on the potential that a revised copper criterion value will be developed in the future. This is particularly true in the case of toxic pollutants, which can adversely impact aquatic life in the short-term. Accordingly, the copper limit will remain in the Final Permit.

The Agencies concur with the analysis of downstream hardness values, and have changed the permit accordingly. Based on the revised hardness value, the new copper limit is 9.4 ug/l monthly average and 14.0 ug/l maximum daily. Monthly average copper values, as documented in Attachment C of the fact sheet, range from 5.0 ug/l - 29.1 ug/l. These values represent a reasonable potential for the Belchertown WRF discharge to cause or contribute to an exceedance of the copper criteria. Under 40 CFR § 122.44(d) of the NPDES regulations, EPA is obligated to include the limit regardless of whether the treatment facility is capable of achieving it. At any time, the Permittee may pursue development of a site specific criterion, and upon approval by DEP and EPA, the permit can be modified to reflect the site specific criterion.

The Agencies do not concur with the proposal to establish a copper limit that varies with hardness. A variable copper limit would be administratively impractical from a compliance monitoring standpoint and is significantly more complex than the example provided by the Permittee. Given the Agencies' resource limitations and the extensive backlog in the NPDES permitting program, this additional level of complexity is not justified. In addition, the Agencies do not believe that it is practical from a facility operations standpoint to ensure compliance with a variable limit. Most POTW facilities achieve copper limits through a combination of source reduction efforts and operational changes at the treatment facility. It is not practical to implement a source reduction program or operational procedures to meet a limit that could regularly change. Furthermore, the Agencies do not consider it to be appropriate to artificially increase the effluent hardness to levels well above the natural instream hardness in order to discharge higher levels of copper with little understanding of the fate and transport of this copper. For instance, copper discharged by the facility may accumulate in the sediments of Forge Pond downstream of the facility. Altering the natural chemistry of the receiving water is not consistent with the goals of the Clean Water Act to maintain the chemical, physical, and biological integrity of ambient waters.

Alternatives for achieving copper limits, including potential indirect impacts of alternatives such as the chemical addition of poly aluminum chloride, may be addressed through an administrative compliance order if the Permittee is unable to meet the permit limit. A "monitor only" requirement for aluminum has been added to the permit in order collect data on the potential for excessive amounts of aluminum in the treated discharge.

Riverways Comments

Comment #1:

The draft permit includes load limits for both BOD_5 and TSS based on allowable seasonal concentrations and the average monthly flow limit of the facility. This is a valuable addition to the permit requirements given the impaired status of the receiving waters affected by this discharge. The reasoning and methodology used is consistent with other permits and with the need to reduce impacts associated with the discharge. While the Riverways staff continues to have issues with the change in the method used to determine monthly average flows, the addition of the mass limitations helps offset some of the problems with the annual averaging and increases in discharge volume. One question arises about the flow limit in the existing NPDES permit for the Belchertown facility. Is the flow in this draft permit greater than the flow in the current permit? If existing permitted average monthly flow is less than 1.0 MGD, than the load limitations for BOD_5 and TSS should be based on the lower flow rate so the allowable load will remain the same despite an allowed increase in flow. This would be in keeping with anti-degradation objectives.

Response #1:

We concur with the importance of the mass loading limits. The average monthly flow limit in the previous permit was 1.0 MGD

Comment #2:

There is a further concern with the mass limitations being based on 1.0 MGD given the status of the receiving waters. The existing TSS and BOD_5 loads, as extrapolated from the DMR information provided with the Fact Sheet, are significantly lower than what the new permit would theoretically allow. This is a concern because the receiving waters are currently impaired by organic enrichment/low D.O. under existing loadings. If the waters are unable to meet state water quality standards presently; it seems likely an increase in BOD_5 and TSS would further exacerbate impairment due to organic enrichment/low DO. The need to have a TMDL completed before determining the allocation for the different inputs to the system is understandable. It is our hope that the TMDL can be completed in a timely fashion and adjustments made to the NPDES permit and the allowable daily load of TSS and BOD_5 if warranted by the TMDL allocations.

Response #2:

Concerns with organic enrichment/low D.O. are primarily related to the excessive phosphorus discharged by the facility. We do not anticipate any significant impact from BOD_5 and TSS if the limits contained in the Final Permit are met. The phosphorus limits contained in the Final Permit are expected to achieve significant improvements in the receiving water quality. If a future assessment or a TMDL indicates that water quality uses and criteria have not been achieved, then

future permit actions may require lower limits.

Comment #3:

Ammonia limits vary with the seasons with a transition from cold weather limits to warmer temperature limits occurring in May. The sampling frequency for ammonia is once per month but no guidance is given on when during the month the sampling should take place. Given there will be only one sample in the month of May, and May has its own unique ammonia limit, a request for a sampling mid-month would help the plant operators make sure the transition from the higher winter limits was effective.

Response #3:

While we agree with the concern, the data from this facility indicates that ammonia levels are consistently much lower than the permit limits for November - May. This is also less of a concern given the relatively small transition from the April permit limit of 10.0 mg/l to the May permit limit of 7.0 mg/l.

Comment #4:

The testing methodology for copper appears to be the same as other NPDES permits issued in Massachusetts. We agree with EPA's rationale for using this methodology. We also agree with the phosphorus limits placed on the discharge. The receiving waters are currently listed as impaired with nutrients as a causative factor. The EPA used a defensible and accepted method to arrive at the phosphorous limit for the facility. The intent of the limit is to protect the receiving waters and the 1.0 MGD flow number is simply a convenient figure to use based on a known phosphorus end point. It is our hope more current data than 1986 can be used in determining phosphorus loads in the future so changes in the non point source loads and the total maximum daily load can be factored into the calculation.

Response #4: We concur with the need to have more current non point source loading data and ambient water quality data for future permitting decisions. If a future water quality assessment/analysis and/or a TMDL indicate that water quality criteria are not being met, more stringent permit limits may be necessary.

Comment #5:

The Fact Sheet appendix lists the 7Q10 for the Lampson Brook as 0.1 cfs. Was this derived from flow data taken from Lampson Brook near the discharge or extrapolated from gage data from a near by river or a gage in another reach of the brook?

Response #5:

There are no gages in Lampson Brook. The 7Q10 flow was estimated from the drainage area upstream of the discharge and gage data determined to be representative of Lampson Brook.

Comment #6:

It is commendable that the facility upgraded to the use of UV to disinfect its discharge. Chlorine can prove both acutely and chronically toxic to aquatic systems. Was the chlorine delivery system kept in place at the facility as a contingency should the UV disinfection system experience a failure?

Response #6:

The permit does not authorize the use/discharge of chlorine.

Information for Filing an Adjudicatory Hearing Request with
the Commonwealth of Massachusetts
Department of Environmental Protection

Within thirty days of the receipt of this letter the adjudicatory hearing request should be sent to:

Docket Clerk
Office of Administrative Appeals
Department of Environmental Protection
One Winter Street, Third Floor
Boston, MA 02108

In addition, a valid check payable to the Commonwealth of Massachusetts in the amount of $100 must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

The hearing request to the Commonwealth will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver

The filing fee is not required if the appellant is a city, town (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee for a permittee who shows that paying the fee will create an undue financial hardship. A permittee seeking a waiver must file, along with the hearing request, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

April 17, 2002

NPDESappeal.wpd

Appendix C

Tighe&Bond
Consulting Engineers
Environmental Specialists

B-0341-4-50
October 28, 2003

FAXED 10/29/03

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Linda M. Murphy, Director
Massachusetts NPDES Permit Unit
Office of Ecosystem Management
United States Environmental Protection Agency, Region 1
1 Congress Street, Suite 1100 (CPE)
Boston, MA 02114-2023

Glenn Haas, Director
Division of Watershed Management
Massachusetts Department of Environmental Protection
1 Winter Street
Boston, MA 02108

Re: Belchertown, MA
NPDES No. MA0102148

Dear Ms. Murphy and Mr. Haas:

On behalf of the Town of Belchertown Department of Public Works, we are writing to provide you with comments relative to the draft NPDES permit issued for the Belchertown Water Reclamation Facility on October 1, 2003. These comments are the result of our review of the draft permit as well as a review of the current discharge permit and the previously withdrawn draft permit issued September 8, 2000.

Our comments on the current draft permit as well as recommendations for permit modifications and clarifications are as follows:

1. Part I A.1 – Page 2 of 10 – Mass Loading Limits (BODs and TSS)

Monthly and weekly mass loading limits for BODs and TSS are not included in the current permit, but had been proposed in the September 2000 draft permit. The current draft contains the same limits as the withdrawn 2000 draft permit. These limits were derived by multiplying the monthly and weekly concentration limits by the annual average flow rate (1.0 mgd) and a conversion factor of 8.34 to arrive at a mass loading value.

As noted in our comments on the September 2000 draft permit, the Town of Belchertown takes exception to this approach as it uses an annual average flow to compute weekly mass limits. Since average weekly flows can be significantly greater than average annual flows, any mass limit

would be more appropriately calculated based on flows that correspond with the loading frequency in question. i.e., maximum monthly flow and maximum weekly flow. Additionally, because the monitoring requirements in the new permit require sampling once per week, this effectively results in the weekly average condition being the equivalent of a daily maximum limit. The approved basis of design for this facility included a maximum daily peaking factor of 2.5 times the annual average flow. Based on this peaking factor for weekly flow conditions, a mass based BOD_5 limit of 63 lbs/day would result in a required effluent concentration of 3.0 mg/L. An effluent BOD_5 limit of 3.0 mg/L cannot be reliably achieved and was not included in the approved facilities plan and final design.

Although the Town has previously contested the inclusion of weekly mass based limits, noting that imposing weekly and monthly mass limits would unreasonably restrict facility discharges without a technical basis for establishing the new limit, and had requested that the mass loading limits be either removed from the draft permit or adjusted to reflect the design maximum monthly and weekly flow conditions for the facility, the new draft permit includes the same proposed limits, calculated using the same methods, based on annual flow.

While the Town continues to disagree with the basis for the proposed based mass based limits for BOD and TSS, the proposed limits would be acceptable to the Town if clarifications are made to the permit to indicate that the calculations of discharge BOD and TSS mass for compliance monitoring purposes are to be made using the same methods used by EPA to derive the permit limits (i.e. permit compliance calculations should be made using the annual average flow rate as required to be reported in monthly monitoring reports and corresponding weekly or monthly average concentrations). This approach will allow direct comparison of the discharge monitoring data with the permit limitations using the same basis for establishing calculated mass values. This method would be more consistent with the basis for the proposed limits.

Suggested modifications to the permit are as follows:

Add footnote 10 to all mass based limitations for BOD and TSS to read as follows:

"10. The permittee shall use the annual average flow as shall be reported each month (see footnote 1) and corresponding weekly or monthly average concentrations in calculating compliance with all mass based limitations."

2. Part I A.1 – Page 3 of 10 - Phosphorus Limit, Mass Based Limit Calculation

As with BOD and TSS, the monthly average mass based limit for phosphorus has been calculated by EPA using the annual average flow permit limit. Citing the same concerns as noted above, permit compliance calculations should be made on the same basis as used for establishing the permit limit.

Suggested modifications to the permit are as follows:

Add footnote 10 to mass based limitations for phosphorus to read as follows:

"10. The permittee shall use the annual average flow as shall be reported each month (see footnote 1) and corresponding weekly or monthly average concentrations in calculating compliance with all mass based limitations."

3. Part I A.1 – Page 3 of 10 – Whole Effluent Toxicity Limits (LC50 and C-NOEC)

The draft permit contains the same requirements for toxicity testing as contained in the current permit issued in 1999 and also as proposed in the September 2000 draft permit. These include requirements for both acute and chronic toxicity testing four times per year. A review of the last two years of toxicity test results indicates that treated effluent is generally not toxic as measured by both acute and chronic toxicity tests. Based on the review of the toxicity test data, on behalf of the Town of Belchertown, we request that the permit limitations and the monitoring requirements for acute toxicity be eliminated from the permit.

Suggested modifications to the permit are as follows:

On page 3 of 10, delete the line beginning C-NOEC.

On page 4 of 10, delete footnote 7.

On page 4 of 10, edit footnote 8 to read as follows:

"8. The permittee shall conduct modified acute toxicity tests four times per year using the specie Ceriodaphnia Dubai. The permittee shall conduct modified acute toxicity tests during the second week of the month (any day of the week but no later than Friday) of March, June, September, and December. Results are to be submitted by the 30th day of the month after the sample i.e. April, July, October and January. See Toxicity Test Procedure and Protocol on Attachment A."

4. Part I A.1 – Page 3 of 9 - Copper Limit

In 1999 EPA made modifications to the water quality criteria for copper. The new limits for copper have been calculated at lower values than contained in the 2000 draft and the 1997 permit. The proposed limits of 6.4 ug/l as a monthly average and 9.2 ug/l as a maximum daily limit are significantly below the range of values reported in the last two years of data reviewed.

In comments presented to EPA on the September 2000 draft permit it was noted that the copper limit proposed at that time was extremely stringent and may be technically unachievable. In addition, there are numerous technical reasons why the need for copper limits remains in question including, the reduction of copper toxicity due to decreased copper bioavailability associated with complex formation with other materials, the limitations of commercial laboratory testing and the methods used for development of the Gold Book standards. For a number of years EPA has been working with Water Environment Federation (WEF) to develop a biotic ligand model for copper toxicity to account for the influences of wastewater characteristics with the reduction in copper toxicity. However, to date, EPA has not used the results of this research to address the problems numerous communities are facing in regard to extremely stringent copper limitations. For this reason, the Town of Belchertown requested that copper limits not be included in the previous draft permit until these issues were resolved.

While it appears unlikely that EPA will soon modify the criteria values for copper based on the biotic ligand model, the calculation of the copper limit as currently presented by EPA in the Fact Sheet is a function of hardness. The higher the hardness, the less toxic copper is and the higher the allowable discharge limit. EPA has used a hardness value of 60 mg/l for calculating copper limits. The Fact Sheet does not provide a statement of basis for this value and we believe that it is inappropriately low. The data included in the toxicity tests from 2002 and 2003 indicate that this value is not reflective of typical in-stream hardness after mixing with the discharge. The average outfall hardness was 94.5 mg/l and the average in stream hardness above the outfall was 72.9 mg/l. Based on the 7Q10 dilution ratio of 1.065, the calculated hardness down stream of the outfall (the location used as the basis for calculating compliance with State Water Quality Standards) is 93.2 mg/l. If the in stream hardness is assumed to be 93.2 mg/l, the calculated monthly average limit for copper would be 9.0 ug/l rather than 6.4 ug/l and the calculated maximum daily limit would be 13.4 ug/l rather than 9.2 ug/l.

While recalculating the copper limits based on the observed average hardness of 93.2 mg/l will not by itself bring the facility into compliance with the proposed limits, it would make a significant difference in the potential ability to comply with the limit.

Because hardness so strongly effects the theoretical toxicity values used for establishing copper discharge limitations, and because hardness is a parameter the POTW has the potential to control, we believe that POTWs should be allowed to control hardness through chemical addition as part of the treatment process in order to allow a higher discharge copper limits, much as alkalinity is allowed to be added in order to achieve pH limitations. For facilities that add sodium hydroxide for control of pH, an operational change to a magnesium hydroxide, for example, could be used to both control pH and add hardness to the effluent.

Given the large potential additional cost to provide treatment to remove copper through other forms of chemical addition, such as polyaluminum chloride to achieve the low limits included in the draft permit, it would be preferable to develop more flexible alternative permit limits that are expressed in the permit as a function of hardness, using the same equations used by EPA to develop the proposed discharge limitations. While the limitation could be expressed in

the permit directly in the form of the equations used by EPA to develop the proposed limitations, for compliance monitoring and for operational evaluation. it may be simpler to express the limits in tabular form based directly upon EPA's equations as presented in the attached table 1.

While this may be a new approach for expressing copper discharge limitations in NPDES permits, the proposed method is based on establishing limitations using the same numeric methods used by EPA in the draft permit, but addresses the actual site specific discharge hardness at the time of permit compliance monitoring.

This approach will, necessarily require collection of additional discharge hardness data to determine compliance, and it is recommended that hardness data be collected at the same frequency and time as effluent copper discharge monitoring to allow direct evaluation of allowable copper discharges at the time of discharge. This approach retains a significant level of protective conservatism in that the limits are still based assuming annual average flow occurring at a time of minimum (7Q10) stream flow.

Furthermore, addition of hardness to the treatment process is expected to provide an incremental improvement in copper removal efficiency. While this alone is not expected to be sufficient to bring the facility into compliance with the limits currently contained in the draft permit, combined with the proposed mechanism for hardness based permit limits as discussed above, addition of hardness may be sufficient to achieve permit compliance without the addition of further amounts of chemicals such as polyaluminum chloride which are known to cause problems with sludge processing and may also interfere with achieving the very low solids limits imposed on the Belchertown POTW. Use of polyaluminum chloride for copper control may also have an undesirable side effect of increasing aluminum concentrations in the final treated effluent.

Suggested modifications to the permit are as follows:

On page 3 of 10, replace the line beginning Total Recoverable Copper with the following:

"Total Recoverable Copper ug/l.

See attached Table 1 for limits		*1/month*	*24-hour composite[4].*
Hardness	*mg/l Report*	*1/month*	*24-hour composite[4]."*

Insert attached Table 1.

Tighe & Bond and the Town of Belchertown recognize that the inclusion of hardness based limitations for copper expressed directly in the permit may be a new concept. We are unaware of other similar discharge limits. However, we are aware that in other permits, specific limitations for pollutant parameters have been expressed as a function of other discharge parameters, such as if the flow is above a given value, a pollutant discharge limitation may be one value and if the

flow is below the given value, the pollutant discharge limitation is another value. Therefore, there is precedent for establishing different permit limits to be complied with under different discharge conditions.

All of the modifications to the permit proposed in this letter are consistent with the specific methods used by EPA to determine the limits included in the draft permit. There are no adjustments or modifications to State Water Quality Standards used for development of the proposed revised limitations.

The expression of the limitations for copper is consistent with EPA's requirement to express limitations for toxic metals in terms of concentration limits.

While the development and inclusion of permit limitations are expressed as a function of hardness may present a minor additional level of effort for both the POTW and EPA to monitor and verify permit compliance, the potential benefits to the Town, including financial benefits, significantly outweigh this potential drawback.

Given the high level of importance in reaching agreement on the proposed modifications prior to finalizing the NPDES permit, on behalf of the Town of Belchertown, Tighe & Bond requests that a meeting be set up to discuss these issues directly with EPA prior to issuing the final permit. Please notify the undersigned of dates you may be available to meet to discuss these issues.

In the meantime, if you have any questions regarding this matter, please contact either Doris Atkinson of Tighe and Bond at (413) 572-3238 or Omer Dumais at (413) 572-3236.

Very truly yours,
TIGHE & BOND, INC.

Omer H. Dumais, Jr., P.E.
Vice President

NPDES-2003 draft comments.doc

Copy:
Gary L. Brougham – Town Administrator
Steven J. Williams – DPW Director
Rollin J. DeWitt – Operations Supervisor

Table 1

Effluent Copper Concentrations as a Function of Hardness

POTW Hardness mg/l (minimum value)	Monthly Average Copper Limit ug/l	Daily Maximum Copper Limit (ug/l)
60	6.4	9.2
80	7.9	11.6
100	9.5	14.3
120	11.1	17.0
140	12.7	19.7
160	14.3	22.3
180	15.8	24.9
200	17.2	27.5
220	18.7	30.1
240	20.2	32.7
260	21.6	35.2
280	23.0	37.8
300	24.4	40.3

Notes:

Based on a receiving stream dilution factor of 1.065

Hardness used for determining limit shall be equal to or greater than stated value.

Hardness analyses must be performed on the same collected for copper monitoring.

Appendix A

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §26-53),

Town of Belchertown Department of Public Works
290 Jackson Street, P.O. Box 670
Belchertown, Massachusetts 01007 - 0670

is authorized to discharge from the facility located at

Belchertown Water Reclamation Facility
175 George Hannum Road
Belchertown, Massachusetts 01007

to receiving waters: **Lampson Brook to Connecticut River**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective sixty days after the date of signature.

This permit and the authorization to discharge expire at midnight, five years (5) years from the effective date.

This permit supersedes the permit issued on July 11, 1997.

This permit consists of 10 pages in Part I including effluent limitations, monitoring requirements; Attachment A, and 35 pages in Part II including General Conditions and Definitions.

Signed this day of

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Division of Watershed Management
Department Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirement	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow	MGD	1.0[1]	----	Report	Continuous[2]	Recorder
BOD_5 (June 1 - October 31)	mg/l	5.0	7.5	Report	1/Week[3]	24Hr.Composite[4]
	lbs/day	42	63	Report		
BOD_5 (May)	mg/l	15	15	Report	1/Week[3]	24Hr.Composite[4]
	lbs/day	125	125	Report		
BOD_5 (November 1- April 30)	mg/l	30	30	Report	1/Week[3]	24Hr.Composite[4]
	lbs/day	250	250	Report		
TSS (June 1 - October 31)	mg/l	15	15	Report	1/Week[3]	24Hr.- Composite[4]
	lbs/day	125	125	Report		
TSS (May)	mg/l	20	20	Report	1/Week[3]	24Hr.- Composite[4]
	lbs/day	167	167	Report		
TSS (November 1- April 30)	mg/l	30	30	Report	1/Week[3]	24Hr.- Composite[4]
	lbs/day	250	250	Report		
pH	s.u.	See Condition I.A.1.b. on Page 5 of 10			Daily	Grab

Effluent Characteristic	Units	Discharge Limitation	Monitoring Requirement

		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Total ammonia, as N						
(May)	mg/l	7	7	10	1/month	24 - Hr.Composite[4]
(June 1 to October 31)	mg/l	1	1	1.5	1/month	24 - Hr.Composite[4]
(November 1 to April 30)	mg/l	10	10	15	1/month	24 - Hr.Composite[4]
Fecal Coliform[5]						
(April 1 - October 31)	CFUs/100 ml	200	----	400	1/week	Grab
Nitrite+Nitrate,	mg/l	Report	----	----	1/month	24 - Hr.Composite[4]
TKN	mg/l	Report	----	----	1/month	24 - Hr.Composite[4]
Dissolved Oxygen	mg/l	6	----	----	1/week	Grab
LC_{50}[6]	%	----	----	100	4/year [8]	See Protocol
C-NOEC [7]	%	----	----	94	4/year [8]	See Protocol
Toatal Recoverable Copper	ug/l	6.4	----	9.2	1/month	24 - Hr.Composite[4]
Phosphorus	mg/l	0.25	----	----	1/week	24 - Hr.Composite[4]
	lbs/day	2.085	----	----	year- round	

Footnotes:

1. This limit is **annual average.** The permittee shall report the annual average flow each month. The annual average, shall be calculated using the monthly average flow from the reporting month and the monthly average flows from the previous 11 months.

2. For flow, report maximum and minimum daily rates and total flow for each operating date.

3. Sampling required for influent and effluent.

4. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during one working day (e.g 6:00 AM -5:59AM, Monday - Tuesday).

5. This is a State certification requirement. The monthly average limit is expressed as a geometric mean and shall be measured and reported in Colony Forming Units (CFUs) per 100 milliliters.

6. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

7. C-NOEC is the highest effluent concentration at which No Observed Chronic Effect (e.g.

   e.g. growth, reproduction, mortality) will occur at continuous exposure to test organisms (in a life-cycle or partial life- cycle test). The "94% or greater" is defined as a sample which is composed of 94% (or greater) effluent, the remainder being dilution water.

8. The permittee shall conduct chronic (and modified acute) toxicity tests four times per year using the specie Ceriodaphnia dubia.. The permittee shall conduct chronic (and modified acute) toxicity tests during the second week of the month (any day of the week but no later than Friday) of March, June, September, and December. Results are to be submitted by the 30th day of the month after the sample i.e. April, July, October and January, See Toxicity Test Procedure and Protocol on Attachment A.

9. The minimum level (ML) for copper is defined as 3 ug/l. This value is the minimum level for copper using the Furnace Atomic Absorption analytical method (EPA Method 220.2). For effluent limitations of less than 3 ug/l, compliance/non-compliance will be determined based on the ML from this method, or another approved method that has an equivalent or lower ML, one of which must be used. Sample results of 3 ug/l or less shall be reported as zero on the Discharge Monitoring Report.

Part I.A.1. (Continued)

a. The discharge shall not cause a violation of the water quality standards of the receiving waters.

b. **The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time,** unless these values are exceeded due to natural causes or as a result of the approved treatment processes.

c. The discharge shall not cause objectionable discoloration of the receiving waters.

d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.

f. When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the designed flow, the permittee shall submit to the permitting authorities 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.

2. All POTWs must provide adequate notice to the Director of the following:

a. Any new introduction of pollutants into that POTW from an indirect discharger in a primary industry category discharging process water; and

b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For purposes of this paragraph, adequate notice shall include information on:

(1) the quantity and quality of effluent introduced into the POTW; and

(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

3. Prohibitions Concerning Interference and Pass Through:

a. Pollutants introduced into POTW's by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

b. If, within 30 days after notice of an interference or pass through violation has been sent by EPA to the POTW, and to persons or groups who have requested such notice, the POTW fails to commence appropriate enforcement action to correct the violation, EPA may take appropriate enforcement action.

4. Toxics Control

a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

5. Numerical Effluent Limitations for Toxicants

EPA or DEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I A.1. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSO) if any, are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Infiltration/Inflow

The permittee shall develop and implement a plan to control infiltration and inflow (I/I) to the separate sewer system. **The plan shall be submitted to EPA and MA DEP within six months of the effective date of this permit** (see page 1 of this permit for the effective date) and shall describe the permittee's program for preventing infiltration/inflow related effluent limit violations, and all unauthorized discharges of wastewater, including overflows and by-passes due to excessive infiltration/inflow.

The plan shall include:

- An ongoing program to identify and remove sources of infiltration and inflow. The program shall include the necessary funding level and the source(s) of funding.
- An inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts. Priority should be given to removal of public and private inflow sources that are upstream from, and potentially contribute to, known areas of sewer system backups and/or overflows
- Identification and prioritization of areas that will provide increased aquifer recharge as the result of reduction/elimination of infiltration and inflow to the system.
- An educational public outreach program for all aspects of I/I control, particularly private inflow.

Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year shall be **submitted to EPA and the MA DEP annually**, by the anniversary date of the effective date of this permit. The summary report shall, at a minimum, include:

- A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year.
- Expenditures for any infiltration/inflow related maintenance activities and corrective actions taken during the previous year
- A map with areas identified for I/I-related investigation/action in the coming year.
- A calculation of the annual average I/I, the maximum month I/I for the reporting year.
- A report of any infiltration/inflow related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Unauthorized Discharges section of this permit.

3. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall continue to provide an alternative power source with which to sufficiently operate its treatment works (as defined at 40 CFR §122.2).

D. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state or federal (40 CFR part 503) requirements.

3. The requirements and technical standards of 40 CFR part 503 apply to facilities which now perform or will in the future perform one or more of the following use or disposal practices.

   a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge only landfill

   c. Sewage sludge incineration in a sludge only incinerator at Belchertown's WRF.

4. The 40 CFR part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g. lagoons- reed beds), or are otherwise excluded under 40 CFR 503.6.

5. The permittee shall use and comply with the attached compliance guidance document to determine appropriate conditions. Appropriate conditions contain the following elements.
   - General requirements
   - Pollutant limitations
   - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
   - Management practices
   - Record keeping
   - Monitoring
   - Reporting

   Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the frequency indicated below. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year:

less than 290	1/ year
290 to less than1500	1 /quarter
1500 to less than 15000	6 /year

15000 + ... 1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8

8. The permittee shall **submit an annual report containing the information specified in the guidance by February 19.** Reports shall be submitted to the address contained in the reporting section of the permit. Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge disposal. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such case, the permittee is required only to submit an annual report by February 19 containing the following information:

   - Name and address of contractor responsible for sludge disposal
   - Quantity of sludge in dry metric tons removed from the facility by the sludge contractor

E. MONITORING AND REPORTING

1. Reporting

Monitoring results obtained during the previous month shall be summarized for each month and **reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the effective date of the permit.**

Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

2. A copy of the Discharge Monitoring Reports and all other reports required herein, <u>except for **toxicity** test reports</u>, shall be submitted to MADEP at the following address:

Massachusetts Department of Environmental Protection
Western Regional Office - Bureau of Resource Protection
436 Dwight Street
Springfield, MA 01103

3. Copies of all Discharge Monitoring Reports **and toxicity** test reports required by this permit shall be submitted to MADEP the following address:

Massachusetts Department of Environmental Protection

Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd floor
Worcester, Massachusetts 01608

F. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) under federal and state law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chap.21, §43.

Each Agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as an NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
ONE CONGRESS STREET, SUITE 1100 (CMA)
BOSTON, MASSACHUSETTS 02114 - 2023

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO THE WATERS OF THE UNITED STATES

NPDES PERMIT NO. MA0102148

NAME AND ADDRESS OF APPLICANT:

Town of Belchertown Department of Public Works
290 Jackson Street, P.O. Box 670
Belchertown, Massachusetts 01007 - 0670

NAME AND ADDRESS OF THE FACILITY WHERE THE DISCHARGE OCCURS:

Belchertown Water Reclamation Facility
175 George Hannum Road
Belchertown, Massachusetts 01007

RECEIVING WATERS: Lampson Brook - CODE 34/CONN

CLASSIFICATION: B

I. Proposed Action, Type of Facility.

The Town of Belchertown, Department of Public Works, has requested that the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MADEP) reissue its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated waters. The Town owns and operates an advanced wastewater treatment facility with a design flow of one million gallons per day (MGD). A facility upgrade, expanding the treatment plant capacity and improving the level of treatment, was completed in late 2000. Figure 1, showing the site location is attached.

Receiving Water

The discharge is to Lampson Brook, which has been classified as a Class B waterway by the state. The designated uses for a Class B water include: habitat for fish, other aquatic life, and wildlife, and primary and secondary contact recreation. Where designated, it shall be suitable as a source of public water supply with appropriate treatment. It shall be suitable for irrigation and other agricultural uses and other compatible industrial cooling and process uses. These waters

shall have consistently good aesthetic value. Lampson Brook is listed on the 1998 Massachusetts 303(d) list of waters not attaining surface water quality standards. The 303(d) list identifies the pollutants/stressors as unionized ammonia, chlorine, nutrients, and organic enrichment/low dissolved oxygen. Lampson Brook discharges to Weston Brook, which discharges to Forge Pond. Both of these water bodies are also on the 1998 303(d) list. Weston Brook's pollutant/ stressors are the same as those listed for Lampson Brook with the addition of pathogens. The pollutants/stressors for Forge Pond are listed as nutrients and noxious aquatic plants. It is expected that the water quality violations have been reduced or eliminated with the completion of the upgraded treatment plant. However there have been no stream surveys conducted to verify this assumption.

Permit History

The existing permit was issued on July 11, 1997 and expired on August 10, 2000, but has remained in effect under the Administrative Procedures Act as the permittee made a timely application for renewal. EPA reissued the permit on December 28, 2000, but the Town appealed certain conditions of the permit, which stayed its effective date. EPA subsequently withdrew the 2000 permit (the "withdrawn permit") on January 10, 2001, pursuant to 40 CFR Section 124.19(d), so that the withdrawn permit was never in effect. The appealed conditions included the flow limit, the mass limits for BOD and TSS, the mass limits for total phosphorus, the copper limits, and the freshwater chronic toxicity procedure and protocol.

This draft permit contains essentially the same effluent limitations as were contained in the December 28, 2000 permit. EPA has included additional information in the fact sheet to support the contested limits, and MADEP has required that several of the contested limits be included as conditions for state certification pursuant to Section 401 of the Clean Water Act.

II. Description of Discharge

The effluent limitations of the draft permit and the monitoring requirements are found on the draft NPDES permit pages.

III. Permit Basis and Explanation of Effluent Limitation Derivation

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301 (b) of the Clean Water Act (CWA). Under Section 301(b)(1)(B) of the CWA, POTWs must have achieved effluent limitations based upon secondary treatment by July 1, 1977. The secondary treatment requirements are set forth at 40 CFR Part 133, and include effluent limitations for BOD, TSS, and pH.

Section 301(b)(1)(B) of the CWA requires discharges to achieve any more stringent limitations, including those necessary to meet water quality standards, by July 1, 1977. The Massachusetts Surface Water Quality Standards (314 CMR 4.00) include requirements for the regulation and

control of toxic constituents and also require the EPA criteria, established pursuant to Section 304 (a) of the CWA, shall be used unless a site specific criteria is established. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained, or attained.

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, and toxic) that is or may be discharged at a level that caused, has reasonable potential to cause, or contributes to an excursion above any water quality criterion. An excursion occurs if the projected or actual in stream concentrations exceed the applicable criterion. In determining reasonable potential, EPA considers existing controls on point and non-point sources of pollution, variability of the pollutant in the effluent, sensitivity of the species to toxicity and, where appropriate, the dilution of the effluent in the receiving water.

Anti-backsliding: A permit may not be renewed, reissued, or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of the CWA. The anti-backsliding provisions found in 40 CFR 122.44(l) prohibit the relaxation of permit limits, standards, and conditions. Therefore, the technology-based effluent limits in a reissued permit must be at least as stringent as those in the previous permit. Conditions for relaxing permit limits or exceptions to anti-backsliding, are found in Section 402 (o) of the CWA an 40 CFR §122.44(l). Effluent limits based on water quality and state certification requirements must also meet the anti-backsliding provisions found under Section 402(0) and 303(d)(4) of the CWA, as described in 40 CFR 122.44(l). Anti-backsliding does not apply to changes in settleable solids limits and maximum daily BOD and TSS limits based on new information not available at the time of the previous permit reissuance (40 CFR §122.44(l)(2)(i)(B)).

Anti-degradation: The Massachusetts Anti-degradation Policy is found at Title 314 CMR 4.04. All existing uses of Lampson Brook must be protected. This draft permit is being reissued with allowable discharge limits as or more stringent than the current permit with the exception of the limitations for settleable solids and maximum daily BOD and TSS . There is no change in outfall location. EPA anticipates that the MADEP will find that there is no significant degradation as a result of the relaxation of these limits and that all existing uses of the receiving water shall be protected. The public is invited to participate in the anti-degradation finding through the permit public notice process.

Limits Derivation

Flow

The flow limit is based on the design flow of the treatment plant, which is one MGD. The flow limit is now expressed as an annual average, rather than a monthly average as in the current permit. This change is being made to all POTW permits in MA at the request of MADEP. The purpose of this change was to allow some variation in POTW flows in response to wet weather, and in recognition that the flow rate used as the monthly average is in most cases presented in the treatment plant planning documents as an annual average. As part of this change in how flow

limits are written, DEP and EPA agreed that mass limitations for BOD and TSS should be included as permit conditions to ensure that existing controls on mass discharges of BOD and TSS were maintained, in order to prevent degradation of the receiving water.

In its appeal of the withdrawn permit, the Town objected to EPA not stating that the change of the flow limit from a monthly average to an annual average was a correction rather than a change. The Town believed that an acknowledgment that the change in the flow limit was a correction would impact the antidegradation and antibacksliding arguments used as the basis for the monthly average and weekly average BOD and TSS mass limitations, "since the antibacksliding and antidegradation regulations allow for administrative corrections to NPDES Permits without impacting antidegradation or antibacksliding concerns[1]".

To provide some background, a treatment plant designer can establish a design flow for any time period, including yearly, monthly, daily, and hourly. A design flow is simply the flow rate which the designer establishes can be adequately treated over a given time period. Typically, a treatment facility can provide adequate treatment for higher flow rates for short periods than it can for long periods, meaning that design flow increases as the time period decreases. The annual average design flow is almost always provided in the planning documents for POTWs. Other design flow rates are not as consistently calculated or provided in planning documents. The Belchertown facilities plan estimates the annual average at 1 MGD. Belchertown has not presented a maximum monthly design flow.

Therefore, the previous use of an annual average flow as a monthly average limit provided some conservatism to the permit by not allowing the facility to operate at its maximum monthly hydraulic capacity. We believe that this was the intention of EPA and MADEP in limiting the flow in this manner, and was not an error, as the permittee has characterized it. We have now decided to loosen the flow limit somewhat, but have sought to balance this action by imposing mass limitations on the discharge of BOD and TSS to ensure that the easing of the flow restriction does not result in a significant increase of pollutants during months when the monthly average discharge flow exceeds the limit established in the current permit. We have also strengthened the I/I requirements of the permit to ensure that the permittee maintain efforts to minimize extraneous flows to the collection system.

BOD and TSS
Concentration limits

The BOD and TSS monthly average and weekly average concentration limits are the same as in the existing permit and are necessary to meet water quality standards. These limits were

[1] Quote is from the Town's February 7, 2001 permit appeal. While it is our position that the monthly average flow limit in the current permit is not an error, federal regulations found at 40 CFR Section 122.44(l)(2)(i)(B)(2) do provide an exception to antibacksliding regulations where the Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing a permit. There is no such specific exception for mistakes in federal antidegradation regulations or in the state antidegradation policy.

originally included in the permit issued on September 26, 1991 based on a March 28, 1991 wasteload allocation performed by the Massachusetts DEP. The maximum daily concentration limits have been removed, because MADEP no longer requires them as conditions of obtaining state certification.

Mass Limits

The current permit does not contain an explicit conditon establishing a mass limit for TSS or BOD. However, the current permit implicitly limits mass by establishing concentration limits for these pollutants and a flow limit. The current permit includes a monthly average flow limit of 1 MGD and monthly, weekly and maximum daily maximum concentration limits for BOD and TSS (the maximum daily concentration limits have been removed from the draft permit since the state no longer requires them as a condition for obtaining sate certification). The mass limits in the withdrawn permit, and in this draft permit, were established using the monthly average flow limit of the current permit and the concentration limits for the corresponding period (i.e the monthly average concentration limit was used to calculate the monthly average mass limit). As described in the *Flow* section, the mass limitations are included to maintain existing constraints on the mass discharge, which will ensure that there is no degradation of the receiving water during period when the treatment facility exceeds the flow limit in the current permit.

For example, the winter (November 30- April 30) monthly average limits for BOD and TSS in the current permit are 30 mg/l and the monthly average flow limit in the current permit is 1 MGD. The mass discharge, if the permittee is discharging at the monthly average limits is 250 lbs/day. This is the monthly average limit for this period in the draft permit. The mass limits for the other months were calculated in the same manner, using the same method.

pH

The pH range of 6.5 - 8.3 s.u. is based on state water quality standards and certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR 124.53 and 124.55.

Ammonia

The draft permit contains seasonal ammonia limits. These are;

	monthly average	weekly average	maximum daily
June through October	1 mg/l	1mg/l	1.5 mg/l
November through April	10 mg/l	10 mg/l	15 mg/l
May	7 mg/l	7 mg/l	10 mg/l

These limits are the same as the limits in the current permit, with a slightly changed end date for the summer period. (in the current permit, the summer period ends on October 15)

The seasonal limit of 1 mg/l comes from a MADEP March 18, 1991 wasteload allocation, and was initially incorporated into the September 26, 1991 permit for the period of April through

October 15 along with winter (October 16 to March 31) limits of 3mg/l, 3 mg/l, and 4.5 mg/l for monthly average, weekly average and maximum daily. The change to the current limits was made based on MADEP recommendations that the limits in the 1991 permit were more stringent than necessary to meet water quality standards.

Fecal Coliform

The average monthly and maximum daily requirements for fecal coliform are based on state water quality standards and certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR 124.53 and 124.55.

Total Nitrogen

It has been determined that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen. The State of Connecticut has begun to impose nitrogen limitations on Connecticut discharges to Long Island Sound and its tributaries. EPA believes there is a need to determine the loadings of nitrogen from sources in Massachusetts which are tributary to Long Island Sound, to determine whether these loadings are impacting the water quality in Long Island Sound, and to help determine what limits, if any, should ultimately be imposed on discharges in Massachusetts . Therefore, EPA has included once per month monitoring for ammonia, nitrite and nitrate, and TKN in the draft permit. The information submitted by the permittee will help to establish a database of nitrogen loadings, which can be used to quantitatively assess the impact of loading and transport of nitrogen to Long Island Sound. The data will provide a more sound decision making basis in the future decisions relating to nitrogen loadings to the Sound. No numerical limitations for these pollutants are established in the draft permit at this time.

Total Copper

The limits for total copper are based on the dissolved fraction as required by the Massachusetts Water Quality Standards but are converted to total recoverable limits in accordance with EPA regulations at 40 CFR Section 122.45(c). In the absence of a site specific conversion factor for determining how metals in the discharge partition between the particulate and dissolved phases in the receiving water, EPA guidance recommends using either a generic conversion factor, or assuming that the metals are all in the dissolved phase. The generic conversion factor was used in establishing the limits in the permit. If the metals were assumed to be all in the dissolved phase, the limit would have been more stringent since the dissolved criteria are more stringent than the total metals criteria.

While all of the dissolved metals may not be bio-available, a site specific criteria would have to be developed and adopted into the Massachusetts Water Quality Standards before permit limits could be modified. National guidance is available to any permittee that wants to pursue a criteria adjustment. In the proceedings for the withdrawn permit, the Town requested that EPA and MADEP include a statement in the permit that would clarify that the permit would be modified if there is sufficient data to indicate that the levels of copper in the discharge will not

cause or contribute to any water quality standards violations. EPA and MADEP acknowledge that if site specific water quality criteria which would support a less stringent effluent limit are developed by the State and approved by EPA during the term of the permit, that this would constitute new information pursuant to 40 CFR Section 122.62(a)(2) and would be sufficient to support a request to modify the permit. Any modified limit must be consistent with anti-degradation requirements.

Address WET

The limits for total recoverable copper were calculated by multiplying the available dilution by the chronic and acute criteria for each metal. These water quality criteria are found in December 10, 1998 National Recommended Water Quality Criteria (FR Vol. 63, No.237), which is the MA state-adopted water quality criteria. The limits for these metals, in addition to other limits found in the draft NPDES permit, are necessary to maintain current water quality standards established pursuant to Massachusetts State regulations. See **Attachment B** for these metal calculations.

Address feasibility (crib from a brief) e.g Ample precedent under the Clean Water Act establish that technological feasibility

Furnace AA is specified in the permit as the appropriate test method for measuring copper because the ML that this method provides is lower than the actual average monthly and maximum daily permit limits for copper (the ML for copper using Furnace AA is 3 ug/1). As previously stated, EPA has defined the ML as "the level at which the entire analytical system shall give recognizable signal and acceptable calibration points". Certain MLs were established by EPA's Region 1 Environmental Services Division for the purposes of NPDES permits. These MLs are usually higher than the minimum detection levels (MDLs) of test methods.

Phosphorus

To prevent the development of biological nuisances and to control accelerated or cultural eutrophication, total phosphates as P should not exceed 50 ug/l in any stream at the point it enters any lake or reservoir (EPA Water Quality Criteria for Water 1986). EPA and MADEP developed a phosphorous limit for the Belchertown WWTP NPDES permit to control eutrophication of Forge Pond . Information contained in the document entitled "Diagnostic/Feasibility Study for the Management of Forge Pond" published in February1989, was used to develop the limit. See Attachment B for development of permit limit.

The appealed permit contained a monthly average effluent limitation on the mass discharge of phosphorus which is not in the current permit. This limit is retained in the draft permit. The Town appealed the mass limit on the basis that it is based on a monthly flow of 1 MGD rather than "adjusted to reflect the design maximum monthly flow conditions for the facility". The Town did not state what it believes this flow rate should be. Given that the existing concentration limit of 0.25 was calculated from a mass loading of 2.08 lbs/day using a monthly average flow of 1 MGD (see Attachment B) we believe that the mass limit based on this flow limit is appropriate to ensure that there is no degradation of the downstream impoundment.

The phosphorus limit is a year-round limit in the current permit and we have retained that requirement in the draft permit. Limits are imposed on a year round basis in order to ensure normal seasonal improvements in water quality consistent with requirements of the Clean Water Act. Where it is demonstrated that cold temperatures result in an inability to achieve the limits in the winter period, relaxed limits are allowed during the winter period, provided that water quality standards will still be achieved. Due to eutrophication concerns in the downstream lake and the potential for higher winter phosphorus loadings to accumulate in the sediments and contribute to the eutrophication problem, the limits will remain as year round, as recommended by MADEP in its March 28, 1991 wasteload allocation.

Whole Effluent Toxicity

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The State Surface Water Quality Standards, include the following narrative statements and also require that EPA criteria established pursuant to Section 304(a)(1) of the CWA be used as guidance for interpretation of the following narrative criteria:

> Waters shall be free from pollutants in concentrations or combinations that:
>
> (a) Exceed the recommended limits on the most sensitive receiving water use;
>
> (b) Injure, are toxic to, or produce adverse physiological or behavioral responses in humans or aquatic life; or
>
> (c) Exceed site-specific safe exposure levels determined by bioassay using sensitive species.

National studies conducted by the EPA have demonstrated that domestic sources contribute both metal and organic toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and other constituents.

EPA's Technical Support Document (TSD) for water quality-based pollutants control provides guidance concerning the control of toxicity and generally provides for a tiered approach to toxicity control for moderate and high factors of dilution. However, in considering uncertainty factors of specie sensitivity and effluent variability, the TSD recommends direct application of definitive toxicity testing. Therefore, based on the potential for toxicity from domestic contributions, the level of dilution at the discharge location, water quality standards and in accordance with EPA regulation and policy, the draft permit includes chronic and acute effluent toxicity limitations and monitoring requirements. **(See "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 49 Fed. Reg. 9016 (Mar. 9, 1984); see also, EPA's Technical Support Document for Water Quality-Based Pollutants Control).** The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bio-availability of pollutants after discharge is best measured by toxicity testing; and (3) pollutants

for which there are inadequate chemical analytical methods or criteria can be addressed.

The dilution factor for the discharge at 7Q10 is 1.065. The MADEP Implementation Policy for the Control of Toxic Pollutants to Surface Waters requires that an acute toxicity limitation of LC50 ≥100% be established for a discharger with this dilution factor, and that a chronic toxicity limit greater than or equal to the receiving water concentration (1/dilution factor) be established for a discharge with this dilution factor. A C-NOEC of 94%, which is 1/dilution factor has therefore been included in the draft permit. See Attachment B for the calculation of this limit and Attachment A of the draft permit for the acute and chronic toxicity testing protocols.

The permittee shall conduct chronic and (modified acute) whole effluent toxicity testing four times per year in accordance with Part I.A.I. Footnote 8 of the permit. Typically, permittees are required to perform tests on two species, Ceriodaphnia dubia and Pimephales promelas. However, the existing permit issued three years ago did not include Pimephales promelas because toxicity data from the previous years revealed no violations of the acute and chronic toxicity limit for Pimephales promelas. Therefore, the proposed permit, consistent with the existing permit, does not require toxicity testing be performed on Pimephales promelas. The permittee is required to use only the specie Ceriodaphnia dubia.

Eliminated and Reduced Sampling

Total Residual Chlorine

The facility began using Ultraviolet (UV) light for disinfection during September 2000. Since chlorine is no longer used at the facility, effluent limits and monitoring requirements for total residual chlorine are not included in the draft permit.

Settleable Solids

Monitoring requirements and effluent limits for settleable solids are not included in the draft permit because the state no longer requires them as a condition for obtaining state certification.

BOD and TSS

The maximum daily limits for BOD and TSS are not included in the draft permit because they are no longer required as a condition for obtaining state certification.

Metals

Past monitoring data for aluminum, cadmium, chromium, lead, silver and zinc has shown that concentrations of these pollutants in the discharge are low enough that there is no reasonable potential to violate water quality standards for these pollutants. Therefore, monitoring requirements for these metals are not included in the draft permit.

IV. Essential Fish Habitat Determination (EFH):

Under the 1996 Amendments (PL 104-267) to the Magunson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Services (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. § 600.910 (a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. § 1855(b) (1) (A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

EPA and MA DEP have determined that a formal EFH consultation with NMFS is not required because the proposed discharge is meeting Gold Book Criteria and State Water Quality Standards and will not adversely impact EFH.

V. SLUDGE CONDITIONS

The permittee has reported that the sludge which is generated at the plant it is trucked off site for treatment at another facility that provides treatment. The receiving facility's name is Fitchburg WWTP located at 3 Lancaster Street, Fitchburg, MA 01420.

The draft permit requires the permittee to comply with all existing federal & state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards. However, with the current method of disposal, there are no applicable federal pollutant limitations applicable to this facility on sludge disposal. See Sludge Compliance Guidance to determine if any section is applicable to your sludge disposal method.

VI. STATE CERTIFICATION REQUIREMENTS

The staff of the State of Massachusetts Department of Environmental Protection has reviewed the draft permit. EPA has requested permit certification by the State pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

VII. PUBLIC COMMENT PERIOD, AND PROCEDURES FOR FINAL DECISION

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the U.S. EPA, Office of Ecosystem Protection, One Congress St., Suite 1100 (CPE), Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues

proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

VIII. EPA Contact

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Victor Alvarez
Massachusetts Office of Ecosystem Protection- CPE
One Congress St., Suite 1100
Boston, Massachusetts 02114-2023.
Telephone: (617) 918-1572

September 5, 2003
Date

Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

ATTACHMENT B
NPDES Permit No. MA0102148
BELCHERTOWN MASSACHUSETTS

Reclamation Facility; Design Flow: 1.MGD (**1.547 CFS**)
Receiving Water - LAMPSON BROOK
7 day/10 year low flow (7Q10) = 0.0646317 MGD (**0.1 CFS**)

Dilution (factor)[1] at outfall001 = (7Q10 stream flow + effluent design flow)÷ effluent design flow

= (0.1cfs +1.547 cfs) ÷ 1.547 = 1.065

METALS:

Total Recoverable Copper:

The limits for copper were calculated based on National Recommended Water Quality Criteria published in the Federal Register on December 10, 1998, with a hardness of 60 mg/l and a dilution factor of 1.065. The instream of 60 mg/l is form Whole Effluent Toxicity Reports conducted from 1/26/98 thru 2/22/01.

Water Quality Criteria for hardness-dependent metals (see equations below):

Acute Criteria (dissolved) = $\exp\{m_a [\ln(\text{hardness})] + b_a\}$ (CF)

Where: m_a = pollutant-specific coefficient
b_a = pollutant-specific coefficient
h = hardness of the receiving water = 58 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor
(CF is used to convert total recoverable to dissolved metal)

Chronic Criteria (dissolved) = $\exp\{m_c [\ln(\text{hardness})] + b_c\}$ (CF)

Where: m_c = pollutant-specific coefficient
b_c = pollutant-specific coefficient
h = hardness of the receiving water = 58 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor
(CF is used to convert total recoverable to dissolved metal)

Calculation - acute limit for copper :

$m_a = 0.9422$ $b_a = -1.7$ CF = 0.96

Acute criteria (dissolved) = $\exp\{0.9422 [\ln(60)] - 1.7\}$ (0.96) = 8.31 ug/l

Dilution Factor = 1.065

Effluent Limitation: = (8.31 ug/l x 1.065) = 8.85 ug/l (dissolved)
Total recoverable = 8.85 / CF = 8.85 / 0.96 = 9.2 ug/l *

* An inverse conversion factor is used to determine total recoverable metal. The EPA Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA- 823-B-96-007) is used as the basis for using the criteria conversion factor. National guidance requires that permit limits be based on total recoverable metals and not dissolved metals. Consequently, it is necessary to apply a translator in order to develop a total recoverable permit limit from a dissolved criteria. The translator reflects how a discharge partitions between the particulate and dissolved phases after mixing with the receiving water. In the absence of site specific data on how a particular discharge partitions in the receiving water, a default assumption that the translator is equivalent to the criteria conversion factor is used in accordance with the Translator Guidance.

Therefore the acute (maximum daily) water quality based limitation for Total Recoverable Copper is 9.2 ug/l.

Calculation - chronic limit for copper:

$m_c = 0.8545$ $b_c = -1.702$ CF = 0.96

Chronic criteria (dissolved) = exp{0.8545 [ln(58)] - 1.702} (0.96) = 5.79 ug/l

Dilution Factor = 1.065

Effluent Limitation: = (5.79 ug/l x 1.065) = 6.17 ug/l (dissolved)
Total Recoverable = 6.17 / CF = 6.17 / 0.96 = 6.4 ug/l *

Therefore the chronic (monthly average) water quality based limitation for Total Recoverable Copper is 6.4 ug/l.

PHOSPHOROUS LIMIT

Major Forge Pond Inputs (1986 May - September average)
Mean Total Phosphorous

	Mean Flow	ug/l	lb/day
Bachelor Brook	6.5 cfs	13.6	0.48
Forge Pond Brook	2.6 cfs	35.3	0.49
Weston Brook	3.7 cfs	294.0	5.9
	12.8 cfs (8.3MGD)		

Allowable load to Forge Pond = 8.3 MGD (8.34 lbs/gallon) 0.05 mg/l P[1] = 3.46 lbs/d
Weston Brook NPS load = 2.0 MGD* (8.34) 0.024** mg/l P = 0.40 lbs/d
Allowable WWT P load = 3.46 lbs /d - 0.48 lbs/d - 0.49 lbs /d - 0.40 lbs /d = 2.08 lbs/d
Allowable WWTP P concentration = 2.08 lbs /d ÷(8.34) 1.0 MGD = 0.25 mg/l

[1] Quality Criteria for Water 1986 (Gold Book)
* 2.0 MGD = Weston Brook flow - Belchertown WWTP flow (0.35 MGD)
** 0.024 mg/l = average of Bachelor Brook and Forge Pond Brook

CHRONIC WHOLE EFFLUENT TOXICITY LIMIT:

Chronic - No Observed Effect Concentration (C- NOEC) %
= effluent design flow ÷ (7Q10 flow + effluent design flow)
= 1.547 ÷ (0.1 + 1.547) = 0.939 = 94%

Appendix E

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §26-53),

Town of Belchertown Department of Public Works
290 Jackson Street, P.O. Box 670
Belchertown, Massachusetts 01007 - 0670

is authorized to discharge from the facility located at

Belchertown Water Reclamation Facility
175 George Hannum Road
Belchertown, Massachusetts 01007

to receiving waters: **Lampson Brook to Connecticut River**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective sixty days after the date of signature.

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on July 11, 1997.

This permit consists of 9 pages in Part I including effluent limitations, monitoring requirements; Attachment A, and 35 pages in Part II including General Conditions and Definitions.

Signed this 28th day of December, 2005

Linda M. Murphy
Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Acting Assistant Commissioner
Bureau of Resource Protection
Department Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001 Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirement	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow	MGD	1.0[1]	----	Report	Continuous[2]	Recorder
BOD_5(June1 - October 31)	mg/l	5.0	7.5	Report	1/Week[3]	24Hr.Composite[4]
	lbs/day	42	63	Report		
BOD_5 (May)	mg/l	15	15	Report	1/Week[3]	24Hr.Composite[4]
	lbs/day	125	125	Report		
BOD_5 (November1- April 30)	mg/l	30	30	Report	1/Week[3]	24Hr.Composite[4]
	lbs/day	250	250	Report		
TSS (June1 - October 31)	mg/l	15	15	Report	1/Week[3]	24Hr.- Composite[4]
	lbs/day	125	125	Report		
TSS (May)	mg/l	20	20	Report	1/Week[3]	24Hr.- Composite[4]
	lbs/day	167	167	Report		
TSS (November 1- April 30)	mg/l	30	30	Report	1/Week[3]	24Hr.- Composite[4]
	lbs/day	250	250	Report		
pH	s.u.	(See Condition I.A.1.b. on Page 4 of 9)			Daily	Grab

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirement	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Total ammonia, as N, (May)	mg/l	7	7	10	1/month	24 - Hr.Composite[4]
(June to October 31)	mg/l	1	1	1.5	1/month	24 - Hr.Composite[4]
Fecal Coliform[5]	CFUs /100 ml	200	----	400	1/week	Grab
(April 1 - October 31)						
Nitrite+Nitrate,	mg/l	Report	----	----	1/month	24-Hr.Composite[4]
TKN	mg/l	Report	----	----	1/month	24-Hr.Composite[4]
Dissolved Oxygen	mg/l	6	----	----	1/week	Grab
LC_{50}[6]	%	----	----	100	4/year [8]	See Protocol
C-NOEC [7]	%	----	----	94	4/year [8]	See Protocol
Copper[9]	ug/l	8.1	----	12.0	1/month	24-Hr. Composite[4]
Phosphorus[9]	mg/l	0.25	----	----	1/week	24-Hr.Composite[4]
	lbs/day	2.085	----	----	1/Week	24-Hr.Composite[4]

Footnotes

1. This limit is annual average. The permittee shall report the annual average flow each month. The annual average, shall be calculated using the monthly average flow from the reporting month and the monthly average flows from the previous 11 months

2. For flow, report maximum and minimum daily rates and total flow for each operating date.

3. Sampling required for influent and effluent.

4. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during one working day (e.g 6:00 AM -5:59AM, Monday - Tuesday).

5. This is a State certification requirement. The monthly average limit is expressed as a geometric mean and shall be measured and reported in Colony Forming Units (CFUs) per 100 milliliters.

6. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

7. C-NOEC is the highest effluent concentration at which No Observed Chronic Effect (e.g. e.g. growth, reproduction, mortality) will occur at continuous exposure to test organisms (in a life-cycle or partial life- cycle test). The "94% or greater" is defined as a sample which is composed of 94% (or greater) effluent, the remainder being dilution water.

8. The permittee shall conduct chronic (and modified acute) toxicity tests four times per year. The permittee shall conduct chronic (and modified acute) toxicity tests during the second week of the month (any day of the week but no later than Friday) of February, May, August, and November Results are to be submitted by the 15th day of the month after the sample i.e. March and September and December, See Toxicity Test Procedure and Protocol on Attachment A.

9. Compliance with the copper and phosphorous limits will be effective one year from the effective date of the permit to allow for operational adjustments during the first year of treatment at the new plant. Therefore, for the first year, the permittee will report the copper and phosphorous concentrations while working towards meeting the limits

Part I.A 1 (Continued)

a The discharge shall not cause a violation of the water quality standards of the receiving waters.

b The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes

c The discharge shall not cause objectionable discoloration of the receiving waters

d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.

f. When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the designed flow, the permittee shall submit to the permitting authorities 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.

g. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control.

2. All POTWs must provide adequate notice to the Director of the following:

a. Any new introduction of pollutants into that POTW from an indirect discharger in a primary industry category discharging process water; and

b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For purposes of this paragraph, adequate notice shall include information on:

(1) the quantity and quality of effluent introduced into the POTW; and

(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

3. Prohibitions Concerning Interference and Pass Through:

a. Pollutants introduced into POTW's by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

b. If, within 30 days after notice of an interference or pass through violation has been sent by EPA to the POTW, and to persons or groups who have requested such notice, the POTW fails to commence appropriate enforcement action to correct the violation, EPA may take appropriate enforcement action

4 Toxics Control

a The permittee shall not discharge any pollutant or combination of pollutants in

toxic amounts.

b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

5. Numerical Effluent Limitations for Toxicants

EPA or DEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I A.1. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSO) if any, are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2 Infiltration/Inflow

The permittee shall eliminate excessive infiltration/inflow to the sewer system A summary report of all actions taken to minimize infiltration/inflow during the previous calendar year shall be submitted to EPA and the MA DEP by February 28th of each year This report shall also include a graph of flows to the treatment plant during the year and an analysis of I/I trends (i.e, is I/I being reduced) If there have been any unauthorized discharges from the collection system during the previous calendar year which were caused by inadequate sewer system capacity, the permittee shall also include in this report an evaluation of actions necessary to restore adequate capacity

3. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall continue to provide an alternative power source with which to sufficiently operate its treatment works (as defined at 40 CFR §122.2).

D. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state or federal (40 CFR part 503) requirements.

3. The requirements and technical standards of 40 CFR part 503 apply to facilities which now perform or will in the future perform one or more of the following use or disposal practices.

   a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge only landfill

   c. Sewage sludge incineration in a sludge only incinerator at Belchertown's WRF.

4. The 40 CFR part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (e g. lagoons- reed beds), or are otherwise excluded under 40 CFR 503.6.

5. The permittee shall use and comply with the attached compliance guidance document to determine appropriate conditions. Appropriate conditions contain the following elements
   - General requirements
   - Pollutant limitations
   - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
   - Management practices
   - Record keeping
   - Monitoring
   - Reporting

   Depending upon the quality of material produced by a facility, all conditions may not apply to the facility

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the frequency indicated below. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year.

less than 290	1/ year
290 to less than1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8

8. The permittee shall submit an annual report containing the information specified in the guidance. Reports are due annually by February 19. Reports shall be submitted to the address contained in the reporting section of the permit.

E. MONITORING AND REPORTING

1. Reporting

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the effective date of the permit.

Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

2. A copy of the Discharge Monitoring Reports and all other reports required herein, <u>except for toxicity test reports</u>, shall be submitted to MADEP at the following address:

Massachusetts Department of Environmental Protection
Western Regional Office - Bureau of Resource Protection
436 Dwight Street
Springfield, MA 01103

3 Copies of all Discharge Monitoring Reports and toxicity test reports required by this permit shall be submitted to MADEP the following address

Massachusetts Department of Environmental Protection
Division of Watershed Management

Surface Water Discharge Permit Program
627 Main Street, 2nd floor
Worcester, Massachusetts 01608

F. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) under federal and state law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chap.21, §43.

Each Agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as an NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

ATTACHMENT A

FRESHWATER CHRONIC TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable chronic (and modified acute) toxicity tests on three samples collected during the test period. The following tests shall be performed in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic and acute toxicity data shall be reported as outlined in Section VIII. The chronic fathead minnow and daphnid tests can be used to calculate an LC50 at the end of 48 hours of exposure when both an acute (LC50) and a chronic (C-NOEC) test is specified in the permit.

II. METHODS

Methods to follow are those recommended by EPA in:

Lewis, P.A. et al. Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Third Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. July 1994, EPA/600/4-91/002.

Any exceptions are stated herein.

III. SAMPLE COLLECTION

For each sampling event, three discharge samples shall be collected. Fresh samples are necessary for Days 1, 3, and 5 (see Section V for holding times). The initial sample is used to start the test on Day 1, and for test solution renewal on Day 2. The second sample is collected for use at the start of Day 3, and for renewal on Day 4. The third sample is used for renewal on Days 5, 6, and 7 (or until termination for the Ceriodaphnia dubia test). The initial (Day 1) sample will be analyzed chemically (see Section VI). Day 3 and 5 samples will be held until test completion. If either the Day 3 or 5 renewal sample is of sufficient potency to cause lethality to 50 percent or more test organisms in any of the dilutions for either species, then a

chemical analysis shall be performed on the appropriate sample(s) as well.

Aliquots shall be split from the samples, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses. The remaining samples shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater also describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1 mg/L chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

IV. DILUTION WATER

Grab samples of dilution water used for chronic toxicity testing shall be collected from the receiving water at a point upstream of the discharge free from toxicity or other sources of contamination. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency-New England
JFK Federal Building (CAA)
Boston, MA 02203

It may prove beneficial to have the dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol. See Section 7 of EPA/600/4-89/001 for further information.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA New England requires that fathead minnow tests be performed using four (not three) replicates of each control and effluent concentration because the non-parametric statistical tests cannot be used with data from only three replicates. Also, if a reference toxicant test was being performed concurrently with an effluent or receiving water test and fails, both tests must be repeated.

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND RECOMMENDED EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA, SURVIVAL AND REPRODUCTION TEST[1]

1.	Test type:	Static, renewal
2	Temperature (°C):	25 ± 1°C
3.	Light quality: laboratory illumination	Ambient
4.	Photoperiod:	16 hr. light, 8 hr. dark
5.	Test chamber size:	30 mL
6.	Test solution volume:	15 mL
7.	Renewal of test solutions:	Daily using most recently collected sample
8.	Age of test organisms:	Less than 24 hr.; and all released within an 8 hr. period of each other.
9	Number of neonates per test	1

	chamber:	
10.	Number of replicate test chambers per treatment:	10
11.	Number of neonates per test concentration:	10
12.	Feeding regime:	Feed 0.1 ml each of YCT and concentrated algal suspension per exposure chamber daily.
13.	Aeration:	None
14.	Dilution water:[2]	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^R or equivalent deionized water and reagent grade chemicals according to EPA chronic toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
15.	Effluent concentrations:[3]	5 effluent concentrations and a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Dilution factor:	$\geq$ 0.5
17	Test duration:	Until 60% of control females have three broods (generally 7 days and a maximum of 8 days).
18.	End points.	Survival and reproduction

19.	Test acceptability:	80% or greater survival and an average of 15 or more young/surviving female in the control solutions. At least 60% of surviving females in controls must produce three broods.
20.	Sampling requirements:	For on-site tests, samples are collected daily and used within 24 hr. of the time they are removed from the sampling device. For off-site tests a minimum of three samples are collected (i.e. days 1, 3, 5) and used for renewal (see Sec. III). Off-site tests samples must be first used within 36 hours of collection.
21.	Sample volume required:	Minimum 1 liter/day

Footnotes:

1. Adapted from EPA/600/4-91/002.
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

EPA NEW ENGLAND RECOMMENDED EFFLUENT TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) LARVAL SURVIVAL AND GROWTH TEST[1]

1.	Test type:	Static, renewal
2.	Temperature (°C):	25 ± 1°C
3.	Light quality:	Ambient laboratory illumination
4.	Photoperiod:	16 hr. light, 8 hr. dark
5.	Test chamber size:	500 mL minimum
6.	Test solution volume:	Minimum 250 mL/replicate
7.	Renewal of test concentrations:	Daily using most recently collected sample.
8.	Age of test organisms:	Newly hatched larvae less than 24 hr. old
9.	No. larvae/test chamber and control:	15 (minimum of 10)
10.	No. of replicate chambers/ concentration:	4
11.	No. of larvae/concentration:	60 (minimum of 40)
12.	Feeding regime:	Feed 0.1 g newly hatched, distilled water-rinsed Artemia nauplii at least 3 times daily at 4 hr. intervals or, as a minimum, 0.15 g twice daily, 6 hrs. between feedings (at the beginning of the work day prior to renewal, and at the end of the work day following renewal). Sufficient larvae are added to provide an excess. Larvae fish are not fed during the final 12 hr. of the test
13.	Cleaning:	Siphon daily, immediately before test solution renewal.

14.	Aeration:	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L. Rate should be less than 100 bubbles/min.
15.	Dilution water:[2]	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^R or equivalent deionized and reagent grade chemicals according to EPA chronic toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
16.	Effluent concentrations:[3]	5 and a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
17.	Dilution factor:	$\geq$ 0.5
18.	Test duration:	7 days
19.	End points:	Survival and growth (weight)
20.	Test acceptability:	80% or greater survival in controls: average dry weight per control larvae equals or exceeds 0.25 mg.
21.	Sampling requirements:	For on-site tests samples are collected and used within 24 hours of the time they are removed from the sampling device. For off-site tests a minimum of three samples are collected (i.e. days 1, 3, 5) and used for renewal (see Sec.IV) Off-site tests samples must be first used within 36 hours of collection.
22	Sample volume required	Minimum 2.5 liters/day

Footnotes:

1. Adapted from EPA/600/4-91/002.

2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory or culture water (0% effluent) is required.

VI. CHEMICAL ANALYSIS

As part of each daily renewal procedure, pH, specific conductance, dissolved oxygen, and temperature must be measured at the beginning and end of each 24-hour period in each dilution and the controls. It is also recommended that total alkalinity and total hardness be measured in the control and highest effluent concentration on the Day 1, 3, and 5 samples. The following chemical analyses shall be performed for each sampling event.

Parameter	Effluent	Diluent	Level (mg/l)	Minimum Quanti-Fication
Hardness[1]	x	x		0.5
Alkalinity	x	x		2.0
pH	x	x		--
Specific Conductance	x	x		--
Total Solids and Suspended Solids	x	x		--
Ammonia	x	x		0.1
Total Organic Carbon	x	x		0.5
Total Residual Chlorine (TRC)[2]	x	x		0.05
Dissolved Oxygen	x	x		1.0
Total Metals				
Cd	x			0.001
Cr	x			0.005
Pb	x	x		0.005
Cu	x	x		0.0025
Zn	x	x		0.0025
Ni	x	x		0.004
Al	x	x		0.02
Mg, Ca	x	x		0.05

Superscripts:

[1] Method 2340 B (hardness by calculation) from APHA (1992) Standard Methods for the Examination of Water and Wastewater. 18th Edition.

[2] Total Residual Chlorine

Either of the following methods from the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses:
-Method 4500-CL E Low Level Amperometric Titration (the preferred method);
-Method 4500-CL G DPD Colorimetric Method.

or use USEPA Manual of Methods Analysis of Water and Wastes, Method 330.5.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)
Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

Reference the flow chart on page 84 or page 172 of EPA 600/4-91/002 for the appropriate method to use on a given data set.

Chronic No Observed Effects Concentration (C-NOEC)
Methods of Estimation:

- Dunnett's Procedure
- Bonferroni's T-Test
- Steel's Many-One Rank Test
- Wilcoxin Rank Sum Test

Reference the flow charts on pages 50, 83, 96, 172, and 176 of EPA 600/4-91/002 for the appropriate method to use on a given data set.

In the case of two tested concentrations causing adverse effects but an intermediate concentration not causing a statistically significant effect, report the C-NOEC as the lowest concentration where there is no observable effect. The definition of NOEC in the EPA Technical Support Document only applies to linear dose-response data.

VIII. TOXICITY TEST REPORTING

A report of results will include the following:

- Description of sample collection procedures, site description;
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody; and
- General description of tests: age of test organisms. origin, dates and results of standard toxicant tests; light and temperature regime; other information on test

conditions if different than procedures recommended. Reference toxicant test data should be included.

- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

RESPONSE TO PUBLIC COMMENTS ON DRAFT NPDES PERMIT NO. MA 0102148 FOR THE BELCHERTOWN WATER RECLAMATION FACILITY(WRF) LOCATED AT 175 GEORGE HANNUM ROADS, MASSACHUSETTS, 01007

On September 8, 2000, the U.S. Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("MADEP") released for Public Notice and comment a draft National Pollutant Discharge Elimination System ("NPDES") permit for the Belchertown Department of Public Works a Massachusetts facility. The public comment period for this draft permit expired October 7, 2000. This is a response to comments received during the comment period from Tighe&Bond a consulting firm working on behalf of the Town of Belchertown, Department of Public Works.

Comments:

1: Part IA.1- Page 2 of 9- Flow limit

The draft permit includes a permit limitation for an annual average flow of 1.0 MGD. The Town requests that a footnote be added to the permit to indicate that this represents a correction to the previous permit, rather than a modification of permit requirements. The indicated flow is based on the approved design flow for the POTW that is an annual average value.

Response 1:

EPA and MA DEP have instituted a policy change in the way flow limits in NPDES permits for POTWs are calculated. The change in Belchertown WRF's permit is not only to this permit, but is taking place in all POTW permits as they are reissued, and is in recognition that the design flows expressed in facilities plans, which were previously limited as monthly average flows are actually expressed as annual averages. The annual average flow will be a twelve month running average which will allow variation in flows at WWTPs, particularly during the spring time runoff events. Footnote 1 in the draft permit provide clarification on how to calculate the annual average flow, and it is now a part of the standard language in permits. We hope this clarifies the reason for the change in the flow limit. We did not however, add the requested footnote because it is not necessary to clarify the limit.

2. Part IA.1 - Page 2 of 9 - Mass Loading Limits (BOD_5 and TSS)

Mass loading limits for monthly and weekly biochemical oxygen demand (BOD_5) and total suspended solids (TSS) were not included in earlier permits. These limits were derived by multiplying the monthly and weekly concentration limits by the annual average flow rate (1.0 mgd) and a conversion factor of 8.34 to arrive at a mass loading value.

We take exception to this approach since it incorrectly used an annual average flow to compute weekly and monthly mass limits. Since average monthly and average weekly flow can be significantly greater than average annuals flows, any mass limit should be based on flows that correspond with the loading frequency in question, i.e., maximum monthly flow and maximum weekly flow. Additionally, the monitoring requirements in the new permit require sampling once per week. This effectively results in the weekly average condition being the equivalent of a daily maximum limit. The approved basis of design for this facility included a maximum daily peaking factor of 2.5 times annual average flow. The estimated peaking factor for monthly maximum flow is 1.5 times the average annual flow.

Proposed maximum weekly flow conditions, with mass based BOD_5 limits of 63 lbs/day would result in a required effluent concentration of 3.0 mg/L. An effluent BOD_5 limit of 3.0 mg/L cannot be reliably achieved and was not included in the approved facilities plan and final design.

Neither the previous nor the current permit contains a weekly flow limit, so there is no basis to compute a weekly mass limit. For these reasons, the mass loading limits should either be removed from the draft permit, or adjusted to reflect the design maximum monthly and weekly flow conditions for the facility.

Imposing a weekly and monthly mass limit also will unreasonably restrict facility discharges without a technical basis for establishing the new limit. Neither the permit nor the fact sheet provides the regulatory basis or necessity for including mass loading limits in this permit. The concentration limits used for computing the winter (November 1 - April 30) mass based limits are technology based limits and are unrelated to water quality of the receiving stream. The concentration limits do not reflect the mass of BOD_5 or TSS that the receiving stream can assimilate without water quality impairment. Limits have not been developed based on a wasteload allocation to prevent stream quality degradation. Therefore, we again request that the mass limits be removed from the permit since they impose a new limit that was never intended in the original facility permit and was not considered in the basis for design of the facility.

We also note that mass based limits are not necessary to comply with EPA's anti-degradation requirements. Administrative permit correction are permitted as a matter of EPA policy without impacting anti-degradation concerns. The flow limit in the tabulation of effluent limits has not changed. The correction only involves a footnote to the table so that the flow limit matches the original basis of design for the treatment facility.

RESPONSE 2:

As described in the response to Comment #1 EPA and MADEP have agreed to a policy of establishing the flow limits in POTW permits as an annual average. As part of this policy, we have agreed to establish monthly average and weekly average mass limits for BOD and TSS using the annual average flow limit, and the weekly average and monthly average concentration limits. The inclusion of mass limits is supported by 40 CFR §122.45(f)(1), which states that pollutants limited in the permit shall have limitations, standards, or prohibitions expressed in

terms of mass. While the regulations require limitations be expressed in terms of mass, 40 CFR §122.45(f)(2) states that pollutants limited in terms of mass additionally may be limited in terms of other units of measurements and the permit shall require the permittee to comply with both limitations. The technology-based secondary treatment limits in the permit are based on average monthly and average weekly requirements in 40 CFR 133.102.

We understand your concern regarding the use of the annual average flow limit in calculating the monthly average and weekly average mass limits. However, we believe that imposing the mass based limits at this flow level is appropriate to satisfy antidegradation and anti-backsliding requirements. The current permit limits flow as a monthly average, and limits BOD_5 and TSS monthly average and weekly average concentrations. So in fact, the current permit does limit the mass discharges to the mass limits proposed in the draft permit. Removing these mass based limits from the proposed permit, or calculating them at higher flow rates would allow greater discharges of these pollutants, which is contrary to the goals of anti-backsliding and antidegradation.

Expressing limitations in terms of concentration and mass encourages the proper operation of a treatment facility at all times. Concentration limits discourage the reduction in treatment efficiency during low flow periods and during periods of high flows and mass limits discourage higher loads being discharged into the receiving water.

3. Part I A.1 - Page 3 of 9 - Total Residual Chlorine Limit

The Town has already notified Nam Phoung in a letter dated September 12, 2000 that the previously used chlorination/ dechlorination system has been abandoned and the new ultraviolet light disinfection system has been put into operation. Therefore, we request that the total residual chlorine limitations be deleted from the previous permit because chlorine is no longer used for disinfection at the facility.

RESPONSE 3:

Deletion of this requirement from the existing permit will not be necessary since the existing permit has expired and is being reissued. Since the town has completed the installation of the disinfection system for the new facility and is no longer discharging chlorine, EPA and MADEP have reissued the final permit without total residual chlorine limitations or monitoring requirements. EPA's Water Technical Unit (SEW) will send to the Facility's Manager, within sixty after the new permit is issued, new discharge monitoring report forms (DMRs) which reflect the requirements of the reissued permit. Until you receive the new DMRs, you should report "no discharge" for TRC.

4. Part 1A.1 - Page 3 of 9 - Phosphorous Limit

We understand that Massachusetts does not have a water quality standard for phosphorus but expects to develop an standard in the next few years. In lieu of a technical standard, we believe EPA and MADEP have relied on the EPA Gold Book guidelines to established a permit limit.

Based on this approach, the instream phosphorus concentration after dilution should govern the effluent limit. Therefore, it would seem logical that the effluent concentration required could be defined to vary seasonally, similar to the BOD_5, and TSS and ammonia limits included in this draft permit, depending on the receiving stream flow. Phosphorus concentrations included in the permit could be staggered seasonally to account for changing flow conditions in the receiving stream, and if appropriate, deleted from the permit period between October 31st and April1st.

Therefore, we request that the phosphorus limits be revised in the winter permit period to a limit of 1.0 mg/L and in May permit period to a limit of 0.5 mg/L. Similar to discussion on the BOD and TSS, we also request that the mass loadings limits should be either removed from the draft permit or adjusted to reflect the design maximum monthly flow conditions for the facility.

RESPONSE 4:

Limits are typically imposed on a year round basis in order to ensure normal seasonal improvements in water quality consistent with requirements of the Clean Water Act. Where it is demonstrated that cold temperatures result in an inability to achieve the limits in the winter period, relaxed limits are allowed during the winter period, provided that water quality standards will still be achieved. Due to eutrophication concerns in the downstream lake and the potential for higher winter phosphorus loadings to accumulate in the sediments and contribute to the eutrophication problem, the limits will remain as year round. These limits are the same as those in the previous permit.

5. Part IA.1 - Page 3of 9- Phosphorous limit, Mass Based Limit Calculation

The mass based limit for phosphorous of 2.0 lbs/day appears to be in error. Multiplying the annual average flow times the indicated concentration of 0.25 mg/L (times 8.34) results in a mass limit of 2.085 lbs/day. We request that, if mass based permit limits are included in the final permit, this value be corrected to 2.09 lbs/day.

RESPONSE 5:

The limit will be changed from the proposed 2.00 lbs/day to 2.085 lbs/day to be exact.

6. Part IA.1- Page 3 of 9 - Copper Limit

The copper limit proposed is extremely stringent and based on a survey we have conducted of numerous facilities within New England, is probably technically unachievable. In addition, there are numerous technical reasons why the need for copper limits remains in question including, the reduction of copper toxicity due to copper availability associated with complex formation with other materials, the limitations of commercial laboratory testing and the methods used for development of the Gold Book standard. As you may be aware. EPA is working with Water Environment Federation (WEF) to develop a biotic ligand model for copper toxicity to account for the influences of the wastewater characteristics with the reduction in copper toxicity.

Furthermore, this facility has consistently demonstrated no effluent toxicity through whole effluent toxicity testing. Therefore, we believe the copper limits included in this draft permit are not justified and request that they be removed from the permit entirely.

EPA and DEP do not concur that copper limits are not required at this time, we request the following language be added to the draft permit for the Belchertown to allow later reevaluation of this issue.

After one year of monitoring for copper under this permit, the permittee may submit a written request to remove this permit requirement if there is sufficient data to indicate that the levels of copper in the discharge will not cause or contribute to any water quality standards violations. The permittee shall continue testing for of copper until the EPA approves of such modification request in writing.

RESPONSE 6.

The limits are based on state numeric water quality criteria and will remain in the permit. At any time, the permittee may pursue development of site specific criteria, and upon approval by DEP and EPA, the permit can be modified to reflect the site specific criteria. Whole effluent toxicity testing is intended to complement chemical specific limits by measuring the toxicity of the aggregate discharge. Whole effluent toxicity testing is infrequent and the species tested are not necessarily the most sensitive species that chemical specific criteria are intended to protect. Whole effluent toxicity testing does not replace the need for chemical specific limits. The limitations are unchanged from the previous permit.

APPEALING/CONTESTING PERMITS

If you wish to contest any of the provisions of this permit, you may petition the Environmental Appeals Board, (EAB), within thirty days of receipt of this letter. You may request the EAB to review any condition of the permit decision In order to be eligible to petition you must have filed comments on the draft permit or participated in any public hearing that may have been held pertaining to this permit. The request should be submitted to the following address.

Environmental Appeals Board, MC1103B
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue N.W.
Washington D.C. 20460

Procedures for appealing permits can be found at 40 C.F.R. §§ 124.19 and 124.21 as amended by regulations effective June 14, 2000. Copies of those regulations are enclosed for your information. The EAB website location and frequently asked questions, (FAQs) are also enclosed

STAYS OF NPDES PERMITS

The effects of a properly filed appeal of an NPDES permit on the conditions and effective date of the permit can be found at 40 C.F.R. §§ 124.16 and 124.60 as amended by regulations becoming effective June 14, 2000. Copies of those are enclosed for your information.

Appendix F

w/the 6 page request for stay!

DF

Tighe&Bond
Consulting Engineers
Environmental Specialists

NPDES Appeal

B-27-5-50
February 7, 2001

OVERNIGHT DELIVERY – ELECTRONIC SIGNATURE TRACKING

Environmental Appeals Board
MC 1103B, U.S. EPA, Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Hearing Clerk
Office of Administrative Appeals
Commonwealth of Massachusetts
Department of Environmental Protection
1 Winter Street, 3rd Floor
Boston, MA 02108

Re: Belchertown, MA
NPDES No. MA0102148
Permit Appeal
Request for Adjudicatory Hearing

Dear Environmental Appeals Board and Office of Administrative Appeals:

On behalf of the Town of Belchertown, Massachusetts, Department of Public Works, we are writing this letter for two purposes: 1) to file an appeal of the final NPDES Permit issued to the Town of Belchertown on January 10, 2001 with the Environmental Appeals Board; and 2) to file an appeal and request an adjudicatory hearing from the Massachusetts Department of Environmental Protection Office of Administrative Appeals.

The Town of Belchertown is disappointed with the lack of receptiveness on the part of the U.S. EPA Region I as well as the Massachusetts Department of Environmental Protection to comments that the Town raised relative to certain conditions of the draft NPDES Permit which the Town believes are unnecessarily stringent and may not be attainable, even with the newly reconstructed tertiary treatment facilities paid for by the Town at a cost of approximately $8.7 million.

While the issues raised in this appeal are specific to the Belchertown, MA, NPDES Permit conditions, we believe that the Environmental Appeals Board and the Office of Administrative Appeals of the Massachusetts Department of Environmental Protection should take a larger interest in this case as it highlights systematic problems associated with the use of draft policies by U.S. EPA Region I and the Massachusetts Department of Environmental Protection in establishing final NPDES Permit conditions. We are concerned that broad policy decisions are being made that affect a wide range of municipalities without the benefit of public comment or review in developing these policies, and without a scientifically based evaluation of the need for, or impact of, these policies.

We urge the Board of Environmental Appeals and the Office of Administrative Appears to undertake full and independent reviews of this appeal.

Requester Information

This request is being filed by the Permit Holder:

Town of Belchertown Department of Public Works

Mr. Steven J. Williams, Director

290 Jackson Street, P.O. Box 670

Belchertown, MA 01007-0670

(413) 323-0415

(413) 323-0470 fax

The requestor is being represented by:

Tighe & Bond, Inc

Consulting Engineers

Omer H. Dumais, Jr., P.E., Vice President

53 Southampton Road

Westfield, MA 01085

(413) 572-3236

(413) 562-5317 fax

A letter from Town of Belchertown Department of Public Works is attached authorizing Tighe & Bond, Inc. to represent the requestor.

Service

Simultaneous with the service of this appeal, the requestor's representative certifies that copies have been sent by United States Mail – Certified Mail to all parties addressed above as well as all parties listed as copied at the end of this letter.

Statement of Interest - Specific Permit Conditions Under Appeal

The Town of Belchertown, through this letter, requests appeal of the following NPDES Permit conditions.

1. Part I A.1 – Page 2 of 9 - Flow limit

The Town of Belchertown does not appeal the specific numeric limitations for flow. However, the Town of Belchertown appeals EPA's decision not to clarify in the permit that the modification of the permit limit from a monthly average basis to an annual average basis is a correction and not a change resulting in less stringent limitations. As discussed below, this issue relates to whether or not the modification is subject to federal anti-backsliding and state antidegradation provisions.

2. Part I A.1 – Page 2 of 9 – Mass Loading Limits (BODs and TSS)

The Town of Belchertown appeals a) the inclusion of mass based limits for five-day Biochemical Oxygen Demand (BOD5) and Total Suspended Solids (TSS) and b) the method used to calculate the limits and c) the policy used by U.S. EPA Region I to establish such limitations.

3. **Part I.A.1- Page 3 of 9 – Phosphorus Limits**

The Town of Belchertown appeals a) the inclusion of mass based limits for phosphorus and b) the method used to determine phosphorus limitations as a year round permit condition, without respect to seasonal variability in receiving waters.

4. **Part I A.1 – Page 3 of 9 - Copper Limit**

The Town of Belchertown appeals a) the inclusion of copper limits in the Permit; b) the methods used to establish such limitations; c) the methods used to demonstrate a need to include such permit limitations and d) the specific numeric limits included in the permit.

5. **Attachment A – Freshwater Chronic Toxicity Test Procedure and Protocol**

The Town of Belchertown appeals a modification made to the Freshwater Chronic Toxicity Test Procedure and Protocol (Attachment A of the Permit) made after the draft NPDES. The draft NPDES Permit required single species toxicity testing, whereas the final NPDES Permit requires toxicity testing using two species. U.S. EPA provided no discussion of the basis for this change.

Background Into Development Of The Permit

Copies of previous NPDES Permits, Administrative Orders as well as copies of comments submitted on draft NPDES permits are attached in the Appendices as listed below:

Appendix A – September 27, 1991 NPDES Permit

Appendix B – December 4, 1996 Draft NPDES Permit

Appendix C – Comments on December 4, 1996 Draft NPDES Permit
(includes comments on predraft)

Appendix D – July 11, 1997 Final NPDES Permit

Appendix E – September 30, 1997 Administrative Order and Amendments

Appendix F – September 6, 2000 Draft NPDES Permit

Appendix G – Comments on September 6, 2000 Draft NPDES Permit

Appendix H – January 10, 2001 Final NPDES Permit

The Belchertown wastewater treatment facility was previously owned by the Commonwealth of Massachusetts Department of Mental Health. Ownership of the facility was transferred to the Town of Belchertown on October 3, 1994 and the NPDES permit in effect at the time was transferred to the Town on January 13, 1995. That permit expired on September 26, 1995 but remained in effect in accordance with the Administrative Procedures Act.

After taking ownership of the wastewater treatment facility, the Town entered into discussion and correspondence with the U.S. EPA Region I and the Massachusetts Department of Environmental Protection regarding the feasibility of upgrading and expanding the treatment facilities to allow for

extension of the Town's sewer system to serve areas with failing septic systems and to significantly improve treatment performance.

Several different design alternatives were evaluated. The design evaluation included estimates for the long-term sewage treatment needs for Belchertown. Final design flows for the facility as presented to the U.S. EPA, including senior permitting staff, and the Massachusetts Department of Environmental Protection were established as follows:

Total Annual Average Daily Flow	1.00 mgd
Total Maximum Daily Flow	2.5 mgd
Total Peak Hourly Flow	3.5 mgd

Facilities plans for the project were evaluated and approved by the Massachusetts Department of Environmental Protection. The project ranked high in the State's list for funding for environmental improvements. The Town was awarded a grant from the Massachusetts Water Pollution Abatement Trust to complete the project.

On July 11, 1997 the NPDES Permit was reissued. The reissued permit authorized an increase in the permitted flow from 0.5 to the design flow of 1.0 mgd, along with a decrease in the permitted phosphorus concentration to 0.25 mg/L, and the inclusion of a limit on copper. Because the existing wastewater treatment facility would not be able to meet the new (1997) NPDES Permit limits, the U.S. EPA Region I issued an Administrative Order (AO) requiring that the Town comply with a construction schedule for completion of the new treatment facilities. The

Administrative Order as subsequently amended required that the Town complete construction by September 16, 2000.

This construction is substantially complete. Thus, within less than six years of taking ownership of a poorly operated and deteriorating treatment facility, the Town has turned the facility into a modern state of the art tertiary treatment facility.

However, ten days before the completion deadline for the new facilities, EPA Region I issued the new draft NPDES permit that contained new permit conditions that the treatment facility cannot reasonably be expected to meet. The Town of Belchertown raised objections and presented technical arguments against the inclusion of these requirements during the comment period. U.S.EPA Region I chose not to revise the permit conditions of concern. Therefore, on behalf of the Town of Belchertown we are filing this appeal.

Documentation of Standing to File Appeal

Regulations governing appeal of NPDES Permits (40 CFR 124.19) stipulate that "...any person who filed comments on that draft permit or participated in the public hearing may petition the Environmental Appeals Board to review any condition of the permit decision....Any person who failed to file comments or failed to participate in the public hearing may petition for administrative review only to the extent of the changes from the draft to the final permit decision....The petition shall include a statement of the reasons supporting the review, including a demonstration that any issues being raised were raised during the public comment period...".

Tighe & Bond, on behalf of the Town of Belchertown, filed comments on the September 2000 draft NPDES Permit, by letter dated October 6, 2000. A copy of this letter is included in Appendix G as demonstration that the issues being raised (other than toxicity testing requirements as discussed below) were raised during the public comment period.

Tighe & Bond's comment letter presented objections to each of the items of appeal, with the exception of the appeal on the requirement for use of two species for toxicity testing. The draft NPDES Permit had included a requirement for only one species for toxicity testing, and no comment was raised during the comment period. However, as noted in 40 CFR 124.19, any person may petition for administrative review for changes from the draft to the final permit decision.

Comments on the September 2000 Draft Permit

By letter dated October 6, 2000 on behalf of the Town of Belchertown, Tighe & Bond provided comments on the draft NPDES Permit. These included comments on the flow limit, mass loading limits for BOD and TSS, total residual chlorine limits, phosphorus concentration limits, mass based phosphorus limits and copper limits. Issues regarding total chlorine limits were resolved to the Town's satisfaction. However, remaining issues have yet to be resolved and are the subject of this appeal.

For reference, the comments on the draft NPDES permit which are relevant to the items under appeal in this letter are restated verbatim below along with EPA's response and a more detailed discussion of the basis of appeal for each item.

Appeal Item 1 - Part I A.1 – Page 2 of 9 - Flow limit

Tighe & Bond Comment on Draft Permit:

> "The draft permit includes a permit limitation for an annual average flow of 1.0 MGD. The Town requests that a footnote be added to the permit to indicate that this represents a correction to the previous permit, rather than a modification of permit requirements. The indicated flow is based on the approved design flow for the POTW that is an annual average value."

EPA Response:

> "EPA and MA DEP have instituted a policy change in the way flow limits in NPDES permits for POTWs are calculated. The change in the Belchertown WRF's permit is not only to this permit, but is taking place in all POTW permits as they are reissued, and is in recognition that the design flows expressed in facilities plans, which were previously limited as monthly average flows are actually expressed as annual averages. The annual average flow will be a twelve month running average which will allow variation in flows at WWTPs, particularly during the spring time runoff events. Footnote 1 in the draft permit provide clarification on how to calculate the annual average flow, and it is now a part of the standard language in permits. We hope this clarifies the reason for the change in the flow limit. We did not however, add the requested footnote because it is not necessary to clarify the limit."

Appeal: The appeal on this issue is directly associated with the appeal of the mass-based limitations for BOD and TSS presented below. An underlying argument that EPA presents as a basis for requiring monthly and weekly mass based BOD and TSS limits to be calculated using the annual average flow is because they, "...believe that the mass based limits at this flow level is appropriate to satisfy antidegradation and anti-backsliding requirements."

We strongly disagree that the use of the annual average flow for computing monthly and weekly BOD and TSS mass based limits as well as phosphorus mass based limitations is required to

address antidegradation or anti-backsliding requirements and contend that the U.S.EPA and the Massachusetts Department of Environmental Protection have based the requirement for mass based limits and the method for determining mass based BOD and TSS limits on an erroneous conclusion of law directly relating to the interpretation of the change in the flow limit from an average monthly limit to an annual average limit. Furthermore, this erroneous conclusion could have been prevented if the permit had been modified as requested during the comment period to clearly state that the change represents a correction to the previous permit, rather than a modification of permit requirements.

The second half of the second sentence of EPA's response quoted above clearly indicates that EPA's policy to modify flow limits in NPDES permit from monthly limits to annual limits (without a change in numeric value) is a correction to permit conditions rather than a modification resulting in less stringent limitations ("... in recognition that the design flows expressed in facilities plans, which were previously limited as monthly average flows are actually expressed as annual averages.").

The antibacksliding and anti-degradation regulations allow administrative corrections to NPDES Permits without impacting anti-degradation or antibacksliding concerns. The U.S. EPA and the Massachusetts Department of Environmental Protection are in error in stating that the mass-based BOD and TSS limitations are required to address these issues. The requested permit modification to specifically recognize the change to the flow limit as a correction would eliminate the perceived need to impose more stringent discharge limitations than contained in the previous permit.

EPA indicates that they did not add the requested footnote because it is not necessary to clarify the limit. While the clarification is not needed to identify the numeric value of the flow limit or the method used to calculate compliance with the flow limit, the clarification is needed to demonstrate compliance with federal anti-backsliding provisions.

Conclusion: Therefore, on behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals direct U.S. EPA Region I and Massachusetts Department of Environmental Protection to modify the permit as requested to indicate that the change to the flow limit is a correction, not subject to antidegradation or anti-backsliding requirements.

Appeal Item 2 - Part I A.1 – Page 2 of 9 – Mass Loading Limits (BOD_5 and TSS)

Tighe & Bond Comment on Draft Permit:

> "Mass loading limits for monthly and weekly BOD_5 and TSS were not included in earlier permits. These limits were derived by multiplying the monthly and weekly concentration limits by the annual average flow rate (1.0 mgd) and a conversion factor of 8.34 to arrive at a mass loading value.
>
> We take exception to this approach since it incorrectly used an annual average flow to compute weekly and monthly mass limits. Since average monthly and average weekly flow can be significantly greater than average annual flows, any mass limit should be based on flows that correspond with the loading frequency in question, i.e., maximum monthly flow and maximum weekly flow. Additionally, the monitoring requirements in the new permit require sampling once per week. This effectively results in the weekly average condition being the equivalent of a daily maximum limit. The approved basis of design for this facility included a maximum daily peaking factor of 2.5 times annual average flow. The estimated peaking factor for monthly maximum flow is 1.5 times average annual flow. Proposed maximum weekly flow conditions, with a mass based BOD_5 limit of 63 lbs/day would result in a required effluent concentration of 3.0 mg/L.

An effluent BOD_5 limit of 3.0 mg/L cannot be reliably achieved and was not included in the approved facilities plan and final design.

Neither the previous nor the current permit contains a weekly flow limit, so there is no basis to compute a weekly mass limit. For these reasons, the mass loading limits should be either removed from the draft permit or adjusted to reflect the design maximum monthly and weekly flow conditions for the facility.

Imposing a weekly and monthly mass limit also will unreasonably restrict facility discharges without a technical basis for establishing the new limit. Neither the permit nor the fact sheet provides the regulatory basis or necessity for including mass loading limits in this permit. The concentration limits used for computing the winter (November 1st - April 30th) mass based limits are technology based limits and are unrelated to water quality of the receiving stream. The concentration limits do not reflect the mass of BOD or TSS that the receiving stream can assimilate during this period without water quality impairment. Limits have not been developed based on a wasteload allocation to prevent stream quality degradation. Therefore, we again request that the mass limits be removed from the permit since they impose a new limit that was never intended in the original facility permit and was not considered in the basis of design for this facility.

We also note that mass based limits are not necessary to comply with EPA's anti-degradation requirements. Administrative permit corrections are permitted as a matter of EPA policy without impacting anti-degradation concerns. The flow limit in the tabulation of effluent limits has not changed. The correction only involves a footnote to the table so that the flow limit matches the original basis of design for the treatment facility."

EPA Response:

"As described in the response to Comment #1 EPA and MA DEP have agreed to a policy of establishing the flow limits in POTW permits as an annual average. As part of this policy, we have agreed to establish monthly average and weekly average mass limits for BOD and TSS using the annual average flow limit, and the weekly average and monthly average concentration limits. The inclusion of mass limits is supported by 40 CFR § 122.45 (f)(1), which states that pollutants limited in the permit shall have limitations, standards, or prohibitions expressed in terms of mass. While the regulations require limitations be expressed in terms of mass, 40 CFR § 122.45 (f)(2) states that pollutants limited in terms of mass additionally may be limited in terms of other units of measurements and the permit shall require the permittee to comply with both limitations. The technology-based secondary treatment limits in the permit are based on average monthly and average weekly requirements in 40 CFR 133.102.

We understand your concern regarding the use of the annual average flow limit in calculating the monthly average and weekly average mass limits. However, we believe

that imposing the mass based limits at this flow level is appropriate to satisfy antidegradation and anti-backsliding requirements. The current permit limits flow as a monthly average, and limits BODs and TSS monthly average and weekly average concentrations. So in fact, the current permit does limit the mass discharges to the mass limits proposed in the draft permit. Removing these mass based limits from the proposed permit, or calculating them at higher flow rates would allow greater discharges of these pollutants, which is contrary to the goals of anti-backsliding and antidegradation.

Expressing limitations in terms of concentration and mass encourages the proper operation of a treatment facility at all times. Concentration limits discourage the reduction in treatment efficiency during low flow periods and during periods of high flows and mass limits discourage higher loads being discharged into the receiving water."

Appeal: In the Fact Sheet attached to the draft permit, U.S. EPA Region I incorrectly stated that the limitations for BOD and TSS are the same as in the previous permit and provided no statement of basis for the newly imposed mass based limitations. Comments on the appealed conditions were raised during the comment period. However, because no statement of basis was provided in the Fact Sheet, the permittee did not have full opportunity during the comment period to comment on the basis used by U.S. EPA Region I in establishing the new permit limitation.

The permittee had no reasonable opportunity to review so-called policy documents used by EPA as the basis for establishing the contested mass-based limitations prior to receipt of the final NPDES Permit as the referenced policy has not been made publicly available and was not referenced in the draft NPDES Permit. Therefore, new arguments regarding the basis for the limitations as indicated by EPA's response to the comments on the draft NPDES Permit are included below that were not raised during the comment period.

EPA states in it's response that "...EPA and MADEP have agreed to a policy of establishing the flow limits in POTW permits as an annual average. As part of this policy we have agreed to establish monthly average and weekly average mass limits for BOD and TSS using the annual average flow limit, and the weekly average and monthly average concentration limits."

Because the permittee was unaware of the referenced policy, a copy of the policy was requested from the Massachusetts Department of Environmental Protection. A draft document was provided, a copy of which is included in Appendix I. Based on discussion with Massachusetts Department of Environmental Protection staff, it is our understanding that as of the date of permit, the policy has not been released for public comment or finalized. We have no knowledge of there having been any public discussion of this document or of there having been any analysis of the potential impacts of this policy on permit compliance or potential costs to POTWs.

While the provided draft policy document discusses that the design flow from the facility plan will be used as the annual average flow rather than a monthly flow limit, there is no discussion in the draft policy document regarding the flow basis to be used for establishing monthly and weekly mass based BOD and TSS limitations.

The use of the referenced draft policy as a basis for establishing final NPDES permit limitations is not justified on four grounds. 1) The policy does not provide guidance on the flow value to be used for establishing mass based limitations for monthly average and weekly average BOD and TSS limitations, contrary to EPA's response comment. 2) The policy is a draft policy and has not been finalized and therefore is an inappropriate basis for establishing final enforceable NPDES

Permit limitations. 3) The policy has not been released for any public review or comment. 4) Neither EPA nor the Massachusetts Department of Environmental Protection have performed an analysis of the potential adverse impacts of the policy as drafted. Based on these considerations, the draft policy should be disallowed as a basis for establishing enforceable final NPDES discharge limitations.

EPA has responded that the inclusion of mass limits is supported by 40 CFR 122.45 (f) (1). U.S.EPA Region I indicates that 40 CFR 122.45 (f) (1) "...states that pollutants limited in the permit shall have limitations, standards, or prohibitions expressed in terms of mass" and that "...the regulations require limitations to be expressed in terms of mass."

We believe that this is an incorrect interpretation of law as exclusions are provided within 40 CFR 122.45 (f) (1) that may be appropriately applied to the Belchertown NPDES Permit. The full text of 40 CFR 122.45 (f) (1) reads as follows:

"(f) Mass limitations. (1) All pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of mass except:

(i) For pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass;

(ii) When applicable standards and limitations are expressed in terms of other units of measurement; or

(iii) If in establishing permit limitations on a case-by-case basis under ss 125.3, limitations expressed in terms of mass are infeasible because the mass of the pollutant discharged cannot be related to a measure of operation (for example, discharges of TSS from certain mining operations), and permit conditions ensure that dilution will not be used as a substitute for treatment."

Both exclusions ii and iii may be applied to the appealed mass based BOD and TSS Permit limits. The applicable standards are expressed in terms of other units of measure as concentration applied as monthly and weekly concentration limits as well as flow, expressed as an annual average limit. Additionally, unless specific weekly and monthly flow limitations are established, it is infeasible to establish weekly and monthly mass based limits because the mass of the discharge cannot be related to a specific measure of operation. The approved facilities plan, is also based on achieving established concentration limits. Mass discharge criteria were not included in the facilities plan. The concentration based limits also ensure that dilution will not be used as a substitute for treatment.

It is inappropriate to conclude as a point of law that NPDES Permits for POTWs are required to contain mass based limitations for BOD and TSS.

While EPA acknowledges understanding the concern regarding the use of the annual average flow limit in calculating the monthly average and weekly average mass limits, EPA states in its response that they "...believe that the mass based limits at this flow level is appropriate to satisfy antidegradation and anti-backsliding requirements.". Supporting arguments against this interpretation were presented above under appeal item 1. The correction to the flow limitation does not require action on other permit conditions to address anti-degradation or antibacksliding requirements. The correction to the flow limit should not be used as a basis to impose more stringent permit conditions than contained in the previous permit.

EPA incorrectly states in their response that, because the previous permit already limited flow as a monthly average, and limited BOD and TSS monthly average and weekly average concentrations, the pervious permit limits mass discharges to the mass limits proposed in the draft permit, and that removing these mass based limits from the proposed permit, or calculating them at higher flow rates would allow greater discharges of pollutants, which is contrary to the goals of anti-backsliding and antidegradation.

If, as EPA acknowledges in their earlier response, the change in the flow limit is a correction to the previously intended flow limitation, the monthly average mass of BOD and TSS was never previously regulated. It could be interpreted that the annual average mass was regulated, but certainly the weekly average mass was never regulated. It is an incorrect statement to say that the previous permit contained discharge limitations as stringent as the limitations currently included in the final NPDES Permit and that these limits must be retained based on anti-backsliding or antidegradation requirements.

The proposed new mass based limitations will in effect impose significantly more stringent discharge limitations which the newly rebuilt tertiary treatment facility is unlikely to be able to meet on a consistent basis, especially as flows increase over time to the design values. It is not unreasonable to expect that peak weekly average flows may approach peak design maximum daily values. In such case the effective concentration limit would be reduced from 7.5 mg/l to 3.0 mg/l during summer months. During high flow periods maintaining these low effluent concentrations is more difficult than during average flow conditions. The facilities planning process, to which

EPA Region I was a party, acknowledges the expected variability in wastewater flows. The previous permit limitations which establish separate permit limitations for monthly and weekly discharge concentrations also recognize the variability in performance during these shorter durations. These monthly, weekly and daily performance variations may be the result of many contributing factors, including but not limited to flow variations, load variations, and any of a multitude of factors that influence performance.

In summary, EPA Region I and the Massachusetts Department of Environmental Protection have issued incorrect findings of fact in stating that the proposed mass based limits represent no change to the previous permit. We believe that the conclusions that the mass based limits are required either for antidegradation / antibackdliding concerns or based on the requirements of 40 CFR 122.45 (f) (1) are also incorrect. The inclusion of the mass based limits is based on an un-reviewed draft policy which represents an important discretionary policy which warrants review by the Environmental Appeals Board and the Office of Administrative Appeals, not only for its impact on the Town of Belchertown but also as it relates to impacts to a wider community and the failure to provide adequate public notice and opportunity for comment and failure to adequately consider potential adverse impacts of such policy. We urge the Environmental Appeal Board and the Office of Administrative Appeals to review not only the content of the contested permit conditions but also the process by which EPA Region I and Massachusetts Department of Environmental Protection derived said conditions.

Conclusion: Pursuant to this appeal, on behalf of the Town of Belchertown, we request that the mass based limitations for BOD and TSS included in the NPDES Permit be removed from the permit.

Appeal Item 3 – Part I.A.1- Page 3 of 9 – Phosphorus Limits

Tighe & Bond Comment of Draft Permit:

> "We understand that Massachusetts does not have a water quality standard for phosphorus but expects to develop a standard in the next few years. In lieu of a technical standard, we believe EPA and DEP have relied on the EPA Gold Book guidelines to establish a permit limit. Based on this approach, the in-stream phosphorus concentration after dilution should govern the effluent limit. Therefore, it would seem logical that the effluent concentration required could be defined to vary seasonally, similar to the BODs, TSS and ammonia limits included in this draft permit, depending on receiving stream flow. Phosphorus concentrations included in the permit could be staggered seasonally to account for changing flow conditions in the receiving stream, and if appropriate, deleted from the permit period between October 31st and April 1st. Therefore, we request that phosphorus limits be revised in the winter permit period to a limit of 1.0 mg/L and in the May permit period to a limit of 0.5 mg/L. Similar to discussion on BOD and TSS, we also request that the mass loading limits should be either removed from the draft permit or adjusted to reflect the design maximum monthly flow conditions for the facility."

EPA Response:

> "Limits are typically imposed on a year round basis in order to ensure normal seasonal improvements in water quality consistent with requirements of the Clean Water Act. Where it is demonstrated that cold temperatures result in an inability to achieve the limits in the winter period, relaxed limits are allowed during the winter period, provided that water quality standards will still be achieved. Due to eutrophication concerns in the downstream lake and the potential for higher winter phosphorus loadings to accumulate in the sediments and contribute to the eutrophication problem, the limits will remain as year round. These limits are the same as those in the previous permit."

Appeal:

There are two issues under appeal. The first issue relates to the appropriateness of the listed phosphorus limit as a year round limit and the second issue relates to the inclusion of mass based permit limits and the method used to determine such limits.

U.S. EPA Region I's comment that, "Where it is demonstrated that cold temperatures result in an inability to achieve the limits in the winter period, relaxed limits are allowed during the winter period, provided that water quality standards will still be achieved." is inconsistent with their denial of the requested permit modification.

We first note that there is no specific water quality standard for phosphorus in the State of Massachusetts. Thus, neither the U.S. EPA nor the State of Massachusetts can determine whether or not in-stream water quality criteria for phosphorus will be met to allow such relaxation of the Permit limits. It is inappropriate to impose stringent final NPDES discharge Permit limitations in the absence of a well defined publically reviewed policy or regulation governing such. It is also premature to impose such stringent limitations at a time when the State is currently in the process of developing water quality criteria for phosphorus. The Permit limits are not based on a scientific waste load allocation for the receiving water or on an evaluation of limitations required to meet water quality standards.

The recently rebuilt tertiary treatment facility was designed to meet a phosphorus limitation of 0.25 mg/l during warm weather conditions when the facility is also required to meet very low BOD and TSS limitations. Meeting this limit on a year round basis, especially during cold

weather will impose additional restrictions on the wastewater treatment facility. U.S. EPA and the Massachusetts Department of Environmental Protection have already indicated that it is appropriate to relax BOD and TSS restrictions during cold weather conditions. Until such time as there are defined water quality standards for phosphorus to the contrary, there is no scientific basis for requiring a limitation of 0.25 mg/L year round.

Therefore, on behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals direct U.S.EPA Region I and the Massachusetts Department of Environmental Protection to revise the concentration limits for phosphorus on a seasonal basis as requested in the comments on the draft Permit.

The second issue under appeal is the inclusion of mass based discharge limitations for monthly average phosphorus limitations that are based on monthly average concentration limits and annual average flows. This issue is similar to the issue of mass based limits for BOD and TSS as discussed above.

U.S. EPA Region I is incorrect in the statement that the limitations are the same as in the previous Permit. The previous Permit did not contain mass based limitations for phosphorus.

The method used to calculate the mass based limit is inappropriate in that it uses an annual flow limit in the calculation of a monthly discharge limitation. EPA, in their comment on appeal item number 1 above acknowledges that the modification to the flow limit is a correction. They state that the purpose for correcting the flow limit is to "... allow variation in flows at WWTPs, particularly during the spring time runoff events." The method used to calculate a monthly

average phosphorus mass limit is inconsistent with the correction of the flow limit to an annual average limit, and does not allow variation in flow as stated by U.S. EPA Region I.

As previously discussed, we believe that U.S. EPA has wrongly concluded that the use of mass based limitations are required either to address anti-degradation or antibacksliding requirements. We also argue that it is inappropriate for U.S. EPA or the Massachusetts Department of Environmental Protection to impose final NPDES Permit limitations based on draft policies that have not been adequately reviewed as to their impacts on the regulated community or for which no public review and comment process has been followed. We further argue that EPA is not required to include mass based limitations for phosphorus as per 40 CFR 122.45(f)(1), following the same arguments as presented above for BOD and TSS mass based limitations. Therefore, on behalf of the Town of Belchertown, we request that the mass based limitations for phosphorus be deleted from the permit.

In summary, EPA Region I and the Massachusetts Department of Environmental Protection have issued incorrect findings of fact in stating that the proposed mass based limits represent no change to the previous permit. The denial of the requested seasonally based concentration limitations is inconsistent with the methods used to develop BOD and TSS concentrations limits. There are also no specific numeric water quality criteria to be used in establishing a basis for relaxation of the permit limits as indicated in EPA's response. It is premature to impose such stringent conditions on a year round basis in the absence of defined water quality criteria or an established waste load allocation. We also believe that the conclusions that the mass based limits are required either for

antidegradation / antibackdliding concerns or based on the requirements of 40 CFR 122.45 (f) (1) are also incorrect. The inclusion of the mass based limits also appears to be based on an un-reviewed draft policy which represents an important discretionary policy which warrants review by the Environmental Appeals Board and the Office of Administrative Appeals. We urge the Environmental Appeal Board and the Office of Administrative Appeals to review not only the content of the contested permit conditions but also the process by which EPA Region I and Massachusetts Department of Environmental Protection derived said conditions.

Conclusions: On behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals direct U.S.EPA Region I and the Massachusetts Department of Environmental Protection to revise the concentration limits for phosphorus on a seasonal basis as requested in the comments on the draft Permit. Additionally, on behalf of the Town of Belchertown, we request that the mass based limitations for phosphorus be deleted from the permit.

Appeal Item 4 - Part I A.1 – Page 3 of 9 - Copper Limit

Tighe & Bond Comment of Draft Permit:

> "The copper limit proposed is extremely stringent and based on a survey we have conducted of numerous facilities within New England, is probably technically unachievable. In addition, there are numerous technical reasons why the need for copper limits remains in question including, the reduction of copper toxicity due to decreased copper bioavailability associated with complex formation with other materials, the limitations of commercial laboratory testing and the methods used for development of the Gold Book standards. As you may be aware, EPA is working with Water Environment Federation (WEF) to develop a biotic ligand model for copper toxicity to account for the influences of wastewater characteristics with the reduction in copper toxicity.

Furthermore, this facility has consistently demonstrated no effluent toxicity through whole effluent toxicity testing. Therefore, we believe the copper limits included in this draft permit are not justified and request that they be removed from the permit entirely.

If EPA and DEP do not concur that copper limits are not required at this time, we request the following language be added to the draft permit for the Belchertown to allow later reevaluation of this issue.

> After one year of monitoring for copper under this permit, the permitee may submit a written request to remove this permit requirement if there is sufficient data to indicate that the levels of copper in the discharge will not cause or contribute to any water quality standards violations. The permittee shall continue testing for of copper until the EPA approves of such modification request in writing."

EPA Response:

> "The limits are based on state numeric water quality criteria and will remain in the permit. At any time, the permittee may pursue development of site specific criteria, and upon approval by DEP and EPA, the permit can be modified to reflect the site specific criteria. Whole effluent toxicity testing is intended to complement chemical specific limits by measuring the toxicity of the aggregate discharge. Whole effluent toxicity testing is infrequent and the species tested are not necessarily the most sensitive species that chemical specific criteria are intended to protect. Whole effluent toxicity testing does not replace the need for chemical specific limits. The limitations are unchanged from the previous permit."

Appeal: The Town of Belchertown has discussed their concerns regarding the extremely stringent limit for copper at length with U.S. EPA Region I and the Massachusetts Department of Environmental Protection. The Town requested that development of a limitation for copper be delayed until current on-going research regarding the binding of copper to organic material is complete and is available to be used in the development of limits based on a sounder scientific approach. In previous correspondence to EPA the Town has noted that the EPA water quality criteria documentation for copper points out that the criteria may not be

appropriate for use in developing permit limits. There is growing concern regarding the discrepancy between the values for copper toxicity as developed by EPA under unrealistic laboratory conditions and the concentrations of copper found in wastewaters which consistently demonstrate no whole effluent toxicity.

In comments on the draft Permit, on behalf of the Town of Belchertown, we requested that the current permit limits be removed as they are not founded on sound scientific assessment. However, acknowledging that U.S. EPA Region I, may be unwilling to wait to develop copper limits based on research still in progress, we requested that language be added to the permit to clarify that the permit may be modified if there is sufficient data to indicate that the levels of copper in the discharge will not cause or contribute to any water quality standards violations.

This request was made in part because U.S. EPA Region I and the Massachusetts Department of Environmental Protection have taken an extremely rigid interpretations of anti-backsliding and antidegradation regulations, as exemplified by their stance taken with regard to the correction to the facility flow limit previously discussed. The Town of Belchertown had requested specific clarification in the permit that the extremely stringent limit for copper included in the permit could be removed from the permit in the future based on sufficient data. The Town is concerned that U.S. EPA Region I and/or the Massachusetts Department of Environmental Protection will use antibacksliding arguments to prevent modification to the Permit in the future when new information becomes available that may support either removal of the limit altogether or development of less stringent limitations.

EPA states in their response that, "At any time, the permittee may pursue development of site specific criteria, and upon approval by DEP and EPA, the permit can be modified to reflect the site specific criteria.". Including this statement, or the suggested statement provided in our comments on the draft Permit, would provide important clarification to future permit writers that this permit condition may be modified. The denial of the requested clarification may create undue requirements for legal reviews or outright denial under U.S. EPA Region I's interpretion of antibacksliding provisions in the future.

U.S. EPA Region I presents no argument as to why the requested clarification should not be added to the Permit. While it is not required for implementation of the existing Permit, it may save a great deal of time and effort on all parties' parts in the future.

Conclusion: Therefore, on behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals direct U.S. EPA Region I and the Massachusetts Department of Environmental Protection to modify the Permit as requested.

Appeal Item 5 – Attachment A – Freshwater Chronic Toxicity Test Procedure and Protocol

The Town of Belchertown appeals a modification made to the Freshwater Chronic Toxicity Test Procedure and Protocol (Attachment A of the Permit) made after the draft NPDES. The draft NPDES Permit required single species toxicity testing, whereas the final NPDES Permit requires toxicity testing using two species.

U.S. EPA and the Massachusetts Department of Environmental Protection provided no discussion of this change. We expect that this may be an inadvertent error in providing the incorrect attachment. However, as there is no procedural avenue to address the correction other than through appeal to the Environmental Appeals Board and the Office of Administrative Appeals, we are raising this issue as an appeal item.

We note that on page 4 of the Fact Sheet accompanying the draft NPDES Permit EPA discusses the basis for requiring only single species toxicity testing. The permittee agrees with EPA's comments set forth in the Fact Sheet regarding use of single species toxicity testing.

Conclusion: On behalf of the Town of Belchertown, we request that the Environmental Appeals Board and the Office of Administrative Appeals direct U.S. EPA Region I and the Massachusetts Department of Environmental Protection to modify the Final NPDES Permit to eliminate the requirement for two species toxicity testing and instead required single species testing using Ceriodaphnia as presented in the draft NPDES Permit.

If, U.S. EPA Region I and/or the Massachusetts Department of Environmental Protection disagree that this is a clerical error, we reserve the right to provide additional comment on this issue as the Town has not been provided with a statement of basis for the change and cannot effectively present arguments against such.

Request for Stay

In requesting the appeal of the permit conditions as well as a formal hearing from the Office of Administrative Appeals on the above referenced NPDES Permit, we also, herby request a stay of the permit requirements for BOD and TSS mass based limits as well as copper effluent concentrations. As noted above, there is current on-going research regarding the appropriate use of water quality criteria for copper. If additional data becomes available regarding this subject before such time as a hearing may be granted, we hereby request to be allowed to submit such additional information for purposes of conducting the hearing.

Statement to Provide Testimony

As required by 40 CFR 124.74(c)(4), the requester agrees to make available to appear and testify:

(i) the requester

(ii) all persons represented by the requester

(iii) all officers, directors, employees, consultants and agents of the requester and the persons represented by the requester.

On behalf of the Town of Belchertown Department of Public Works, we respectfully request that you grant the appeal and hearing on the above-referenced NPDES Permit. If you have any questions regarding this appeal or require additional information, please contact either Mr. Steven

Williams, director of Public Works, Town of Belchertown at (413) 323-0415 or the undersigned at (413) 572-3236.

Very truly yours,
TIGHE & BOND, INC.

Omer H. Dumais, Jr., P.E.
Vice President

J:\B\B0027\NPDES\NPDES-Appeal.DOC

Copy by Certified Mail:

Gary L. Brougham, Town Administrator
Town of Belchertown
Lawrence Memorial Hall
2 Jabish Street, P.O. Box 670
Belchertown, MA 01007

Steven J. Williams, Director
Town of Belchertown Department of Public Works
290 Jackson Street, P.O. Box 670
Belchertown, MA 01007-0670

Rollin J. DeWitt , Operations Supervisior
Department of Public Works, Wastewater Treatment Plant
175 George Hannum Road, P.O. Box 670
Belchertown, MA 01007

Lauren Liss, Commissioner
Massachusetts Department of Environmental Protection
1 Winter Street
Boston, MA 02108

Glenn Haas, Acting Assistant Commissioner
Massachusetts Department of Environmental Protection
Bureau of Resource Protection
1 Winter Street
Boston, MA 02108

Paul Hogan,
Massachusetts Department of Environmental Protection
Central Regional Office – Bureau of Resource Protection
627 Main Street
Worcester, MA 01608

Paul Nietupski
Massachusetts Department of Environmental Protection
Western Regional Office
436 Dwight Street
Springfield, MA 01103

Brian Pit, Chief MA NPDES Permits Unit
U.S. EPA Region I
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Boston, MA 02114-2023

Victor Alvarez
Massachusetts Office of Ecosystem Protection - CPE
U.S. EPA Region I
1 Congress Street Suite 1100
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DEPARTMENT OF PUBLIC WORKS

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Steven J. Williams
Director

Cheryl A. Bishop
Office Manager

Environmental Appeals Board
MC 1103B, U.S. EPA, Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Hearing Clerk
Office of Administrative Appeals
Commonwealth of Massachusetts
Department of Environmental Protection
1 Winter Street, 3rd Floor
Boston, MA 02108

Re: Belchertown, MA
NPDES No. MA0102148
Permit Appeal
Request for Adjudicatory
Hearing

Dear Environmental Appeals Board and Office of Administrative Appeals:

This letter is to authorize the firm of Tighe & Bond, Inc., Consulting Engineers to act on behalf of the Town of Belchertown Department to act as our representative in filing an appeal of the Town's NPDES discharge Permit. If you need additional information regarding this authorization, please feel free to contact me at (413) 323-0415.

Sincerely yours

Steven Williams, Director
Department of Public Works
Town of Belchertown

Cc: Omer H. Dumais, Jr. – Tighe & Bond

Appendix G

B-27
EPA - NPDES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

OHD 7/22/97
DSA 7/23
PAD 7/23/97
JWP 7/23

- Highlighted change on pg 2 will be made by Victor Alvarez - EPA he will issue change

July 17, 1997

Linda E. Barron
Chair, Board of Selectmen
Belchertown Town Hall
2 Jabish Street
Belchertown MA 01007

Re: Reissuance NPDES Permit No. MA 0102148

Dear Ms. Barron:

Enclosed is your final National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to the Clean Water Act (the "Federal Act"), as amended, and the Massachusetts Clean Waters Act (the "State Act"), 21 M.G.L. §§43-45, as amended. The Environmental Permit Regulations, at 40 C.F.R. §124.15, 48 Fed. Reg. 14271 (April 1, 1983), require this permit to become effective on the date specified in the permit.

Also enclosed, is a copy of the Massachusetts State Water Quality Certification for your final permit, and a response to the comments received by the Agency, if any, during the Public Comment Notice on the draft permit. Information relative to hearing requests, and stays of NPDES permits is also included. Should you desire to request a formal hearing, your request should be submitted to the Agency as outlined in the enclosure and a similar request should also be filed with the Director of the Massachusetts Department of Environmental Protection in accordance with the provisions of the Massachusetts Administrative Procedures Act, the Division's Rules for the Conduct of Adjudicatory Proceedings and the Timely Action Schedule and Fee Provisions (see enclosure).

We appreciate your cooperation throughout the development of this permit. Should you have any questions concerning the permit, feel free to contact Victor Alvarez of my staff at 617/565-4870.

Sincerely,

Jane Downing

Jane Downing, Director
Massachusetts Office of Ecosystem Protection

Enclosures

cc: Leon Langley
Office of Watershed Management
One Winter Street
Boston, MA 02108

Kathleen Keohane
Office of Watershed Management
627 Main Street, 2nd floor
Boston, MA 01608

Gary Brougham,
Director Department of Public Works
Belchertown Town Hall, No. 2 Jabish St.
Belchertown, MA 01007

Omer H. Dumais, Jr., P.E.
Senior Associate
Tighe& Bond, Consulting Engineers
Westfield Executive Park
53 Southampton Road
Westfield, MA 01085- 5308

Information for Filing an Adjudicatory Hearing Request with
the Commonwealth of Massachusetts
Department of Environmental Protection

Within thirty days of the receipt of this letter the adjudicatory hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of $100 must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

The hearing request to the Commonwealth will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver.

The filing fee is not required if the appellant is a city, town (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee for a permittee who shows that paying the fee will create an undue financial hardship. A permittee seeking a waiver must file, along with the hearing request, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act, as amended, (33 U.S.C. §§I25I et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 2I, §§26-53),

Town of Belchertown Board of Selectmen

is authorized to discharge from the facility located at

175 George Hannum Road, Belchertown, Massachusetts 01007

to receiving waters named **Lampson Brook**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective 30 days from the date of signature.

This permit and the authorization to discharge expire at midnight, three years from the effective date.

This permit supersedes the permit issued on September 26, 1991.

This NPDES Permit consist of 8 pages containing Part I Sections A-F with effluent limitations, monitoring requirements, etc., and Attachment A, containing Toxicity Testing Protocol, a Fact Sheet with Attachments B, and C, and Part II Requirements containing General Conditions and Definitions.

Signed this //day of July, 1997

Linda M. Murphy
Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration date, the permittee is authorized to discharge treated effluent through Outfall No. 001 from May 1 to October 15.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			Monitoring Requirement	
	Average Monthly	Average Weekly	Maximum[2] Daily	Measurement Frequency	Sample Type
Flow[1], MGD	1.00	—	—	Continuous	See Footnote 1
BOD, mg/l	5	7.5	7.5	1/Week	24-Hr Composite
BOD (May only), mg/l	15	15	20	1/Week	24-Hr Composite
TSS, mg/l	15	15	20	1/Week	24-Hr Composite
TSS (May only), mg/l	20	20	30	1/Week	24-Hr Composite
NH3 (May only), mg/l	7	7	10	1/Week	24Hr Composite
NH3 (June-Oct.), mg/l	1	1	1.5	1/Week	24Hr Composite
Settleable Solids[2], mg/l	—	Report	Report	Daily	Grab
pH[2],s.u.	(See Page 4)			Daily	Grab
Fecal Coliform[2]#/100ml	200	400	400	1/Week	Grab
Chlorine Residual[2], ug/l	12	—	20	Daily	Grab
Phosphorus, mg/l	0.25	—	—	1/Week	24-Hr Composite
Dissolved Oxygen, mg/l	6.0	—	—	1/Week	Grab
Copper, ug/l	8.1	—	12.0	1/Month	24-Hr Composite
LC50[3]	—	—	100%[4,5]	4/Year	SEE PROTOCOL
C-NOEC[6]	—	—	90%[7]	4/Year	SEE PROTOCOL

The discharge shall not cause a violation of the water quality standards of the receiving water.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration date, the permittee is authorized to discharge treated effluent through Outfall No. 001 from May 1 to October 15.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			Monitoring Requirement	
	Average Monthly	Average Weekly	Maximum[2] Daily	Measurement Frequency	Sample Type
Flow[1], MGD	1.00	—	—	Continuous	See Footnote 1
BOD, mg/l	5	7.5	7.5	1/Week	24-Hr Composite
BOD (May only), mg/l	15	15	20	1/Week	24-Hr Composite
TSS, mg/l	15	15	20	1/Week	24-Hr Composite
TSS (May only), mg/l	20	20	30	1/Week	24-Hr Composite
NH3 (May only), mg/l	7	7	10	1/Week	24Hr Composite
NH3 (May-Oct.), mg/l	1	1	1.5	1/Week	24Hr Composite
Settleable Solids[2], mg/l	—	Report	Report	Daily	Grab
pH[2],s.u.	(See Page 4)			Daily	Grab
Fecal Coliform[2]#/100ml	200	400	400	1/Week	Grab
Chlorine Residual[2], ug/l	12	—	20	Daily	Grab
Phosphorus, mg/l	0.25	—	—	1/Week	24-Hr Composite
Dissolved Oxygen, mg/l	6.0	—	—	1/Week	Grab
Copper, ug/l	8.1	—	12.0	1/Month	24-Hr Composite
LC50[3]	—	—	100%[4,5]	4/Year	SEE PROTOCOL
C-NOEC[6]	—	—	90%[7]	4/Year	SEE PROTOCOL

The discharge shall not cause a violation of the water quality standards of the receiving water.

SUPERCEDED

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration date, the permittee is authorized to discharge treated effluent through Outfall No. 001 from October 16 to April 30.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			Monitoring Requirement	
	Average Monthly	Average Weekly	Maximum[2] Daily	Measurement Frequency	Sample Type
Flow[1], MGD	1.00	—	—	Continuous	See Footnote 1
BOD, mg/l	30	30	45	1/Week	24-Hr Composite
TSS, mg/l	30	30	45	1/Week	24-Hr Composite
Settleable Solids[2], mg/l	—	Report	Report	Daily	Grab
pH[2], s.u.	(See Page 4)			Daily	Grab
NH3 (Winter), mg/l	10	10	15	1/Week	Grab
Phosphorus, mg/l	0.25	—	—	1/Week	24-Hr Composite
Dissolved Oxygen, mg/l	6.0	—	—	1/Week	Grab
Copper, ug/l	8.1	—	12.0	1/Month	24-Hr Composite
LC50[3]	—	—	100%[4,5]	4/Year	SEE PROTOCOL
C-NOEC[6]	—	—	90%[7]	4/Year	SEE PROTOCOL

Special Condition - After submitting 4 consecutive sets of whole effluent toxicity test results, demonstrating compliance with the permit limits for whole effluent toxicity, the permittee may request a **reduction in toxicity testing requirements**. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the whole effluent testing requirement has been changed.

a. The discharge shall not cause a violation of the water quality standards of the receiving water.

b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 standard units at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes.

c. The discharge shall not cause objectionable color, odor or turbidity to the receiving waters.

d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.

f. When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the designed flow, the permittee shall submit to the permitting authorities 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.

g. Samples taken in compliance with the monitoring requirements specified in the permit shall be taken at a representative point prior to mixing with other streams.

h. Values of Total Residual Chlorine (TRC), shall be measured using either of the following two procedures from the Standard Methods For The Examination of Water and Wastewater, 18th edition: Method 4500-C1 E, Low Level Amperometric Titration using a chart recorder if possible; or Method 4500-CL G, DPD Spectrophotometric (calorimetric), using a longer cell (ie: 5 cm to 19 cm) if possible.

I. Compliance/noncompliance determination of average monthly TRC values will be based on the Minimum Level (ML). The ML for TRC at this time is 50 ug/l, and it may be reduced through a permit modification, as more sensitive test methods are approved by EPA and MADEP. Any average monthly TRC value below 50 ug/l shall be reported as zero.

FOOTNOTES:

1. Report average monthly and maximum daily flow rates for the month.

2. Required for state certification.

3. "LC_{50}" is defined as the concentration of wastewater that causes mortality to 50% of the test organisms.

4. The 100% is defined as a sample which is composed of 100% effluent.

5. Toxicity testing will be performed during the second week of the month (any day of the week but not later than Friday) of May, August, November and February. Toxicity test reports are due on the 15th day of July, October, January and April. See **Attachment A** of the draft permit for the toxicity testing protocol and testing details. The test species shall be Ceriodaphnia dubia.

6. C-NOEC is the highest effluent concentration at which No Observed Chronic Effect (e.g. growth, reproduction, mortality) will occur at continuous exposure to test organisms (in a life-cycle or partial life-cycle test).

7. The " 90% or greater" is defined as a sample which is composed of 90% (or greater) effluent, the remainder being dilution water.

B. The permittee must provide adequate notice to the Director of the following:

   a. Any new introduction of pollutants into the POTW from an indirect discharger in a primary industry category discharging process water; and

   b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

   c. For purposes of this paragraph, adequate notice shall include information on:

      (1) the quality and quantity of effluent introduced into the POTW; and

      (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

C. DEVELOPMENT OF LIMITATIONS FOR INDUSTRIAL USERS:

a. Pollutants introduced into POTWs by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works. **Limitations for Industrial Users were not developed for this permit because, it was reported by the permittee that there are no Industrial Users discharging into the POTW.**

D. SLUDGE GENERAL CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the Clean Water Act (CWA) Section 405(d) technical standards.

   If an applicable management practice or numerical limitation for pollutants in sewage sludge more stringent than existing, federal, and state regulations is promulgated under Section 405(d) of the CWA, this permit shall be modified or revoked and reissued to conform to the promulgated regulations.

2. The permittee shall give prior notice to the Director of any change(s) planned in the permittee's sludge use or disposal practice.

3. A change in the permittee's sludge use or disposal practice is a cause for modification of the permit. Also, it is a cause for revocation and reissuance of the permit if the permittee requests or agrees with the change.

E. The following conditions apply when sewage sludge is disposed in a solid waste landfill:

1. The permittee shall dispose of its sewage sludge in a **solid waste landfill** in compliance with 40 CFR Part 258.

2. Sewage sludge disposed in the town's **solid waste landfill** shall not be hazardous. The Toxicity Characterization Leachate Protocol (TCLP) shall be used as demonstration that the sludge is non-hazardous.

3. The sewage sludge must not be a liquid as determined by Paint Filter Liquids Test method (Method 9095 as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846).

F. MONITORING AND REPORTING

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report Forms (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. The first report is due on the 15th day of the month following the effective date of the permit.

Original signed Discharge Monitoring Reports and <u>all</u> other reports required herein, shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Planning and Administration (SPA)
P.O. Box 8127
Boston, MA 02114

One copy of original signed Discharge Monitoring Reports and all other reports required herein, except for Toxicity Test Reports, shall be submitted to the State at the following address:

Massachusetts Department of Environmental Protection
Western Regional Office
436 Dwight Street
Springfield, Massachusetts 01103

Copies of all toxicity test reports, and all other notifications and reports required by this permit shall be submitted to the following address:

Massachusetts Department of Environmental Protection
Division of Watershed Management
Watershed Planning and Permitting Section
627 Main Street, 2nd floor
Worcester, Massachusetts 01608

G. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection pursuant to M.G.L. Chap. 21, §43.

Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of this Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this Permit is declared invalid, illegal or otherwise issued in violation of State law such permit shall remain in full force and effect under Federal law as an NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this Permit is declared invalid, illegal or otherwise issued in violation of Federal law, this Permit shall remain in full force and effect under State law as a Permit issued by the Commonwealth of Massachusetts.

PAD 1/24/97
JWP
OHD
DSA 7/29

B27
NPDES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
JOHN F. KENNEDY FEDERAL BUILDING
BOSTON, MASSACHUSETTS 02203-0001

COPY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

July 23, 1997

RECEIVED
JUL 29 1997
TOWN CLERK

Linda E Barron
Chair, Board of Selectmen
Belchertown Town Hall
2 Jabish Street
Belchertown MA 01007

Re. Minor Modification NPDES Permit No. MA 0102148

Dear Ms. Barron:

It has been brought to our attention that a typographical error was made on the NPDES permit issued to your facility on July 11, 1997. This minor modification corrects the error.

A copy of the permit page with the correct information is attached Please recycle the page with the typographical error and replace it with the new page. This error concerned the effluent characteristic for the Ammonia Nitrogen NH3 ***month*** changed from May to June The corrected version reads as follows

Effl. Charact.	Discharge Limitations Average--Average--Maximum[2] Monthly--Weekly-- Daily			Monitoring Requirement Measurement sample Frequency	Type
NH3 (May only). mg/l	7	7	10	1/Week	24Hr Composite
NH3 (*June*-Oct.), mg/l	1	1	1.5	1/Week	24Hr Composite

If you have any questions please call Victor Alvarez at 617/565- 4870.

Sincerely,

Jane Downing, Director
Massachusetts Office of Ecosystem Protection

cc: Bryant Firmin, MA DEP .
Paul Dombrouski. Tighe and Bond

Attachment; **Permit No. MA0102148**, Page 2 of 8.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration date, the permittee is authorized to discharge treated effluent through Outfall No. 001 from May 1 to October 15.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			Monitoring Requirement	
	Average Monthly	Average Weekly	Maximum[2] Daily	Measurement Frequency	Sample Type
Flow[1], MGD	1.00	—	—	Continuous	See Footnote 1
BOD, mg/l	5	7.5	7.5	1/Week	24-Hr Composite
BOD (May only), mg/l	15	15	20	1/Week	24-Hr Composite
TSS, mg/l	15	15	20	1/Week	24-Hr Composite
TSS (May only), mg/l	20	20	30	1/Week	24-Hr Composite
NH3 (May only), mg/l	7	7	10	1/Week	24Hr Composite
NH3 (June-Oct.), mg/l	1	1	1.5	1/Week	24Hr Composite
Settleable Solids[2], mg/l	—	Report	Report	Daily	Grab
pH[2],s.u.	(See Page 4)			Daily	Grab
Fecal Coliform[2]#/100ml	200	400	400	1/Week	Grab
Chlorine Residual[2], ug/l	12	—	20	Daily	Grab
Phosphorus, mg/l	0.25	—	—	1/Week	24-Hr Composite
Dissolved Oxygen, mg/l	6.0	—	—	1/Week	Grab
Copper, ug/l	8.1	—	12.0	1/Month	24-Hr Composite
LC50[3]	—	—	100%[4,5]	4/Year	SEE PROTOCOL
C-NOEC[6]	—	—	90%[7]	4/Year	SEE PROTOCOL

The discharge shall not cause a violation of the water quality standards of the receiving water.

Appendix A

United States Environmental Protection Agency
Region I - New England

IN THE MATTER OF Town of Belchertown, Massachusetts NPDES Permit No. MA0102148 Proceedings under Section 309(a)(3) of the Clean Water Act, as amended, 33 U.S.C. §1319(a)(3)	DOCKET NO. 04-49 FINDINGS OF VIOLATION AND ORDER FOR COMPLIANCE

I. STATUTORY AUTHORITY

The following Findings are made and ORDER issued pursuant to Section 309(a)(3) of the Clean Water Act, as amended (the "Act"), 33 U.S.C. §1319(a)(3), which grants to the Administrator of the U.S. Environmental Protection Agency ("EPA") the authority to issue orders requiring persons to comply with Sections 301, 302, 306, 307, 308, 316 and 405 of the Act and any permit condition or limitation implementing any of such sections in a National Pollutant Discharge Elimination System ("NPDES") permit issued under Section 402 of the Act, 33 U.S.C. §1342. This authority has been delegated to EPA Region I's Regional Administrator, and in turn to the Director of the Office of Environmental Stewardship.

The Order herein is based on findings of violations of Section 301 of the Act, 33 U.S.C. §1311, and the conditions of NPDES Permit No. MA0102148. Pursuant to Section 309(a)(5)(A) of the Act, 33 U.S.C. §1319(a)(5)(A), the Order provides a schedule for compliance which the Director of the Office of Environmental Stewardship has determined to be reasonable.

II. DEFINITIONS

Unless otherwise defined herein, terms used in this Order shall have the meaning given to those terms in the Clean Water Act, 33 U.S.C. § 1251 et. seq., the regulations

promulgated thereunder, and any applicable NPDES permit. For the purposes of this Order, "the Permit" means the Town of Belchertown's (the "Permittee") NPDES Permit No. MA0102148, and all amendments or modifications thereto, and renewals thereof, as are applicable and in effect at the time.

III. FINDINGS

The Director of the Office of Environmental Stewardship makes the following findings of fact:

1. The Town of Belchertown, Massachusetts is a municipality, as defined in Section 502(4) of the Act, 33 U.S.C. §1362(4), established under the laws of the Commonwealth of Massachusetts.
2. The Permittee is a person under Section 502(5) of the Act, 33 U.S.C §1362(5). The Permittee is the owner of a publicly-owned wastewater treatment works (the "POTW") from which it discharges pollutants, as defined in Section 502(6) and (12) of the Act, 33 U.S.C. §1362(6) and (12), from a point source, as defined in Section 502(14) of the Act, 33 U.S.C. §1362(14), to Lampson Brook. The Lampson Brook is a Class B waterway and a navigable water under Section 502(7) of the Act, 33 U.S.C.§1362(7).
3. On July 11, 1997, the Permittee was issued NPDES Permit No. MA0102148 (the "Permit") by the Director of the Office of Ecosystem Protection of EPA, Region I, under the authority given to the Administrator of EPA by Section 402 of the Clean Water Act, 33 U.S.C. §1342.
4. The Permit authorizes the Permittee to discharge pollutants from the POTW to Lampson Brook, subject to the effluent limitations, monitoring requirements and other conditions specified in the Permit.
5. Section 301(a) of the Act, 33 U.S.C. §1311(a), makes unlawful the discharge of pollutants to waters of the United States except in compliance with, among other things, the terms and conditions of a NPDES permit issued pursuant to Section 402 of the Act, 33 U.S.C. §1342.
6. Parts I.A.1 and I.A.2 of the Permit establish effluent limitations and monitoring

requirements for the discharge of treated sanitary and industrial wastewater from outfall serial number 001.

7. The Permittee has discharged wastewater containing total phosphorus and total copper in concentrations greater than the effluent limitations contained in the Permit.

8. The Permittee's discharge of pollutants from the POTW to Lampson Brook in excess of the limits contained in the Permit, violates Section 301(a) of the Act, 33 U.S.C. §1311(a).

IV. ORDER

Accordingly, pursuant to Section 309(a)(3) of the Clean Water Act, it is hereby ordered that the Permittee shall:

1. Within 90 days of receipt of this Order, the Permittee shall submit to EPA and the Massachusetts Department of Environmental Protection a detailed evaluation and explanation of the specific causes of the violations of the total phosphorus limitations contained in the Permit (the "Phosphorus Report"). The Phosphorus Report shall also recommend interim and long-term corrective measures to eliminate the total Phosphorus violations and propose an implementation schedule (the "Phosphorus Schedule") for achieving and maintaining full compliance with the Permit.

2. The Phosphorus Schedule submitted pursuant to Paragraph IV.1. of this Order shall be incorporated and enforceable hereunder upon the schedule's approval by, and as amended by, EPA.

3. Until further notice, beginning January 31, 2005, and each January 31st annually thereafter, submit a report (the "Annual Copper Optimization Report") to EPA and the Massachusetts Department of Environmental Protection detailing the actions taken during the prior calendar year by the Permittee, or known by the Permittee to have been taken by other parties, including industrial users and water suppliers, to identify sources of copper entering the POTW and to further

optimize the removal of copper from the POTW effluent. The report shall address all of the items specified in Attachment 1 and must specifically include trend analyses of both influent and effluent copper loadings. The report shall include a summary of the Permittee's monitoring data for total copper for the previous twelve months as well as a tabulation of the average and median total copper loading levels for each month. It must also include a calculation of the total copper loading discharged from the POTW during the prior calendar year.

Interim Effluent Limits

4. Upon the effective date of this Order, the Permittee shall, at a minimum, comply with the interim effluent limitation for total copper set forth in Attachment 2 of this Order. The Permittee shall also comply with all other effluent limitations, monitoring requirements and other conditions specified in the Permit for parameters not addressed in Attachment 2.
5. If the Permittee violates the interim limit for total copper contained in Attachment 2 of this Order for two consecutive months, or for three months within a twelve-month period, it shall submit a detailed engineering report (the "Copper Optimization Engineering Report") to EPA and the Massachusetts Department of Environmental Protection for achieving full compliance with the Permit's copper limits. The Copper Optimization Engineering Report shall be developed in accordance with the Copper Optimization Scope of Work included as Attachment 3 within 365 calendar days of the end of the month in which the reporting requirement contained in this paragraph is triggered. The Copper Optimization Engineering Report shall also include a schedule (the "Implementation Schedule") for implementing the recommendations of the Copper Optimization Engineering Report.
6. The Implementation Schedule submitted pursuant to Paragraph IV.5. of this Order shall be incorporated and enforceable hereunder upon the Implementation Schedule's approval by, and as amended by, EPA.
7. The Permittee shall provide EPA and the Massachusetts Department of

Environmental Protection written notification within fourteen calendar days of the end of the month in which the reporting requirement contained in Paragraph IV.5. of this Order is triggered.

V. NOTIFICATION PROCEDURES

1. Where this Order requires a specific action to be performed within a certain time frame, the Permittee shall submit a written notice of compliance or noncompliance with each deadline. Notification must be mailed within fourteen (14) calendar days after each required deadline. The timely submission of a required report shall satisfy the requirement that a notice of compliance be submitted.
2. If noncompliance is reported, notification should include the following information:
   a. A description of the noncompliance;
   b. A description of any actions taken or proposed by the Permittee to comply with the lapsed schedule requirements;
   c. A description of any factors that explain or mitigate the noncompliance;
   d. An approximate date by which the Permittee will perform the required action.
3. After a notification of noncompliance has been filed, compliance with the past requirement shall be reported by submitting any required documents or providing EPA with a written report indicating that the required action has been achieved. Submissions required by this Order shall be in writing and should be mailed to the following addresses:

USEPA - New England
Office of Environmental Stewardship
1 Congress Street
Suite 1100 (SEW)
Boston, MA 02114-2023
Attn: Linda Brolin

Massachusetts Department of Environmental Protection
436 Dwight Street
Springfield, MA 01103
Attn: Paul Nietupski

VI. GENERAL PROVISIONS

1. This Order does not constitute a waiver or a modification of the terms and conditions of the Permit. The Permit remains in full force and effect. EPA reserves the right to seek any and all remedies available under Section 309 of the Act, 33 U.S.C. § 1319, as amended, for any violation cited in this Order.
2. This Order shall become effective upon receipt by the Permittee.

19 JULY 2004

Date

Stephen S. Perkins, Director
Office of Environmental Stewardship

ATTACHMENT 1

1. Summarize the current corrosion control program being implemented by the local water supplier(s) including the pH level maintained and any corrosion inhibitors used by the supplier(s).
2. Summarize those measures that have been taken to reduce the contribution of copper from household domestic wastes, non-significant industrial users, institutions and commercial businesses.
3. Summarize those public outreach efforts and public education programs that have been conducted to inform the public of the level of copper in household and commercial products, their impact on the publicly-owned treatment works (POTW), and the existence of alternative products.
4. Summarize the specific measures that have been taken by the Permittee, septage haulers, industrial sewer users, and the local water supplier(s) to reduce the level of copper entering, and ultimately discharged from, the POTW including:
   a. septage and side-stream treatment, or reduction or elimination of the introduction of septage to the POTW;
   b. further reduction of copper in the water supply through additional or modified corrosion control treatment;
   c. additional or modified chemical treatment at the POTW, including the use of different treatment chemicals, increased chemical dosing, and multiple chemical addition points at the POTW, for further copper removal; and,
   d. further evaluation of industrial user local limits and industrial user compliance with those local limits.
5. Assess the annual copper reduction that has resulted from the implementation of the above measures.

ATTACHMENT 2

Interim Copper Limits

Parameter	Monthly Average (lbs/day)	Daily Maximum (lbs/day)	Minimum Frequency	Sample Type
Total Copper	20	Monitor	Monthly	24hr. comp

ATTACHMENT 3

COPPER OPTIMIZATION SCOPE OF WORK

The report shall include:

I. BACKGROUND AND PROBLEM STATEMENT

A. A description of the nature and extent of the NPDES Permit effluent violations for copper and other metals and a description of the equipment used to sample the final effluent noting any metal components (i.e. copper tubing).

B. An analysis of historical influent monitoring data including the results of the monitoring required under Paragraph III of this Attachment to locate and quantify the sources of the influent copper loadings to the Publicly-Owned Treatment Works (POTW) and to account for influent copper variability.

C. An inventory of each discrete category of copper sources and an estimate of each category's annual mass contribution relative to the total POTW loading. The analysis shall included both short-term (daily, weekly) and long-term (seasonal) fluctuations from each source. Where monitoring data are not available, estimates and the source of each estimate shall be provided. At a minimum, the following potential sources of copper shall be evaluated:

1. Public and private water supply(ies) that provide water to the users of the Permittee's collection system including any private sources that supply water to industrial users of the Permittee's collection system;
2. Significant Industrial Users (SIUs) of the Permittee's collection system;
3. Industrial/commercial sources that are known to, or are suspected of, discharging copper. These shall include, but not be limited to, industries that do not meet the definition of a SIU, medical facilities, printers, schools, laboratories, photo processing operations, laundry and dry cleaning operations, and other institutions that may discharge wastewater to the POTW;
4. Domestic, commercial, and industrial septage, hauled wastewater, or liquid sludge received from other POTWs as well as landfill leachate that is treated at the POTW;
5. Household domestic wastewater that includes chemical additives, particularly copper-based root control additives; and,
6. Side-stream flows from sludge dewatering, compost area runoff, or any other internal plant flow or treatment chemical process.

As part of these evaluations, the Permittee shall assess the impact of copper on the POTW influent and effluent, sludge quality, sludge processing, activated sludge (concerns/inhibition), the receiving water and aquatic life.

D. A mass balance delineating the sources of copper entering the POTW and the fate of copper within the POTW;

E. A determination of the projected maximum allowable POTW headworks loading for each discrete category of copper discharged to the POTW, a description of the specific treatment technologies and source reduction initiatives that will be implemented to meet the projected maximum allowable POTW headworks loadings, schedules for the implementation of the selected treatment technologies and source reduction measures, and an estimate of the expected copper reductions associated with the implementation of the selected treatment technologies and source reduction measures.

II. DISCRETE COPPER SOURCE INVESTIGATIONS

A. WATER SUPPLY

1. The evaluation of the domestic drinking and industrial water supply(ies) that serve(s) the users of the POTW shall, at a minimum, include:
   a. A determination of the quantity and percent of the total copper loading in the POTW influent that can be attributed to the copper found in the raw water supply(ies) as well as the copper that has leached from homeowner distribution systems;
   b. An evaluation of the feasibility (consisting of a desktop and/or demonstration study) and status of implementation of various corrosion control technologies, including, but not limited to, each of the following, applied separately, and where appropriate in combination with one another, to achieve optimal corrosion control for that particular water system:
      (1) Alkalinity and pH adjustment;
      (2) Calcium hardness adjustment; and,
      (3) Phosphate or silicate-based corrosion inhibitors (The evaluation of phosphorus-based additive alternatives must also consider the impacts of the additional phosphorus on receiving water quality).
   c. An assessment of the impact of the additional treatment options on other drinking water quality parameters (e.g. lead, alkalinity, pH, bacteria, calcium, disinfection byproducts formation, taste, odor, color, etc...) within the water supply system;
   d. An evaluation of the materials that comprise the water distribution system;
   e. Identification of chemical, physical, and other constraints that may affect the implementation of a particular treatment option for the drinking water supply;

f. A description of each water supply's management, its relation to the POTW authority and the water supply's compliance status with the requirements of EPA's Lead and Copper Rule. Identify any barriers to a coordinated, cost-effective joint approach to copper reduction in the water supply(ies) beyond the minimum requirements of the Lead and Copper Rule. Identify what actions can be taken to overcome the identified barriers.

B. EVALUATION OF INDUSTRIAL USERS

An evaluation of the copper contributions from the industrial users to the POTW that shall include:

1. INVENTORY

Identification, listing, and evaluation of all industrial and commercial users that discharge copper to the POTW. These sources may include, but are not limited to, significant industrial users[1], such as electroplaters, metal finishers, metal fabrication and machine shops, leather tanning and textile mills. Other potential industrial/commercial copper sources may include medical facilities, printers, schools, laboratories, photo processing operations, laundry and dry cleaning operations, or other institutions that may contribute wastewater to the POTW where dyes or other products used in these operations may contain copper. The amount of copper annually discharged from these sources to the POTW shall be expressed in pounds and as a percent of the total amount of copper being introduced to the POTW from all sources.

2. LOCAL LIMITS EVALUATION

a. An evaluation of the adequacy of any existing local limit for copper (or other metal of concern) developed by the POTW. The evaluation shall include a comprehensive headworks analysis that quantifies the total amount of copper being introduced to the POTW from all categories of sources and the maximum allowable headworks loading from all categories of sources.

b. Based upon the headworks analysis, and the other evaluations included in the Scope of Work, determine the need to:
   (1). develop a local limit for copper;
   (2). revise any existing local limit(s) for copper; and,
   (3). expand the applicability of the limit(s) to include new industrial/commercial users if the evaluations conducted in this

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[1] Under 40 C.F.R. § 403.3(t), the term Significant Industrial User means any industrial user subject to Categorical Pretreatment Standards under 40 C.F.R. 403.6 and 40 C.F.R chapter I, subchapter N, or any other industrial user that discharges an average of 25,000 gallons per day or more of process waste water to the POTW or contributes a process waste stream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant.

scope of work reveal that more stringent controls are necessary.

c. The local limits evaluation shall be performed in accordance with EPA's Guidance Manual for the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program (Dec., 1987). In the event that the Copper Optimization Engineering Report and headworks analysis determines that the treatment modifications and source reduction measures selected by the Permittee under Paragraph IV.D. of this Scope of Work are not expected to result in the POTW's compliance with its NPDES Permit copper limits, and that the local domestic/background copper loadings will continue to be greater than the maximum allowable headworks loading allowing no allocation for any pollutant loadings from industrial users, a local limit for copper must be established in accordance with Paragraph II.B.2.d. In the event that the treatment modifications and source reduction measures selected by the Permittee under Paragraph IV.D. of this Scope of Work are expected to result in the POTW's compliance with its NPDES Permit copper limits, the local limits established for copper must be consistent with the maximum allowable industrial headworks loading.

d. Under those circumstances where the headworks loading analysis determines that there is no allocation for any pollutant loadings from industrial users due to contributions from other sources, the copper local limit must be developed at a level equal to the POTW's NPDES copper limit, adjusted to reflect the POTW's removal efficiency for copper. For example, if the POTW's NPDES permit monthly average copper limit is 15 micrograms/liter (ug/l) and the POTW is capable of removing 80% of the copper discharged to the POTW, the monthly average local limit for copper would be established at 15 ug/l/0.2 or 75 ug/l.

e. The development of the local limit for copper or revisions to the local limit for copper under this paragraph shall be included as a separate section of the engineering report that must be submitted pursuant to Paragraph IV.1. of this Order for EPA's review and concurrence.

3. **TECHNOLOGY/PRETREATMENT EVALUATION**

An evaluation of industry-specific treatment technologies or operational modifications that must be implemented to ensure compliance with the local limits calculated for copper in Paragraph II.B.2. above. The evaluation can be conducted by the Permitee or can be delegated to the industrial/commercial user. The evaluation of facility-specific treatment technologies or operational modifications necessary to comply with any local limits established under this Order shall include, but shall not be

limited to, the following:

a. The name and location of the industrial/commercial facility (the "facility");
b. A description of the operations conducted and major products produced at the facility with a specific emphasis on those activities and operations that contribute copper to the facility's wastewater;
c. An evaluation of the characteristics of the wastewater discharged to the POTW, including additional representative sampling necessary to quantify the copper contribution from the facility;
d. A description of the wastewater treatment unit operations and processes employed at the facility including an estimate of the annual mass copper removal efficiency of the treatment facilities with specific emphasis on those operations and processes that remove copper;
e. A detailed description of all treatment technologies and operational modifications that may potentially reduce the quantity of copper discharged from the facility, including an estimate of the expected annual copper reduction and capital and operation and maintenance cost associated with the implementation of each alternative; and,
f. Prioritization of the alternatives based upon their expected effectiveness, technical and economic feasibility.

4. **POLLUTION PREVENTION EVALUATION**

In addition to the technology/pretreatment evaluation required in Paragraph II.B.3. above, the POTW shall develop, or require each of the commercial/industrial users that discharge copper to the POTW to develop, a Waste Minimization Plan for the purpose of further reducing the copper loadings from each industrial/commercial user through pollution prevention/source reduction alternatives. At a minimum, the Waste Minimization Plan for each significant source of copper, shall include, but shall not be limited to, the following information:

a. The name of the industrial/commercial facility and location of the site;
b. A general description of the major products manufactured and produced at the facility;
c. A process flow diagram of the unit operations highlighting those activities and operations that contribute copper to the facility's wastewater;
d. An evaluation of source reduction approaches available to the generator that may reduce copper in the commercial/industrial wastestreams. The evaluation shall consider at least the following areas:

(1) Raw materials changes;
(2) Operational process changes;
(3) Product quality changes; and,
(4) Administrative steps taken to reduce copper including but not limited to:
a. Inventory Control;
b. Employee Award Programs;
c. In-house Policies;
d. Employee Training;
e. Corporate or Management Commitment, and,
f. Other Programs or Approaches;

e. An evaluation of the effects of the source reduction methods on emissions and discharges to other media;

f. The report shall prioritize each evaluated approach and shall also discuss the following:
(1) Expected change in the amount of copper generated;
(2) Technical and financial feasibility; and,
(3) Employee health and safety implications;

g. A list of alternatives not selected for further evaluation as a potentially viable source reduction approach and a rationale for rejecting each alternative.

5. **RECOMMENDATIONS**
Evaluate combinations of both pretreatment technologies and pollution prevention approaches to determine the most effective course of metals reduction.

C. **SEPTAGE, LEACHATE, AND OTHER HAULED WASTES**

1. **SEPTAGE**

a. Report the quantity and category (homeowner, commercial, neighboring community, etc...) of septage received at the POTW and the total annual copper loading as a percentage of the total annual copper loading to the POTW. Provide the basis for the measurement or estimate. Describe any chemical monitoring, tracking, or permit system used to control the level of septage discharged to the POTW;

b. Identify the copper loading from each category of septage on an average daily and annual basis, describing whether there are seasonal changes in the amount or character of the septage.

c. If septage discharges are accepted from communities not served by the same water supplier as the POTW, these discharges must be sampled, and separately identified as part of the program outlined under Paragraph III. Describe whether the contributing

communities comply with EPA's Lead & Copper Rule and whether they have taken any additional corrosion control measures to reduce copper beyond the requirements of the Lead & Copper Rule.

2. **LEACHATE**
   a. Identify the name and location of the source, and the location of the discharge of any leachate received by the POTW; and,
   b. Report the average daily, monthly average and annual volume of leachate received by the POTW. Characterize the chemical content of the leachate and determine the total annual copper loading of the leachate as a percentage of the total annual copper loading to the POTW providing the basis for the measurement or estimate. Describe any chemical sampling, tracking, or permit system used to monitor or regulate the leachate received by the POTW.
3. **OTHER HAULED WASTEWATERS**
   a. If the Permittee accepts non-septage hauled wastewater from industrial or commercial establishments, describe the approval process for individual or contract dischargers citing any sampling protocols and the local sewer use ordinance, where applicable.
   b. Identify all non-septage wastewaters hauled to the POTW and describe the chemical monitoring and the tracking or permit system used to control such discharges.
   c. Report the amount of non-septage wastewater delivered to the POTW on an average daily and annual basis.
   d. Determine the non-septage hauled waste copper loading as a percent of the total POTW loading. Provide the basis for the measurement or estimate.
4. Identify control strategies for septage, leachate and other hauled wastes including scheduling modifications, chemical treatment at the point of injection, restrictions on, or banning of, categories of discharges, or other means of improved management controls and prioritize the alternatives based upon their expected effectiveness, technical and economic feasibility.

D. HOUSEHOLD DOMESTIC WASTES

1. Identify through a residential survey, by sales analyses of products commonly available in the region, or by estimate of domestic chemical product usage, the amount of copper that may be discharged to the collection system from the use of household chemical products.
2. Estimate the usage of copper-based root control products within the sewered and non-sewered septage-generating service areas. Consider homeowner and contractor use of these chemical additives.

3. Estimate the annual household domestic waste copper loading as a percent of the total annual POTW copper loading providing the basis for the measurement or estimate.
4. Propose the development and implementation of public outreach and programs that educate consumers regarding the impact of household products on the environment and the availability of alternative products.
5. Consider bans on sales or use of products associated with increased levels of copper in the POTW effluent and explain the rational and limitations for either implementing or not implementing any bans.

E. **SIDE-STREAM OR INTERNAL FLOWS**

1. Describe the POTW unit operations and processes and provide a process flow diagram highlighting side-stream return flows from sludge dewatering, compost area runoff, and locations of septage introduction, chemical addition, etc...
2. Identify the quantity of all wastewater treatment chemical additives used at the POTW, chemical makeup, injection points, and seasonal or episodic usage patterns.
3. Evaluate the annual side-stream and internal copper loading as a percent of the total annual POTW copper loading providing the basis for the measurement or estimate.
4. Identify alternative POTW management or treatment options for the reduction of copper in side-streams, internal flows, or chemical usage and implementation time frames for each considered option.

III. POTW MODIFICATIONS

A. An assessment of the percent of the annual copper loading in the wastewater influent that has historically been removed by the POTW noting any seasonal variations.

B. Provisions for a sampling program that shall be initiated within 30 days of the issuance of this Order, in which weekly monitoring of the level of total and dissolved copper in the POTW influent and effluent, side-streams, and any leachate discharged to the collection system or wastewater treatment facility shall be conducted. This sampling program shall continue for three consecutive months and shall be comprised of twenty-four hour composite samples. Influent and side-stream sampling shall be coordinated with effluent copper sampling and shall be representative of all flows entering the POTW. The results of this monitoring shall be included as a separate table in the report.

C. Provisions for a sampling program that shall be initiated within 30 days following the issuance of this Order, in which weekly monitoring of the level of

total and dissolved copper in septage and any hauled wastewater discharges to the POTW shall be conducted. Representative weekly grab samples shall be taken for three consecutive months. Where possible, the grab samples shall be coordinated with the composite sampling requirements of Paragraph III.B. The results of this monitoring shall be included as a separate table in the report.

D. Provisions for a three-month sampling program that shall be initiated within 30 days of the issuance of this Order, in which weekly monitoring of the level of total and dissolved copper in the effluents from various unit processes at the POTW (i.e. primary effluent, secondary effluent, final effluent, sludge, etc...) are used to develop a mass balance that characterizes the level of copper removal through the various treatment operations. Where possible, the samples shall be coordinated with the composite sampling requirements of Paragraphs III.B and III.C. Identify gaps in this mass balance exercise explaining where copper "losses" may have occurred. The results of this monitoring shall be included as a separate table in the report.

E. A summary of the results of the monitoring required in III.B., III.C., and III.D. above, including an assessment of the magnitude and variability of the level of copper entering the POTW to determine whether all likely sources of copper have been identified and whether effluent variability correlates to influent variability or is the result of treatment variability or other factors.

F. A quality assurance/quality control program to ensure that appropriate sampling and analytical techniques and chain of custody procedures are implemented such that the monitoring results of the sampling programs are accurate at the levels required by the permit's effluent limits (i.e. clean techniques are used where required and the analytical equipment used to analyze the samples is capable of achieving the detection levels required by the NPDES permit effluent limit).

G. An evaluation of the POTW's ability to achieve greater removals of copper through operational changes, including but not limited to, single-point and multiple-point chemical addition, and/or installation of additional treatment. These evaluations shall include an assessment of the level of copper that is expected to be removed through the implementation of the evaluated treatment plant modifications.

H. Development of capital and operational costs and schedules for implementing any improvements necessary at the POTW to reduce the copper content in the effluent.

IV. RANKING OF SOURCES AND CONTROL STRATEGIES

A. Rank each category of copper sources, including side-stream sources, by

annual average quantity and percent contribution to the overall POTW loading. If important seasonal differences exist, rank the sources during the various seasons.

B. Summarize the influent and effluent copper reduction potential of each of the alternatives evaluated under Paragraphs II and III.

C. For each alternative that is likely to reduce the level of copper discharged by the POTW, evaluate the technical, political, and economic feasibility of the alternative and rank each alternative with regards to effectiveness and implementability.

D. Select the options, or mix of alternatives, that provide the greatest likelihood of achieving significant effluent copper reduction leading to compliance with the POTW effluent limits.

E. Include specific schedules for the implementation of each of the alternatives selected under Paragraph IV.D and propose a monitoring program to that will determine the effectiveness of the completed treatment modifications and source reductions measures.

Appendix I

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

DRAFT

MADEP-DWM NPDES PERMIT PROGRAM
POLICIES RELATED TO *FLOW* and *NUTRIENTS* in NPDES PERMITS

Introduction: The current "backlog" NPDES permit project and the accelerated control needs for nutrients have raised a few questions on how to develop and implement permit limits in many cases with particular emphasis on flow and nutrients. The following information outlines MADEP-DWM's recommended approach to those permit parameters

Effluent Flow: MADEP-DWM proposes the following conditions related to effluent flow in permits: 1). use a mass-only loading for BOD, TSS, and nutrients and not have a flow limit in the permit; 2). use the "design flow" (from the facility plan) as the average annual flow in the permit rather than as a monthly flow; facility designs look at three flow regimes: average flow, maximum flow and peak flow; the latter two are for short duration events particularly related to stormwater inputs and provide for proper treatment levels over specified time durations; the "average" flow will be a 12 month "running average" flow; this will recognize the variation in flow at WWTPs particularly in spring time runoff events; the limits for BOD, TSS and nutrients would be limited as both mg/l and mass loading (lbs/day); in addition, the permit would require I/I control and would require comprehensive wastewater planning where appropriate; this approach would limit the mass loading to the receiving water which is the key element in water quality control; when a TMDL is developed for a segment indicated that lower mass loadings are needed the permit will be reissued to reflect the lower mass loading; MADEP-DWM will continue to expand the evaluation of water resources associated with the permit particularly review of MADEP-DWM Water Management Act permits to ensure that water withdrawals are not causing local sub-watershed problems; 3.) if a facility requests a flow increase in the permit they must have completed a comprehensive wastewater management planning assessment to demonstrate such need.; if the need is properly demonstrated the permit will be modified to reflect the new flow (as an annual average) but will not increase loadings unless anti-degradation has been evaluated and loadings deemed to be insignificant

Total Phosphorus: MADEP-DWM has established the following guidelines for phosphorus controls: 1.) for discharges to an impaired segment (i.e. on 303d list for nutrients) the approach will be to use a "phased" approach to meet either the TMDL based loading and/or the "best practical" treatment level; the effluent limit will be listed in the permit as both mg/l and mass based (lbs/day) and will reflect optimizations levels (assess current capability of facility to maximize removal) and will set forth a schedule to develop comprehensive wastewater planning and to develop the technical approaches to meet TMDL or "B-P" levels; the phosphorus limit

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can be expressed as a seasonal average loading to reflect the variability of treatment and to acknowledge that temporal loading of phosphorus is critical; 2) for facilities which discharge to receiving waters which are not listed on 303d but judgement indicates that future TMDLs will lead to lower effluent limits in the future, the permit will require the permittee to conduct a phosphorus evaluation study as part of the permit conditions; the approach includes: a.) influent and effluent loading analyses; b) maximum removal with current physical structures but potential modification of removal techniques (e.g. multiple dosing locations for metal salts); c.) facility planning and budget development to be ready for both achieving potential future limits and to have the financial resources to accomplish the needs.

Total Nitrogen: The control of nitrogen to waters in Massachusetts which discharge to coastal embayments both within this state and to interstate waters is acknowledged as a future need in some watersheds in this state; MADEP-DWM proposes the following approach: 1.) for discharges to systems which eventually flow to Long Island Sound MADEP-DWM acknowledges USEPA's requirement to have total nitrogen monitoring in all WWTPS which discharge to those watersheds (particularly the Housatonic and Connecticut Watersheds) to establish a data base which will help to determine load contributions and also help in developing future control strategies if necessary; 2.) for WWTPs which have been identified as having excessive nitrogen loadings which result in water quality violations, MADEP-DWM supports requiring nitrogen limits in the permit; this approach requires significant data and analyses on the cause and effect and a development of loading scenarios needed to provide nitrogen reduction; 3.) for WWTPs which may be contributing to nitrogen related problems but data to date is not sufficient to determine permit limits and removal needs, MADEP-DWM supports effluent monitoring and preliminary engineering assessments on nitrogen removal requirements at the WWTP; 4.) nitrogen removal needs to be accessed as part of the overall WWTP control needs and cannot preclude the development of a higher priority project associated with the discharge (e.g. CSO controls)

Questions related to these policies should be directed to Paul Hogan (508-767-2796) and Bryant Firmin (508-849-4003) of the MADEP-DWM Surface Water Discharge Permit Program. Changes to the above policies will be made only by the MADEP-DWM Program Director

Glenn Haas, Director
June 12, 2000

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Appendix J

MEMORANDUM

B27-5-50

TO: Gary L. Brougham, Director DPW Belchertown
Paul M. Hogan, Surface Water Permits Program Manager, DEP
Victor Alverez, Permits, EPA
FROM: Doris S. Atkinson, Omer H. Dumais, Jr. - Tighe & Bond, Inc.
RE: Evaluation of Instream Dissolved Oxygen
DATE: October 25, 1995

This Memorandum is to present the results of the dissolved oxygen (DO) monitoring program conducted in late August of this year as conducted following the Scope of Work submitted to you on August 22, 1995 (copy attached).

The purpose of monitoring DO levels in the waterbodies to which the Belchertown POTW discharges was to collect new data for use in evaluating effluent limits for Belchertown's NPDES Permit. The current Permit is based on data that is more than fifteen years old. An additional consideration of the sampling program was to assess the impact that naturally occurring wetlands have on instream DO.

The sampling for this evaluation was conducted under "worst case" conditions. Rainfall for the preceding six weeks was at record lows and temperatures were above average. These conditions resulted in historically low flows throughout Western Massachusetts.

Task 1 - Work Plan - The first task of the Dissolved Oxygen Monitoring Program was to develop the attached Scope of Work which was submitted to both the U.S. EPA and the Massachusetts DEP for review prior to beginning field work.

Task 2 - Identify Control Wetlands and Sampling Sites - The second task was to identify suitable wetland areas to be used as a control for the Lampson Brook wetland and specific field sampling sites. Sampling Sites are identified on Figure 1. A description of selected sampling sites follows. Photographs of each area are provided as Attachment 2.

DESCRIPTION OF SAMPLING SITES

1. Upstream of Discharge.

   This sampling site is on Lampson Brook, approximately 20 feet upstream of the POTW discharge. The brook at this location follows a well defined channel, with a moderate stream slope and stony bottom. It is in open sunlight, and at the time of sampling the flow was approximately 1.5 feet across (photo #2). Upstream of this location the stream flows through wooded, deeply shaded habitat (photo #1).

2. POTW Discharge.

The POTW treatment lagoons (photo #3) discharge to Lampson Brook through an open discharge pipe (photo #4). The sampling site is in the discharge pipe of the POTW before the discharge is released to rip-rap between the pipe and Lampson Brook.

3. Lampson Brook After Discharge

This sampling site is approximately 20 feet downstream of the POTW discharge on Lampson Brook (photo #5). The stream characteristics are similar to those noted for Lampson Brook upstream of the discharge (photo #2).

Immediately after this location Lampson Brook enters a wetland (photo #6). The wetland is characterized by cattails with blueberries and standing dead trees. Trees along the edges of the cattails include poplars and red maple. There is also jewel weed and wild rose along the edge. The wetland does not appear to have a very well defined channel and spreads out in a flooded area (photo #7) behind a small stone impoundment (photo #8). According to local residents, this area was originally flooded by beaver activity, but the beavers have since left the area and the beaver dams broke. The stone impoundment was built to retain some of the water which had previously been retained by the beaver dams.

4. Exit of Wetland

This sampling site is immediately upstream of the stone impoundment on Lampson Brook (photo #7). There is standing open water which at the time of sampling appeared to have an average depth of one foot or less. The banks indicated that water was typically higher in this area than observed at sampling.

5. Lampson Brook Downstream of Wetland.

This site is approximately 500 feet downstream of the stone impoundment on Lampson Brook where Lampson Brook crosses George Hannum Road (photo # 10). The stream channel between the impoundment and George Hannum Road is approximately 3 to 5 feet wide and appears to have depths in the order of 2 to 4 feet (photo # 9). It is very sluggish with no visible movement at the time of sampling. There appears to be a deep layer of organic sediments on the bottom of the stream channel, and in locations, vegetation from the sides of the brook constricts the flow in the channel.

6. Weston Brook at Boardman Street

Lampson Brook joins Weston Brook approximately 0.4 miles downstream of

George Hannum Road (sampling location 5). Another 0.5 miles downstream Weston Brook flows under Boardman Street which is the closest readily available monitoring location. At this location Weston Brook follows a well defined channel, with a moderate stream slope and stony bottom. It is in dappled sunlight, and at the time of sampling the flow was approximately 2.5 feet across (photo # 11). Upstream of this location the stream flows through open meadow and it is reported that there are also Beaver impoundments along Weston Brook above the confluence with Lampson Brook.

7. Forge Pond Inlet

This sampling site is located in Forge Pond approximately 1,000 feet from the point where Weston Brook enters the pond (photo #12). The sampling site was accessed via a concrete boat dock. Samples were taken at a depth of approximately one foot from the surface. The pond in this location is relatively narrow compared to the main body of the pond. The average width is less than 200 feet. At the time of sampling, this area of the pond was covered bank to bank with duckweed with limited light penetration.

8. Forge Pond Outlet

This sampling site is located in Forge Pond (photo # 13) approximately 200 feet from the outlet of the pond at Bachelor Brook (photo # 14). The sampling site was accessed via a boat ramp off of School Street. Samples were taken at a depth of approximately one foot from the surface, approximately 10 feet from shore. The water surface at this location was mostly free of vegetative growth.

9. Upstream of Control Wetland

This site is located in Jabish Brook where it crosses Jabish Street (photo #15). The stream at this location is reasonably similar in characteristics to Lampson Brook upstream of the POTW. It flows through a well defined channel, with moderate stream slope and stony bottom. While the sample site is located in wooded shaded habitat, a short distance downstream, the stream flows in open sunlight. At this time of sampling the flow was approximately 1.5 to 2.0 feet across and appeared to be somewhat greater than the Lampson Brook flow, although no stream measurements were made. Shortly downstream of the sample site, the Town operates shallow drinking water supply wells off Jensen Street.

10. Control Wetland

This site is located at the exit to a cattail wetland located on Jabish Brook (photo # 16) that is flooded due to beaver activity (photo #17). This wetland was selected as the control wetland because it has both similar hydraulics and similar

plant communities as found in the Lampson Brook wetland. The plant community is dominated by cattails and high bush blueberries and dead or dying trees. The area has been flooded due to beaver activity. Recently the water level has increased causing flooding problems along Jensen Street. This wetland is somewhat smaller than the Lampson Brook wetland.

11. Downstream of Control Wetland

This site is located approximately 0.5 miles downstream of the control wetland, where Jabish Brook crosses Aldrich Street (photo #18). The stream is slower moving and deeper at this location than at the upstream location. Between the control wetland and this location the stream flows though wooded wetlands. However, the stream channel is well defined, and at the time of sampling, there was little to no standing water in the wooded wetlands. The stream flow in this location was more rapid than at the site on Lampson Brook downstream of the Lampson Book wetland (Site 5).

Task 3 - Sampling - The third task of the monitoring program was sample collection and instream DO and temperature measurements. The sampling program included two days of sampling, each approximately one week apart, with two DO measurements for each location each day and additional DO measurements for the Forge Pond sample sites to determine the extent of diurnal variability in DO concentrations.

Additionally, Nitrogen and phosphorous levels were analyzed in the POTW effluent and within Forge Pond to provide data regarding nutrient loadings. Chlorophyll-a concentrations were measured in the Forge Pond samples to assess relative algae concentrations.

Tables 1 and 2 present the DO data for each sample date and Table 3 summarizes the results of the laboratory chemical analyses. Full laboratory reports with quality control documentation are provided as Attachment 3.

Task 4 - Project Memorandum and Data Interpretation - Dissolved oxygen data were plotted against distance downstream from the upstream sampling locations (mile 0). Figure 2 presents the instream DO data for August 24 and Figure 3 presents the data for August 30. The data for each day indicated similar DO levels for each sampling site and similar trends relative to stream distance from the upstream monitoring location.

For both days, there was an immediate decrease in DO concentrations associated with the mixing of the POTW effluent with Lampson Brook. However, this decrease was well within the water quality standard of 5.0 mg/L. The DO in Lampson Brook upstream of the POTW ranged from 8.0 to 9.6 mg/L. The upstream control on Jabish Brook had very similar DO concentrations with a range from 8.6 to 9.0 mg/L. The lowest DO of the POTW effluent was 5.0 mg/L, with a maximum of 5.4 mg/L. The

lowest DO of the receiving stream after mixing with the POTW effluent was 7.0 mg/L, with a maximum of 7.0 to 7.6 mg/L. BOD concentrations in the POTW effluent and in Lampson Brook downstream of the POTW discharge were all below 6 mg/L.

DO levels in the wetlands on Lampson Brook and Jabish Brook dropped significantly compared to the upstream controls. The DO levels in the Lampson Brook wetland ranged from 1.6 mg/L to 2.6 mg/L. The DO levels in the Jabish Brook wetland ranged from 2.8 to 3.8 mg/L. The drop in DO in the Jabish Brook control wetland indicates that the oxygen depletion seen in both systems is likely to be due to the naturally occurring anoxic sediments associated with the wetland environments. The difference in concentrations may also reflect the fact that the Jabish Brook wetland is not as extensive and that Jabish Brook is somewhat more channelized than Lampson Brook.

BOD concentrations in the two wetlands were significantly higher than in the upstream samples. The Lampson Brook wetland samples had higher BODs (25 and 110 mg/L) than the Jabish Brook wetland samples (8.6 and 10 mg/L). This may reflect a higher algae concentration in the Lampson Brook wetland. The Lampson Brook wetland samples were taken in full sunlight while the Jabish Brook wetland samples were taken in fairly deep shade.

Reoxygenation occurs in both stream systems within the same relative distance from the wetlands. DO levels on Lampson Brook shortly downstream of the wetland area (800 feet +/-) were still lowered (2.8 to 4.6 mg/L). The stream between the wetland and this monitoring location is very sluggish, with little opportunity for reaeration. Shortly after this point, Lampson Brook joins with Weston Brook. D.O levels in Weston Brook at Boardman Street, approximately 1.6 miles downstream from the POTW, ranged from 6.2 to 7.0 mg/L. The downstream monitoring site for Jabish Brook had a DO concentration of 7.2 mg/L. This location is approximately 1.2 miles from the upstream control and is at a location past the confluence of Jabish Brook and an unnamed brook draining from the north. BOD concentrations also decreased as oxygen levels increased.

Figure 3 shows DO concentrations at two locations in Forge Pond. The inlet location had low DO concentrations, ranging from 1.2 to 2.4 mg/L on August 24 and 2.2 to 5.8 mg/L on August 30. The presence of surface vegetation (duckweed) may be responsible for the observed low oxygen levels at this location. The pond is relatively narrow and stagnant at this location. At the time of sampling, duckweed covered the pond surface in this area from bank to bank. This may have prevented light from entering the water column and reducing oxygenation from photosynthesis. Weather conditions may account for the somewhat higher oxygen levels on August 30th as there was a moderate breeze on this day.

The DO concentrations near the outlet were generally higher and indicated a diurnal curve with DO concentrations above saturation during the daytime and dropping at night. This is typical of ponds with high concentrations of algae which produce oxygen during

the daylight hours but consume oxygen at night.

BOD levels in samples collected from the pond appear to correlate with chlorophyll-a concentrations. Samples with algae will tend to produce a higher apparent BOD5 than actually exerted as samples are not exposed to light and algae therefore do not photosynthesize during the BOD test.

Nutrient analysis indicates that total phosphorous levels are at concentrations expected to lead to eutrophic conditions. These conditions appear to foster algae as the high chlorophyll-a concentrations would indicate.

Conclusions - The overall conclusion of this study regarding instream DO concentrations is that the depletion of DO seen in the Lampson Brook wetland as well as the Jabish Brook wetland is due to natural wetland processes. The Jabish Brook wetland system is considered to be a good match to be used as a control system. Jabish brook is a very clean undisturbed stream which is used as water supply. DO levels drop to similar levels in the Jabish Brook wetland as are seen in the Lampson Brook wetland. The natural depletion of DO across the wetland does not appear to impair downstream reaeration.

Based on the data presented in this memorandum, it does not appear that the Belchertown POTW is exerting any undue oxygen demand on Lampson Brook or that there is any need to place further restrictions on effluent BOD to improve water quality. The data do indicate conditions leading to eutrophication exist in Forge Pond. Specifically, total phosphorous levels are above those recommended for control of eutrophication. However, it does not appear that BOD loadings from the POTW are directly contributing to these conditions, and it is recommended that NPDES permit limits for BOD not be restricted based on the low DO concentrations seen leaving the Lampson Brook wetland.

J:\B27\eutrophmemo.doc

TABLE 1
DISSOLVED OXYGEN AND TEMPERATURE DATA – AUGUST 24–25, 1995

	1	2	3	4	5	6	7	8	9	10	11
	Upstream of POTW	POTW	Downstream of POTW	Lampson Wetland Exit	Lampson Downstream of Wetland	Weston at Boardman Street	Forge Pond Inlet	Forge Pond Outlet	Upstream Control	Control Wetland	Downstream Control
Time	6:12	6:23	6:43	7:03	7:23	7:43	8:23	8:13	8:58	9:18	9:43
D.O.	9.6	5.1	7.1	2.2	3.1	6.6	1.2	5.1	8.8	2.8	7.2
Temp.	13	17	16	15	16	16	19	21	14	16	12
Time							10:20	10:10			
D.O.							1.4	7.8			
Temp.							20	22			
Time							13:55	14:10			
D.O.							1.2	8.4			
Temp.							21	22			
Time	15:30	15:40	15:50	16:10	16:20	16:30	16:40	17:00	17:20	17:40	17:50
D.O.	8.2	5	7.6	2.6	4.6	6.2	1.4	11.4	8.6	3.8	7.2
Temp.	17	19	18	21	22	19	21	24	16	18	14
Time							22:05	22:20			
D.O.							2.4	11.6			
Temp.							20	21			
Time							2:25	2:45			
D.O.							2.2	10.2			
Temp.							18	20			

TABLE 2
DISSOLVED OXYGEN AND TEMPERATURE DATA – AUGUST 30–31, 1995

	1	2	3	4	5	6	7	8	9	10	11
	Upstream of POTW	POTW	Downstream of POTW	Lampson Wetland Exit	Lampson Downstream of Wetland	Weston at Boardman Street	Forge Pond Inlet	Forge Pond Outlet	Upstream Control	Control Wetland	Downstream Control
Time	6:47	7:08	7:17	7:40	7:58	8:10	6:25	6:03	8:33	8:55	9:13
D.O.	9.2	5.4	7.0	1.6	2.8	7.0	2.2	8.8	9.0	2.8	7.2
Temp.	11	16	16	15	15	15	16	20	12	13	11
Time							10:15	10:00			
D.O.							2.6	7.2			
Temp.							17	20			
Time							14:20	14:05			
D.O.							2.4	11.2			
Temp.							19	23			
Time	15:15	16:25	16:35	16:50	17:00	17:10	16:00	15:45	17:25	17:40	17:55
D.O.	8.0	5.4	7.0	1.8	3.4	6.8	3.2	11.4	8.6	3.0	7.2
Temp.	15	16	16	20	19	16	19	24	15	16	14
Time							22:20	22:05			
D.O.							5.8	12.6			
Temp.							19	20			
Time							02:38	2:25			
D.O.							5.8	11.6			
Temp.							18	19			

TABLE 3
CHEMICAL ANALYSES – AUGUST 24 AND 30, 1995

	1	2	3	4	5	6	7	8	9	10	11
	Upstream of POTW	POTW	Downstream of POTW	Lampson Wetland Exit	Lampson Downstream of Wetland	Weston at Boardman Street	Forge Pond Inlet	Forge Pond Outlet	Upstream Control	Control Wetland	Downstream Control
08/24/95											
Time	6:10	6:20	6:40	7:00	7:20	7:40	8:30	8:10	8:55	9:15	9:40
BOD	<3	5.7	5.9	25	8.3	4.2	3.6	11	<3	10	<3
Chlorophyll a							17	190			
Ammonia		5.1						0.077			
Nitrite/Nitrate		7.7						<0.02			
TKN		6.2						1.7			
Total P		3.3						0.82			
08/30/95											
Time	6:45	7:05	7:15	7:35	7:55	8:05	6:20	6:00	8:30	8:50	9:10
BOD	5.7	<3	4.8	110	7.4	16	14	46	<3	8.6	<3
Chlorophyll a							180	570			
Ammonia		3.0						0.42			
Nitrite/Nitrate		7.7						<0.02			
TKN		6.2						9.9			
Total P		2.8						0.61			

Figure 2 – Instream DO (August 24)

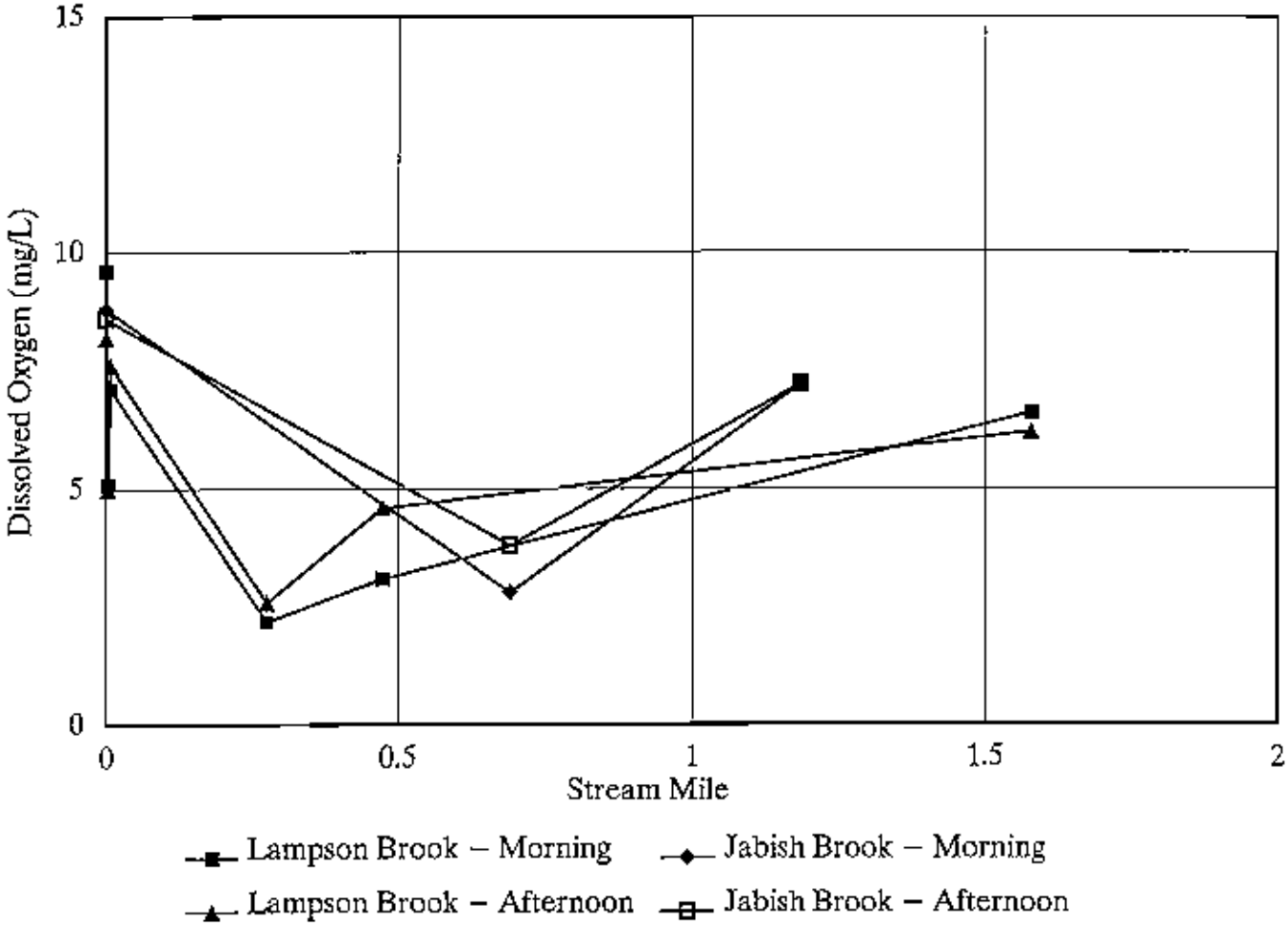


Figure 3 – Instream DO (August 30)

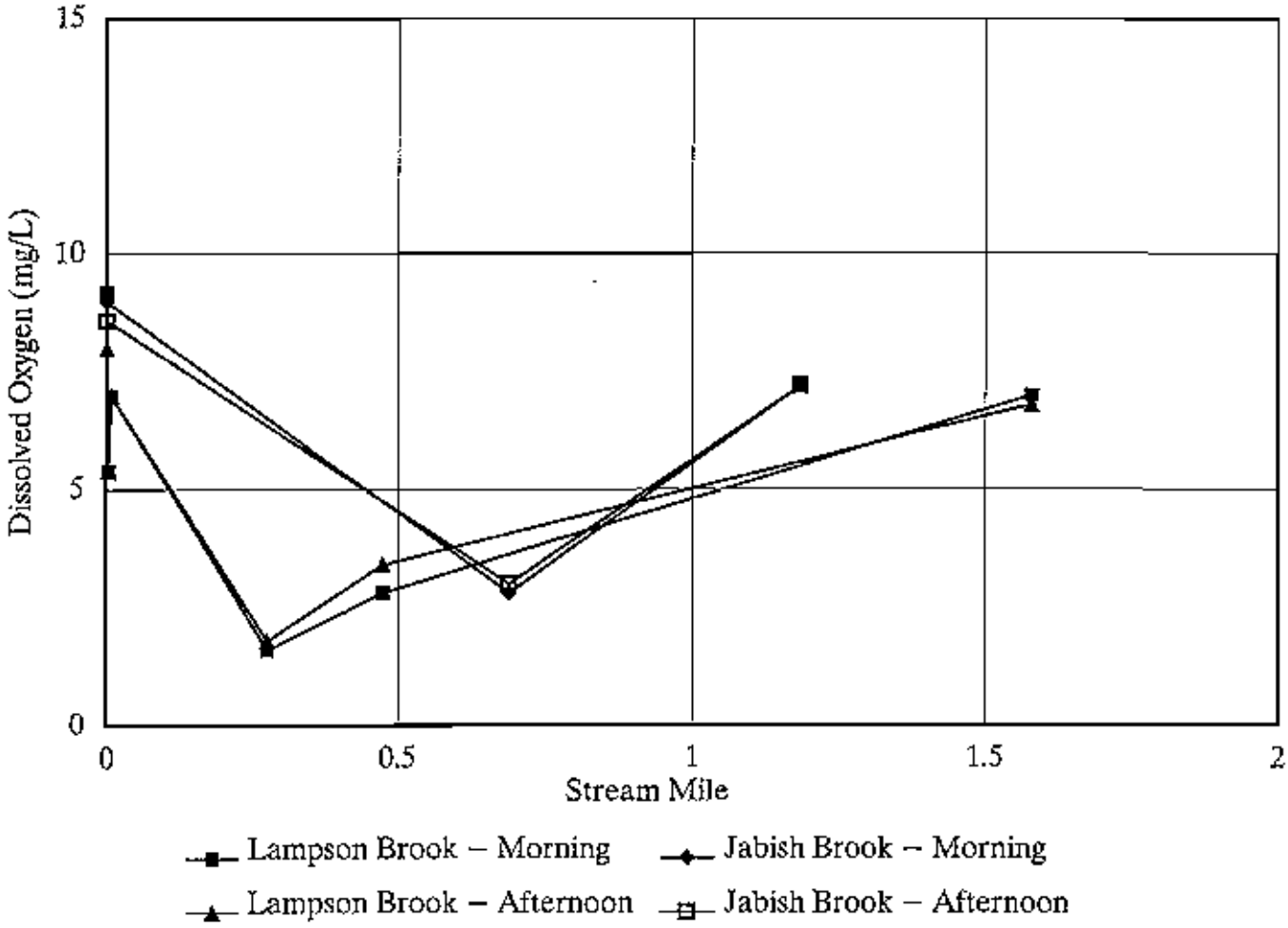
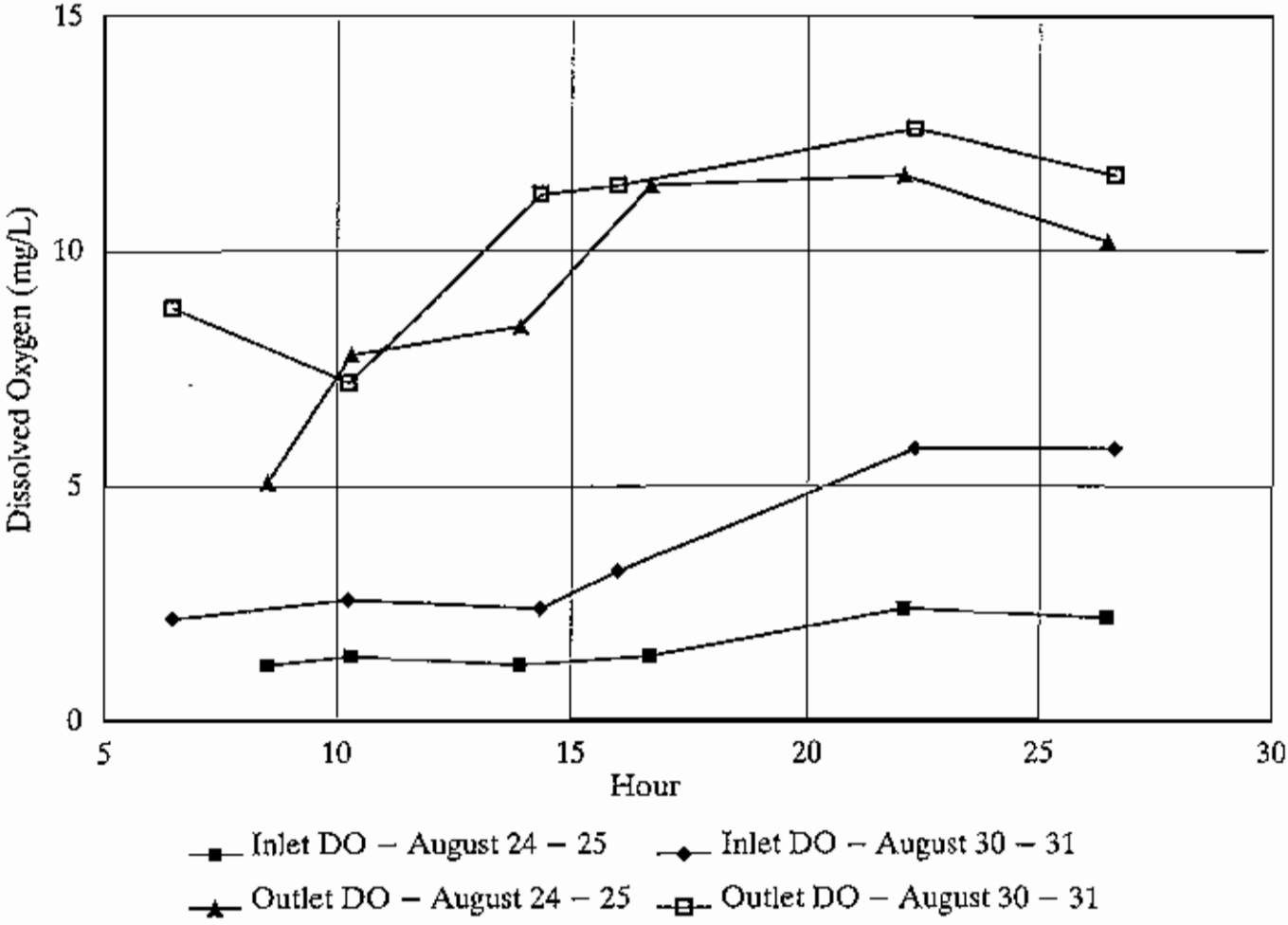


Figure 4 – Forge Pond DO



ATTACHMENT 1

SCOPE OF WORK

ATTACHMENT 2

PHOTOGRAPHS OF SAMPLING SITES

ATTACHMENT 3

LABORATORY REPORTS

MEMORANDUM

B27-5-50

TO: Gary L. Brougham, Director DPW Belchertown
Paul M. Hogan, Surface Water Permits Program Manager, DEP
Victor Alverez, Permits, EPA
FROM: Doris S. Atkinson, Omer H. Dumais, Jr. - Tighe & Bond, Inc.
RE: Evaluation of Instream Dissolved Oxygen
DATE: October 25, 1995

This Memorandum is to present the results of the dissolved oxygen (DO) monitoring program conducted in late August of this year as conducted following the Scope of Work submitted to you on August 22, 1995 (copy attached).

The purpose of monitoring DO levels in the waterbodies to which the Belchertown POTW discharges was to collect new data for use in evaluating effluent limits for Belchertown's NPDES Permit. The current Permit is based on data that is more than fifteen years old. An additional consideration of the sampling program was to assess the impact that naturally occurring wetlands have on instream DO.

The sampling for this evaluation was conducted under "worst case" conditions. Rainfall for the preceding six weeks was at record lows and temperatures were above average. These conditions resulted in historically low flows throughout Western Massachusetts.

Task 1 - Work Plan - The first task of the Dissolved Oxygen Monitoring Program was to develop the attached Scope of Work which was submitted to both the U.S. EPA and the Massachusetts DEP for review prior to beginning field work.

Task 2 - Identify Control Wetlands and Sampling Sites - The second task was to identify suitable wetland areas to be used as a control for the Lampson Brook wetland and specific field sampling sites. Sampling Sites are identified on Figure 1. A description of selected sampling sites follows. Photographs of each area are provided as Attachment 2.

DESCRIPTION OF SAMPLING SITES

1. Upstream of Discharge.

   This sampling site is on Lampson Brook, approximately 20 feet upstream of the POTW discharge. The brook at this location follows a well defined channel, with a moderate stream slope and stony bottom. It is in open sunlight, and at the time of sampling the flow was approximately 1.5 feet across (photo #2). Upstream of this location the stream flows through wooded, deeply shaded habitat (photo #1).

2. POTW Discharge.

The POTW treatment lagoons (photo #3) discharge to Lampson Brook through an open discharge pipe (photo #4). The sampling site is in the discharge pipe of the POTW before the discharge is released to rip-rap between the pipe and Lampson Brook.

3. Lampson Brook After Discharge

This sampling site is approximately 20 feet downstream of the POTW discharge on Lampson Brook (photo #5). The stream characteristics are similar to those noted for Lampson Brook upstream of the discharge (photo #2).

Immediately after this location Lampson Brook enters a wetland (photo #6). The wetland is characterized by cattails with blueberries and standing dead trees. Trees along the edges of the cattails include poplars and red maple. There is also jewel weed and wild rose along the edge. The wetland does not appear to have a very well defined channel and spreads out in a flooded area (photo #7) behind a small stone impoundment (photo #8). According to local residents, this area was originally flooded by beaver activity, but the beavers have since left the area and the beaver dams broke. The stone impoundment was built to retain some of the water which had previously been retained by the beaver dams.

4. Exit of Wetland

This sampling site is immediately upstream of the stone impoundment on Lampson Brook (photo #7). There is standing open water which at the time of sampling appeared to have an average depth of one foot or less. The banks indicated that water was typically higher in this area than observed at sampling.

5. Lampson Brook Downstream of Wetland.

This site is approximately 500 feet downstream of the stone impoundment on Lampson Brook where Lampson Brook crosses George Hannum Road (photo # 10). The stream channel between the impoundment and George Hannum Road is approximately 3 to 5 feet wide and appears to have depths in the order of 2 to 4 feet (photo # 9). It is very sluggish with no visible movement at the time of sampling. There appears to be a deep layer of organic sediments on the bottom of the stream channel, and in locations, vegetation from the sides of the brook constricts the flow in the channel.

6. Weston Brook at Boardman Street

Lampson Brook joins Weston Brook approximately 0.4 miles downstream of

George Hannum Road (sampling location 5). Another 0.5 miles downstream Weston Brook flows under Boardman Street which is the closest readily available monitoring location. At this location Weston Brook follows a well defined channel, with a moderate stream slope and stony bottom. It is in dappled sunlight, and at the time of sampling the flow was approximately 2.5 feet across (photo # 11). Upstream of this location the stream flows through open meadow and it is reported that there are also Beaver impoundments along Weston Brook above the confluence with Lampson Brook.

7. Forge Pond Inlet

This sampling site is located in Forge Pond approximately 1,000 feet from the point where Weston Brook enters the pond (photo #12). The sampling site was accessed via a concrete boat dock. Samples were taken at a depth of approximately one foot from the surface. The pond in this location is relatively narrow compared to the main body of the pond. The average width is less than 200 feet. At the time of sampling, this area of the pond was covered bank to bank with duckweed with limited light penetration.

8. Forge Pond Outlet

This sampling site is located in Forge Pond (photo # 13) approximately 200 feet from the outlet of the pond at Bachelor Brook (photo # 14). The sampling site was accessed via a boat ramp off of School Street. Samples were taken at a depth of approximately one foot from the surface, approximately 10 feet from shore. The water surface at this location was mostly free of vegetative growth.

9. Upstream of Control Wetland

This site is located in Jabish Brook where it crosses Jabish Street (photo #15). The stream at this location is reasonably similar in characteristics to Lampson Brook upstream of the POTW. It flows through a well defined channel, with moderate stream slope and stony bottom. While the sample site is located in wooded shaded habitat, a short distance downstream, the stream flows in open sunlight. At this time of sampling the flow was approximately 1.5 to 2.0 feet across and appeared to be somewhat greater than the Lampson Brook flow, although no stream measurements were made. Shortly downstream of the sample site, the Town operates shallow drinking water supply wells off Jensen Street.

10. Control Wetland

This site is located at the exit to a cattail wetland located on Jabish Brook (photo # 16) that is flooded due to beaver activity (photo #17). This wetland was selected as the control wetland because it has both similar hydraulics and similar

plant communities as found in the Lampson Brook wetland. The plant community is dominated by cattails and high bush blueberries and dead or dying trees. The area has been flooded due to beaver activity. Recently the water level has increased causing flooding problems along Jensen Street. This wetland is somewhat smaller than the Lampson Brook wetland.

11. Downstream of Control Wetland

This site is located approximately 0.5 miles downstream of the control wetland, where Jabish Brook crosses Aldrich Street (photo #18). The stream is slower moving and deeper at this location than at the upstream location. Between the control wetland and this location the stream flows though wooded wetlands. However, the stream channel is well defined, and at the time of sampling, there was little to no standing water in the wooded wetlands. The stream flow in this location was more rapid than at the site on Lampson Brook downstream of the Lampson Book wetland (Site 5).

Task 3 - Sampling - The third task of the monitoring program was sample collection and instream DO and temperature measurements. The sampling program included two days of sampling, each approximately one week apart, with two DO measurements for each location each day and additional DO measurements for the Forge Pond sample sites to determine the extent of diurnal variability in DO concentrations.

Additionally, Nitrogen and phosphorous levels were analyzed in the POTW effluent and within Forge Pond to provide data regarding nutrient loadings. Chlorophyll-a concentrations were measured in the Forge Pond samples to assess relative algae concentrations.

Tables 1 and 2 present the DO data for each sample date and Table 3 summarizes the results of the laboratory chemical analyses. Full laboratory reports with quality control documentation are provided as Attachment 3.

Task 4 - Project Memorandum and Data Interpretation - Dissolved oxygen data were plotted against distance downstream from the upstream sampling locations (mile 0). Figure 2 presents the instream DO data for August 24 and Figure 3 presents the data for August 30. The data for each day indicated similar DO levels for each sampling site and similar trends relative to stream distance from the upstream monitoring location.

For both days, there was an immediate decrease in DO concentrations associated with the mixing of the POTW effluent with Lampson Brook. However, this decrease was well within the water quality standard of 5.0 mg/L. The DO in Lampson Brook upstream of the POTW ranged from 8.0 to 9.6 mg/L. The upstream control on Jabish Brook had very similar DO concentrations with a range from 8.6 to 9.0 mg/L. The lowest DO of the POTW effluent was 5.0 mg/L, with a maximum of 5.4 mg/L. The

lowest DO of the receiving stream after mixing with the POTW effluent was 7.0 mg/L, with a maximum of 7.0 to 7.6 mg/L. BOD concentrations in the POTW effluent and in Lampson Brook downstream of the POTW discharge were all below 6 mg/L.

DO levels in the wetlands on Lampson Brook and Jabish Brook dropped significantly compared to the upstream controls. The DO levels in the Lampson Brook wetland ranged from 1.6 mg/L to 2.6 mg/L. The DO levels in the Jabish Brook wetland ranged from 2.8 to 3.8 mg/L. The drop in DO in the Jabish Brook control wetland indicates that the oxygen depletion seen in both systems is likely to be due to the naturally occurring anoxic sediments associated with the wetland environments. The difference in concentrations may also reflect the fact that the Jabish Brook wetland is not as extensive and that Jabish Brook is somewhat more channelized than Lampson Brook.

BOD concentrations in the two wetlands were significantly higher than in the upstream samples. The Lampson Brook wetland samples had higher BODs (25 and 110 mg/L) than the Jabish Brook wetland samples (8.6 and 10 mg/L). This may reflect a higher algae concentration in the Lampson Brook wetland. The Lampson Brook wetland samples were taken in full sunlight while the Jabish Brook wetland samples were taken in fairly deep shade.

Reoxygenation occurs in both stream systems within the same relative distance from the wetlands. DO levels on Lampson Brook shortly downstream of the wetland area (800 feet +/-) were still lowered (2.8 to 4.6 mg/L). The stream between the wetland and this monitoring location is very sluggish, with little opportunity for reaeration. Shortly after this point, Lampson Brook joins with Weston Brook. D.O levels in Weston Brook at Boardman Street, approximately 1.6 miles downstream from the POTW, ranged from 6.2 to 7.0 mg/L. The downstream monitoring site for Jabish Brook had a DO concentration of 7.2 mg/L. This location is approximately 1.2 miles from the upstream control and is at a location past the confluence of Jabish Brook and an unnamed brook draining from the north. BOD concentrations also decreased as oxygen levels increased.

Figure 3 shows DO concentrations at two locations in Forge Pond. The inlet location had low DO concentrations, ranging from 1.2 to 2.4 mg/L on August 24 and 2.2 to 5.8 mg/L on August 30. The presence of surface vegetation (duckweed) may be responsible for the observed low oxygen levels at this location. The pond is relatively narrow and stagnant at this location. At the time of sampling, duckweed covered the pond surface in this area from bank to bank. This may have prevented light from entering the water column and reducing oxygenation from photosynthesis. Weather conditions may account for the somewhat higher oxygen levels on August 30th as there was a moderate breeze on this day.

The DO concentrations near the outlet were generally higher and indicated a diurnal curve with DO concentrations above saturation during the daytime and dropping at night. This is typical of ponds with high concentrations of algae which produce oxygen during