

West Springfield Station Response to Comments on Draft National Pollutant Discharge Elimination System (NPDES) Permit No. MA0004707

Introduction:

In accordance with the provisions of 40 C.F.R. §124.17, this document presents EPA's responses to comments received on the Draft NPDES Permit (MA0004707). The responses to comments explain and support the EPA determinations that form the basis of the Final Permit. The West Springfield draft permit public comment period began April 26, 2004 and ended on May 25, 2004. With assistance from Earth Tech, the permittee commented on the draft permit (Section I). A list of comments from the permittee on the draft permit fact sheet were also received. Since the fact sheet is a final document, no changes were made. Instead, the fact sheet comments were noted and a response to them is included in this document (Section II). The other commenter was the Commonwealth of Massachusetts Riverways Program (Section III).

The Final Permit is substantially identical to the Draft Permit that was available for public comment. Although EPA's decision-making process has benefitted from the various comments and additional information submitted, the information and arguments presented did not raise any substantial new questions concerning the permit. EPA did, however, improve certain analyses and make certain clarifications in response to comments. These improvements and changes are detailed in this document and reflected in the Final Permit. A summary of the changes made in the Final Permit are listed below. The analyses underlying these changes are explained in the responses to individual comments that follow.

1. The permittee has the option to request to discontinue or reduce the sampling program after two years.
2. The frequency of pH sampling for outfall 001 has been changed from 2X/week to 2X/month.
3. The flow requirements for outfall 002 have been changed from "average monthly" limits to "report."
4. For clarification purposes, the word "Recorder" was changed to "Record."
5. The pH limits for stormwater have been changed from "not more than 0.2 s.u." to "not more than 0.5 s.u." outside the background range.
6. Stormwater language in the permit was changed to clarify the sampling location and the consistency of the sampling requirements.
7. Instead of installing a flow meter, pump capacity curve and operational hours will be used to determine the flow of the monthly and daily sandfilter backwashes.
8. Sandfilter backwash sampling for TSS is changed from a 24 hour composite/week to a composite of one backwash cycle/week.
9. The permittee is no longer required to provide hourly megawatt data.
10. The deadline for the annual data report is changed from January 31st to February 28th.

11. Language has been added that requires the permittee to access the effectiveness of data gathering efforts.
12. The requirement for the Station to produce a report evaluating alternative entrainment reduction technologies for possible installation at the Station has been removed.
13. Entrainment sampling at the Station discharge (Outfall 002) has been removed.
14. Language has been added to clarify sampling requirements for macroinvertebrates.
15. Only one year of river sediment sampling and grain size analysis is required.
16. Language has been added that clarifies field data gathering activities associated with the thermal plume evaluation.
17. The requirement for visual inspections at the discharge locations and areas adjacent to these locations has been changed from “at least once per operating shift” to “periodically, when not in conflict with safety concerns or other company policies and procedures.”
18. A provision has been added which indicates that all observed fish mortality must be recorded, but those dead fish identified as being washed off the traveling screens or dead fish floating from upstream can be identified as such and placed in a separate category, along with the justification for making the determination.
19. “When circulating pumps are in operation” has been added to the requirement of when the visual inspection of the intake screens for dead or live fish shall occur.
20. The reporting limit for impinged fish has been changed from 25 fish within 24 hours to 40 fish within eight hours (5 fish/hour on average).
21. Natural debris, not including trash, may be returned to the river.
22. The time period for the improvements to the intake structure (providing the safe return of fish to the river) has been extended to one year to accommodate that construction permits may contain seasonal restrictions.
23. Permit language that identifies the screenwash pressure to be over 30 psi and labels the debris return chute as a “fish return trough” has been removed.
24. For the purpose of entrainment monitoring, Unit 3 pumps may be operated independent of the Station’s power generation or other operational needs.
25. For impingement monitoring, at least one of the cooling water pumps for Unit 3 must be operated continuously during the sample period and these pumps may be operated independent of the Station’s power generation or other operational needs.
26. The Unit 3 pumps may be used to prevent freezing and during emergency situations. EPA will be notified within 24 hours if these conditions occur.
27. EPA has incorporated into the final permit that sampling shall be consistent with USEPA's Multi-Sector General Permit for storm water discharges associated with

industrial activities.

28. If possible, one of the yearly stormwater samples shall either include snowmelt or consist solely of snowmelt from any stockpiled snow within the drainage area.

**I. Earth Tech/ Consolidated Edison Energy of Massachusetts, Inc. (CEEMI)
Comments on Draft NPDES Permit**

Comments 1-6:

In general, the Station believes that, relative to the receiving water (Connecticut River), the multi-year biological and thermal monitoring program envisioned by the USEPA and outlined in the draft Permit is overly ambitious and unnecessarily burdensome for an electric power facility of this size and mode of operation given that:

1. The Station's overall intake and discharge flow has been reduced by 57% with the decommissioning of two steam electric power generating units (Units 1 and 2);
2. The Station no longer operates as a base-load facility, but instead as a peaking plant with average intake flows substantially below the draft permit's proposed maximum flow as indicated in the Fact Sheet;
3. The Station's maximum intake flow as limited by the draft permit (71 mgd or 110 cfs) represents only 5.6% of the estimated 7Q10 low flow of 1,975 cfs (MADEP) at Springfield;
4. The Station would not be required to meet the entrainment performance standards under the prepublication 316(b) Phase II rule for existing facilities, since the intake flow is well below 5% of the Connecticut River's annual mean river flow of 12,520 cfs as measured below the Holyoke Dam (USGS);
5. The prepublication 316(b) Phase II rule for existing facilities would limit verification monitoring, which is analogous to the monitoring requirements proposed in the Station's draft permit, to two years, as opposed to the three or more years proposed by the USEPA;
6. Impingement sampling results from Vermont Yankee, a facility with a significantly higher intake flow, suggest that fish impingement rates may not be significant at the Station.

Response 1:

EPA acknowledges and commends the West Springfield Station's (Station) reduction in cooling water withdrawals from the Connecticut River. EPA recognized this flow reduction in its evaluation of whether the capacity, design, location, and construction of the facility's cooling water intake structure reflects the best technology available (BTA) to minimize environmental impact to the Connecticut River. It was central to EPA's determination regarding the BTA at the Station.

Response 2:

Throughout these comments, the assertion is made that the Station's "peaking plant" operation will have a lesser impact on the Connecticut River than the base-load facility operation of the past. Yet, there is no provision in the draft permit that would prevent the facility from returning to a continuous base-load operation if business conditions prompted the permittee to take this action. Moreover, the permittee has not wanted to commit that it would not resume baseload operations in the future. EPA met with Station representatives on July 11, 2003 to discuss Station operations data collected in 2000 and 2001. Based on EPA calculations, the monthly capacity factor of the facility in 2000 ranged from approximately 2 to 59 % (March and December, 2000 respectively), with a yearly average capacity factor of 18 %. In 2001, the monthly capacity factor of the facility ranged from approximately 0 to 61 % (April and January, 2001 respectively), with a yearly average capacity factor of 16 %. EPA suggested during this meeting that perhaps reduced water use limits that would better reflect the current "peaking plant" mode of operation should be considered for the permit. EPA also encouraged the permittee to submit a proposal with its own water use limits that would better reflect the peaking plant mode of the Station. It was EPA's understanding that the permittee did not support this approach, and was interested in permit limits that still allowed for possible baseload operations in the future. Therefore, the monitoring plan and permit limits were designed to take into consideration that the facility could potentially operate at full baseload capacity.

Response 3:

Comment noted. See Response to Comment 4.

Response 4:

The comment suggests that the percentage of the mean annual flow of the Connecticut River represented by the Station's intake flow should be a factor in addressing entrainment in the permit. The facility's intake flow is a significant factor in assessing the magnitude of adverse impacts associated with entrainment and this was considered in the determination of best technology available (BTA). In this particular permit, EPA is not requiring attainment of an entrainment performance standard as part of the best technology available (BTA) determination.

There are several bases for the entrainment and impingement monitoring provisions in the permit independent of whatever the CWA § 316(b) Phase II regulations might require. These independent bases include (a) the need to assess cumulative adverse impacts, including those from the cooling water intake, in order to support analysis of the effects of the Station's thermal discharges and to support future permit determinations regarding thermal discharge limits under CWA § 316(a), (b) the need to assess the intake's adverse effects on aquatic life covered by either the Endangered Species Act or the Essential Fish Habitat requirements of the Magnuson-Stevens Fishery Conservation and Management Act, and (c) the need to ensure that entrainment losses do not contribute to violations of applicable state water quality standards. In addition, in applying CWA § 316(b) on a Best Professional Judgment (BPJ) basis, as EPA has done for this permit, it is appropriate to set monitoring requirements for entrainment and impingement, especially given the dearth of existing data for the Station. Finally, these monitoring requirements are also authorized by CWA §§ 402(a)(1) and (a)(2), and 308(a). EPA notes that after adequate data is collected and assessed, it may be possible to reduce these data collection requirements in the future.

As stated above, EPA developed permit limits under CWA § 316(b) on a case-by-case, BPJ basis

for the Station's permit. This approach is consistent with EPA's new Final CWA § 316(b) Phase II Rule for existing facilities, see 69 Fed. Reg. 41576 (July 9, 2004) (regulations promulgated at 40 C.F.R. Part 125 Subpart J), as discussed further below (referred to hereinafter as either the "Phase II Rule" or the "Phase II Regulations"). The final Phase II Regulations were signed by the Administrator on February 16, 2004, published in the Federal Register on July 9, 2004, and became effective on September 7, 2004. While the Phase II Regulations were not in effect at the time the Draft Permit was issued – and thus were not applicable requirements under 40 C.F.R. § 122.43(a) and (b) – the expected timing and effective date of the future § 316(b) Phase II Regulations was discussed in Section 5.1.1 of the Fact Sheet, which accompanied the Draft Permit. In this section, EPA also invited comment on the relationship of the Draft Permit to the prepublication draft of the newly signed § 316(b) Regulations that EPA posted on its public website.

The Final Phase II Regulations identify five different options from which a Phase II existing facility may choose an approach to achieving compliance with the regulations. Application requirements vary based on the compliance alternatives selected and, for some facilities, include development of a Comprehensive Demonstration Study. Under this final rule, EPA has established performance standards for the reduction of impingement mortality and, under certain circumstances, the reduction of entrainment. The performance standards consist of ranges of reductions in impingement mortality and/or entrainment (e.g., reduce impingement mortality by 80 to 95 percent and/or entrainment by 60 to 90 percent). The application of performance standards is based on several factors, including the type of water body on which the facility is located, the facility's utilization rate, and the proportion of the volume of the water body that is withdrawn by the facility. Under the rule, the performance standards can be met by design and construction technologies, operational measures, restoration measures, or some combination thereof.

The Phase II Regulations prescribe a number of interrelated decisions to be made by EPA and permittees during a multi-step process of options selection and information collection, submission and review leading up to permit issuance. For example, the rule requires EPA to evaluate – using information from a permittee's application, its bi-annual status reports, or other sources – the performance of any technologies, operational measures, and/or other measures that the permittee may have already implemented. As another example, if a permittee chooses to propose restoration measures as part of its approach to satisfying the applicable performance standards under the rule, EPA would need to evaluate the proposal and determine its acceptability under the rule, as well as how it would be monitored if approved. Clearly, working through all the potential issues could be a difficult, time-consuming process. (See 69 Fed. Reg. 41576, 41631 - 41633 (July 9, 2004) (discussion of time needed for application process under Phase II Regulations).)

Understandably, given the timing of this final permit and the recent publication of the new Phase II Regulations, the permittee has not yet submitted a complete information submission addressing all of the new requirements under the Phase II Regulations. This type of situation is addressed by EPA regulations at 40 C.F.R. § 122.43(b), and the Phase II Regulations also directly address this type of problem in a manner designed to allow ongoing permitting to continue without undue delay because of the new regulations. Under 40 C.F.R. § 122.43(b), the Phase II Regulations were not applicable requirements to be applied to the Draft Permit issued to the Station and the permit proceeding is not required to be reopened in order to apply the new regulations now that they have gone into effect (on September 7, 2004). Furthermore, the Phase II Regulations themselves provide a reasonable approach to the transition from BPJ permitting to permitting based on the information required in 40 C.F.R. § 125.95. Under this approach the permitting

authority is allowed to continue issuing new permits with § 316(b) limits based on BPJ under certain circumstances. These circumstances apply in the case of the West Springfield Station permit. Therefore, EPA is setting CWA § 316(b) permit limits for the final permit based on BPJ because doing so is consistent with the new Phase II Regulations.

Specifically, 40 C.F.R. §§ 125.95(a)(2)(i) and (ii) of the Phase II Regulations state the following (emphasis supplied):

(i) You must submit your NPDES permit application in accordance with the time frames specified in 40 C.F.R. 122.21(d)(2);

(ii) If your existing permit expires before July 9, 2008, you may request that the Director establish a schedule for you to submit the information required by this section as expeditiously as practicable, but not later than January 7, 2008. *Between the time your existing permit expires and the time an NPDES permit containing requirements consistent with this subpart is issued to your facility, the best technology available to minimize adverse environmental impact will continue to be determined based on the Director's best professional judgment.*

Applying this regulation to this case, one sees that the existing permit for West Springfield Station expired many years ago (in 1993) and that, consistent with 40 C.F.R. § 122.21(d)(2), the permittee also timely filed its permit application many years ago. In addition, the permittee has not submitted all of the information required by the Phase II Regulations. Therefore, EPA is currently issuing the final permit to the Station with § 316(b) limits that “continue to be determined based on the Director’s best professional judgment.”

This approach to permitting during the period of transition from the historical BPJ approach to developing CWA § 316(b) permit limits using the information required in 40 C.F.R. § 125.95 is a reasonable and appropriate scheme which seeks to prevent undue delay to ongoing permitting as a result of the new regulations. This approach is consistent with the CWA’s goal of continued progress toward achieving the restoration and maintenance of the chemical, physical and biological integrity of the Nation’s water bodies. *See* 33 U.S.C. § 1251(a)(1). Moreover, if the Phase II Regulations are not in effect at the time this final permit becomes effective for some reason (e.g., they have been stayed or remanded as a result of the litigation that has been filed regarding the new regulations), then the final permit still provides a proper BPJ-based foundation for the permit’s limits.

The above assessment of how to properly issue the final permit to the Station in light of the new Phase II Regulations is further supported by the discussion provided in the August 19, 2004 set of “Questions and Answers” posted on EPA’s website (www.epa.gov/waterscience/316b). In Section 2.A, Q2 of this document, EPA addresses the sequence of events relevant to the West Springfield permit, describing them as follows:

The draft permit is proposed before the 316(b) Phase II rule takes effect, but the final permit would be issued after the Phase II rule takes effect. At the time of the final permit issuance by the State or the Region (as the case may be), the facility has not submitted the comprehensive demonstration study and other information needed to

determine limitations under the 316(b) Phase II rule.

EPA indicates that in such a case, the 316(b) limitations in the final permit would be based on BPJ for either of two reasons. First, EPA explains that a draft permit issued prior to the new regulations becoming effective would be based on BPJ under 40 C.F.R. § 401.14. This is because 40 C.F.R. § 122.43(b) states that only regulations that are actually in effect are applicable requirements for a permit being issued. At the same time, however, EPA's Questions & Answers also explain that 40 C.F.R. § 122.43(b) also indicates that "the Director has the discretion to reopen the permit proceedings when he or she determines prior to issuance of the final permit, based on information in the record, that the new Phase II Requirements . . . are of sufficient magnitude to make additional proceedings desirable (e.g., re-proposing the draft permit to reflect the new Phase II Requirements)." EPA states that the decision whether or not to reopen the proceedings should be explained in the permit record – as Region 1 is doing here. Second, EPA specifically states that the "Director could reasonably determine that the Phase II Requirements are not of sufficient magnitude *at that time* to justify reopening the proceedings to consider new limitations when, as here, the facility has not provided the permit writer with the comprehensive demonstration study or other information needed to determine limitations based on one of the compliance alternatives in the Phase II rule" (emphasis in original). EPA went on to explain that in such a case, "[t]he 316(b) limitations would be based on BPJ whether or not the Director reopens the permit, because under § 125.95(a)(2)(ii) for the Phase II rule, a BPJ-based permit limit is required for facilities that have not submitted the information required under the Phase II rule" (emphasis in original).

For the final West Springfield Station permit, EPA has decided to exercise its discretion not to reopen the permit proceedings due to the new Phase II Regulations because the new requirements are not "of sufficient magnitude to make additional proceedings desirable." For this permit, as in the example from the EPA Questions & Answers document, the facility has yet to provide the Agency with the permit application information required by the Phase II Rule. Therefore, EPA could not presently apply the Phase II Regulations to the new permit. Moreover, 40 C.F.R. § 125.95(a)(2)(ii) of the Rule itself requires that BTA limits be determined on a BPJ basis under these circumstances. Thus, as EPA states in the Questions & Answers, intake limits would be based on BPJ "whether or not" the permit was reopened to apply the Phase II Rule.

In making the BPJ determination for BTA for this final permit, EPA has considered the substantive requirements of the new, recently effective Phase II rule, as well as the attainment of Massachusetts Surface Water Quality Standards. This BTA determination is consistent with Massachusetts Water Quality Standards. As described in the draft permit, the BPJ determination for BTA included the following components: an intake structure located away from the main channel of the river where fish passage is most likely to occur; requirements to modify the current fish return structure in a manner that always returns fish, with minimal stress, to water of sufficient depth for fish locomotion; a significant reduction in water use; and biological monitoring designed to allow EPA to confirm if any adverse impacts exist. This BPJ determination of BTA is retained in the final permit. EPA has not decided to require further intake capacity reductions reflecting the use of known technologies, such as closed-cycle cooling using cooling towers, that would further minimize the adverse environmental impact of cooling

water withdrawals (i.e., entrainment and impingement) because EPA has determined on a qualitative basis that the cost of such technology would be wholly disproportionate to its benefits at the Station. This conclusion is based on EPA's knowledge regarding the significant cost of retrofitting power plants with closed-cycle cooling towers, and the limited biological information currently available regarding the severity of the impacts of the Station's impacts. Furthermore, EPA notes that the facility is undertaking a substantial reduction in intake flow, along with other steps to reduce adverse environmental impacts from the intake.

EPA's Questions & Answers document also indicates that the Director has the discretion to include a specific schedule in the final permit setting deadlines for submission of the required Phase II Rule information for the next permit submission. In the case of this permit, EPA has decided not to include such a schedule. EPA did not receive any comments on the draft permit requesting that an information submission schedule be included in the final permit consistent with 40 C.F.R. § 125.95(a)(2)(ii) from the prepublication draft of the Phase II Rule that was posted on EPA's website in February 2004. In addition, the draft permit's study requirements already call for submission of much of the technical information required for a permit application under the new Phase II regulations, and these requirements have been retained in the final permit (section I.A.10).

Response 5:

EPA does not characterize the permit's environmental data collection plan as only verification monitoring. In general, the multi-year biological and thermal monitoring program proposed in the draft permit takes into consideration that no appreciable amount of environmental data has been collected in the Connecticut River in the vicinity of the Station for almost 30 years. During that time, overall water quality has improved and the presence of anadromous fish have shown measurable progress in the river as a whole. In addition, as the permittee correctly points out in Comment 7, one of the regulatory objectives of the monitoring program should be to evaluate the impact of the Station's thermal discharge. EPA considers that in order for a monitoring program to achieve a meaningful assessment of the impact of the Station on that reach of the Connecticut River, three years worth of data would be desirable. This time period takes into consideration the expected range of variability in background hydrologic, water temperature, and biological conditions on the Connecticut River from season to season and year to year, and the potential for this variability to effect Station impacts. However, in response to this comment, EPA is providing flexibility in the duration of the monitoring study in the final permit. See Response to Comment 18 and Part I.A.10.d of the Final Permit.

Response 6:

It is not appropriate to make projections of possible impingement levels at West Springfield Station by reviewing impingement data from a facility 50 miles upstream that has an intake structure and location on the river that does not match the set of conditions seen at the intake structure of the West Springfield Station. There are cases of facilities with intake structures just across the river from each other or only a few river miles apart, that have documented measurably different impingement rates. Small differences in location, design and operation of

intake structures can potentially have a substantial effect on impingement and entrainment rates. For this reason, impingement sampling results from Vermont Yankee can not reliably be used as an indicator of likely Station impingement rates. A comprehensive, site-specific impingement sampling program at the Station must be conducted to determine impingement rates.

Comment 7:

As a result, and particularly in light of the requirements of the new 316(b) Phase II rule, the Station strongly suggests that a more modest and focused monitoring program, as detailed in the comments below, would be sufficient to provide data in support of current and future USEPA regulatory decision-making with respect to the Station's 316(a) variance and 316(b) Best Technology Available (BTA) determination. The data gathering activities of the monitoring program should be carefully tailored to capture only that information which is strictly necessary to achieve the regulatory objectives described in the draft Permit and Fact Sheet, which are to:

1. Evaluate the impact of the Station's thermal discharge on the balanced, indigenous population of shellfish, fish and wildlife in and on the Connecticut River; and
2. Determine if the location, design, construction, and capacity of the cooling water intake structure represents BTA for minimizing adverse environmental effects.

Response 7:

As mentioned previously, the biological and thermal monitoring program proposed in the draft permit takes into consideration that no appreciable amount of environmental data has been collected in the Connecticut River in the vicinity of the Station for almost 30 years. During that time, overall water quality has improved and the presence of anadromous fish indicate measurable improvement in the river as a whole. In addition, the data collection program is also designed to gather site-specific information to support (a) the assessment of the permit's compliance with state water quality requirements, including satisfaction of designated uses, (b) the Essential Fish Habitat evaluation under the Magnuson-Stevens Act, and (c) to further address concerns under the Endangered Species Act for shortnose sturgeon and the dwarf wedge mussel. Furthermore, as stated above, the permit's monitoring requirements are authorized by CWA §§ 402(a)(1) and (a)(2), and 308(a).

Comment 8: Draft Permit Part I.A.1 (page 2 of 20)

The frequency of pH sampling has increased to 2x/week from 2x/month. Also, the range language is different than original.

The Station requests frequency to be 2x/month and language to read: "pH \geq 6.5 and \leq 8.3 or not more than 0.5 S. U. outside the naturally occurring range." This would maintain the frequency at its current level and, we feel, better suit a plant with a 10% average capacity factor.

Response 8:

The draft permit will be modified to measure pH twice per month, maintaining the frequency required in the Station's last permit. The section of the Connecticut River where the Station is

located is considered a Class B warm water. As indicated in the Fact Sheet, “the pH range for Class B water is from 6.5 to 8.3 standard units (s.u.) as defined in the Massachusetts Surface Water Quality Standards, found at 314 CMR 4.00.” In addition, these Water Quality Standards require that pH shall not be “more than 0.5 units outside of the *background range*,” as written in the Station’s final permit. (emphasis added)

Comment 9: Draft Permit Part I.A.2 and 3 (pages 3 and 4 of 20)

Is it necessary to specify an "average monthly " limit for flow for Outfall 002A and 002B given the maximum limit, or could this be changed to "report" similar to Outfall 001?

Response 9:

EPA agrees. In the final permit, the flow requirements have been changed from “average monthly” limits to “report” for Outfalls 002A and 002B.

Comment 10: Draft Permit Part I.A.2 and 3 (pages 3 and 4 of 20)

Same comment for pH as above. Also, continuous total residual chlorine (TRC) monitoring seems excessive. *The Station requests the continuation of grab samples for TRC under current permit. Due to costs associated with a continuous sampler (purchase, re-engineering, installation and maintenance) and given the Station's limited capacity factor, we feel grab sampling, as is currently done, is sufficient to monitor TRC.*

Response 10:

Continuous TRC monitoring is retained in the final permit. The effluent guideline for the Steam Electric Power Generating Point Source Category specifies that TRC shall be an “instantaneous maximum.” (40 C.F.R. § 423) Further, in order to ensure that grab samples are not taken during times of low chlorine concentrations and are representative of an “instantaneous maximum,” EPA requires that the facility measure and report TRC using continuous monitoring equipment. In addition, TRC is needed to determine aquatic life impacts. Moreover, as discussed in Response 2, the permit limits were not designed assuming a low Station capacity factor when the facility is not prohibited from full capacity operation.

Comment 11: Draft Permit Part I.A.4 (page 5 of 20)

Flow on screenwash pump is required to be monitored. The Station requests that the use of pump curves and on/off time logs be used to calculate total flow.

Response 11:

The draft permit, in its current form, essentially requires what the permittee is requesting for calculating flow: “Pump capacity curve and operational hours” For clarification, EPA will change the word “Recorder” to “**Record**” in the Sample Type column of the table for Part I.A.4.

EPA has also made this correction for other appropriate provisions in the new permit.

Comment 12: Draft Permit Part I.A.5 (page 5 of 20)

Discharge limitations in this section require that storm water have a pH of not more than 0.2 s.u. outside of the naturally occurring range. The Station requests that the pH \pm range be 0.5 instead of 0.2 to match Outfalls 001 and 002.

Response 12:

The Massachusetts Water Quality Standards changed in 1990 from the Station's existing permit pH limits for Outfall 006 to ≥ 6.5 and ≤ 8.3 and not more than 0.5 s.u. outside the background range. The final permit will reflect this change.

Comment 13: Draft Permit Part I.A.5.a (page 5 of 20)

Language on the required sampling location is not clear . *We suggest that the sentence be revised to read: "Samples of storm water shall be taken from the catch basin nearest to the No.2 fuel unloading area, and must be collected within the first hour of the rain event. "*

Additionally, in order to ensure the generation of meaningful data, requirements for storm water sampling should be specified, or otherwise referenced, and consistent with USEPA's MSGP for storm water discharges associated industrial activities (i. e. sampling of storm greater than 0.1 inch 72 hours after last storm greater than 0.1 inch, etc.).

Response 13:

EPA agrees. In the final permit, EPA has incorporated the requested changes in the stormwater language.

Comment 14: Draft Permit Part I.A.6 and 7 (page 6 of 20)

The 24-hour composite sampling of the sand filter backwash is not appropriate because the backwash typically is only performed for 15 to 30 minutes and only twice to 8 times per day, depending on the season. The requirement for a flow monitor on the discharge is excessive.

The Station requests that grab samples for TSS be collected instead of a 24-hour composite. We request that pump curve and log of operation be used to calculate flow during backwash.

Response 14:

In light of the information provided, EPA agrees and has incorporated in the final permit this request to use pump curves and operation logs for determining daily flow of the sand filter backwashes. In addition, the final permit requires that the composite samples consist of equally spaced samples (e.g. every five minutes or a smaller increment) to be collected for one backwash

cycle during each week, for both sampling locations 010 and 020. Composite sampling is important because normally, the concentration of solids in the discharge decreases as the backwash progresses. Therefore, a grab sample would not be representative.

Comment 15: Draft Permit Part I.A.8 (page 7 of 20)

The requirement for reporting and calculating hourly average intake and discharge temperatures, hourly megawatt and net heat load are excessive and extremely cumbersome to the station and we fail to see any real value in collecting this data. The information requested is either not collected or not collected in one database. Also, net megawatt data is reported the following day from the Independent System Operator (ISO). This extra data handling would prove difficult to manage especially when the Station's current capacity factor is taken into account. Additionally, the impacts of heat load will be studied under the thermal plume study.

The Station requests that this condition be dropped because the relationship between megawatt load, volume of water used (one circulating pump or two) and outfall temperature are linear and well established and will be documented during the thermal study.

Response 15:

EPA does not agree that this requirement is excessive and cumbersome for the Station. In order for a monthly maximum discharge temperature and a monthly maximum Delta T (net heat load) to be determined as required for Discharge Monitoring Report's (DMR), continuous intake and discharge temperature information must be collected. Experience at other facilities indicates that the continuous collection of temperature data in an electronic format, using instrumentation and software generally available, is not an excessive burden, but a valuable tool for the permittee as well as the regulators. Also, the year-round data collection will be used to extrapolate the data from the one-day thermal plume study and other operational periods.

Especially because this facility is not projected to be in continuous use, any monthly average calculation for discharge temperatures or heat loads would be of little value in determining potential impacts to the receiving water. For example, a continuous thermal discharge lasting several days during a key spawning period will likely have a different impact on the receiving water compared with periodic thermal discharge lasting only a few hours each day during a three week period. A monthly average calculation could possibly result in a similar value for each of the very different discharge scenarios listed above. This basic operational data will be critical to realistically assessing facility impacts, especially when merged with the important information gathered under the environmental monitoring program specified in the Draft Permit.

While EPA also sees a use for providing hourly megawatt data, this requirement is removed from the final permit based on the permittee's request because EPA anticipates being able to obtain this information from another source.

Comment 16: Draft Permit Part I.A.8.f (page 8 of 20)

The requirement for the annual data report of Megawatt (MW), hourly average temperatures,

etc. is excessive. *The Station requests that this not be required.*

Should the USEPA nonetheless decide to include this requirement in the final permit, we request that the deadline for the annual report be changed to February 28th from January 31st to correspond with the biological study report.

Response 16:

The annual data report listing hourly average intake temperature and discharge temperature (°F), hourly heat load (BTU), and total discharge flow (gph), submitted in an electronic format, able to be read by a spreadsheet program such as Excel or Lotus 123 is necessary to fully determine impacts to the receiving water. Therefore, this requirement will remain in the permit. Response 15 further discusses the need for this information.

EPA agrees to change the deadline for the annual data report to February 28th from January 31st. It must be pointed out, however, that in the event of a fish kill in the vicinity of the Station's discharge, the draft permit (Part I.A.12) requires that hourly discharge data be made available as part of a report that is required to be submitted within five business days of the event. This requirement remains in the final permit.

Comment 17: Draft Permit Part I.A.10.c.i (page 8 of 20)

We request that the last sentence of this paragraph be deleted and replaced with language that approximates the following:

"The permittee shall assess the effectiveness of data gathering efforts undertaken to date with respect to the objectives of the biological/environmental studies outlined in this part. "

Response 17:

Part I.A.10.c.i. of the draft permit deals essentially with actions to be taken as a result of data analysis. Specifically, this section discusses the identification of anomalies in the data collected and the explanation of differences. The requirement of the permittee in this section of the draft permit focuses on data analysis and modification of the program to specifically address the anomalies identified. The replacement wording requested in Comment 17 refers to the effectiveness of data gathering efforts rather than data analysis. Therefore, in the final permit, EPA has not replaced the last sentence of Part I.A.10.ci with this language, but has added this sentence to the end of the paragraph.

Comment 18: Draft Permit Part I.A.10.d (page 8 of 20)

This section of the draft permit calls for three years of biological and thermal monitoring at West Springfield Station (Station). The three-year duration of studies is excessive based on the prepublication 316(b) Phase II rule, and the magnitude of the expected impingement and entrainment (I&E) losses. Section 125.95(b)(7) of the rule calls for a two-year study to determine the effectiveness of installed technologies for reducing I&E. If the USEPA deems a two-year study to be sufficient to determine reductions in I&E, this duration should be sufficient to determine the magnitude of these impacts.

The magnitude of I&E losses at the Station are expected to be small. While these losses will not

be known until the required study is conducted, examination of recent available data from another Connecticut River power plant, Vermont Yankee Nuclear Generating Station, illustrates the likely magnitude of fish impacts at the Station. Vermont Yankee is located in a similar freshwater portion of the Connecticut River about 50 miles upstream from West Springfield along the Massachusetts-Vermont border, and operates in base-loaded mode with a 542 mgd cooling water system (7.6 times the 71 mgd intake capacity at West Springfield Station). The total number of fish impinged at Vermont Yankee for the April -October period of 1997 through 2001 reveals that 20-25 species are impinged per year, summing to an annual total of between 106 and 958 fish. Most (90%) of the fish impinged at Vermont Yankee were young-of-the year (< 4 inches). West Springfield impingement is likely to be comparable to or, due to the smaller intake flow, less than that observed at Vermont Yankee. Therefore, it is quite cost prohibitive to conduct a multi-year study to characterize variability amounting to a few hundred fish.

The Station requests that as part of the submittal of the second annual biological study report described in the draft Permit that the permittee be allowed to discontinue or reduce the scope of the sampling program based upon the results and data collected.

Response 18:

First, as described in the Response to Comment 5, EPA does not characterize the Draft Permit's environmental data collection plan as only verification monitoring. Second, Section 125.95(b)(7) of the § 316(b) Phase II rule indicates that " at a minimum, two years of monitoring" should be conducted. A minimum of two years should not be interpreted to mean that the length of all studies is limited to two years. In the final permit, EPA has provided additional flexibility in the duration of the monitoring study. As requested by the permittee, a means to modify the scope of sampling has been added in the final permit. Specifically, the following provision has been added "After two years of studies have been completed and reported to the EPA/DEP, the permittee may request that the scope of the sampling program be discontinued or reduced based on the results of data collected. Such changes will become effective upon receipt of EPA notification." See Part I.A.10.d of the final permit.

The comparison of the Station's impingement rates to that of other plants is addressed in Response 6.

Comment 19: Draft Permit Part I.A.10.e (page 9 of 20)

This section mandates that an evaluation be completed of technologies that reduce impingement and entrainment. In conformance with the new 316(b) Phase II rule, this section should be modified to allow the Station to avoid evaluating technologies for the reduction of entrainment should the facility be able to demonstrate that the intake flow is equal to or less than 5% of the annual mean flow of the Connecticut River at the Station. Also, note that the Station typically has a 10% capacity factor.

Additionally, based on previous studies, both thermal and impingement, no significant adverse affects from impingement and entrainment were observed. Those studies were completed when three steam units were in operation and approximately 140 mgd were being withdrawn from the river.

Response 19:

For the final permit, EPA has agreed to eliminate the draft permit's requirement for the Station to produce a report evaluating alternative entrainment reduction technologies for possible installation at the Station. First, the permit's conditions requiring reduced intake flow – approximately a 50 percent reduction as compared to that allowed in the existing permit – will result in a significant reduction in the entrainment allowed by the permit. As discussed above in Response to Comment 1, this was a key part of EPA's determination that the new permit's limits will reflect BTA for minimizing adverse environmental impacts as required by CWA § 316(b). Second, as also discussed above in Response to Comment 4, the permit will require entrainment monitoring by the facility. Should the results of this monitoring indicate that additional permit limits may be needed to further reduce entrainment in order to ensure compliance with, among other things, state water quality standards, ESA requirements, EFH requirements of the Magnuson-Stevens Act, or CWA § 316(a) or (b), then EPA can and will require that entrainment reduction technologies be evaluated pursuant to various applicable legal authorities, such as CWA § 308. EPA notes once again that previous environmental studies at the Station were conducted in the 1970's and that assessments of entrainment impacts should be updated given that Connecticut River water quality and anadromous fish runs have measurably improved since that time, and given that monitoring methods should also have improved.

While this permit's § 316(b) limits are being developed on a BPJ basis, as discussed in Response to Comment 4, the Region acknowledges that the new Phase II Regulations do not require entrainment reductions of existing power plants located on freshwater rivers and that have an intake flow less than or equal to 5 percent of the annual mean flow of the river. In any event, the change to the permit condition removes any potential inconsistency with the new regulations as alleged by the Station.

Comment 20: Draft Permit Part I.A.11.a (page 9 of 20)

We contend that entrainment sampling may not be necessary at the Station. According to Section 125.94(b)(2)(B) of the prepublication 316(b) Phase II rule, entrainment sampling is not required when the design intake flow is equal to or less than 5 percent of the mean annual river flow. USGS flow data (17 years of record) for the Connecticut River downstream of the Holyoke Dam would suggest that 5 percent of the mean annual river flow (5% = 626 cfs) at the Station is well in excess of the maximum flow discharge limit of 71 mgd (110 cfs). As it does not appear to be justifiable to require monitoring that is in excess of that required by the new rule, this flow calculation should be considered before the U.S. EPA determines that an entrainment monitoring program is necessary.

Response 20:

Again, previous studies were conducted approximately 30 years ago, when the receiving water was measurably more degraded than present conditions. Entrainment monitoring data will be

used to support the judgment of granting the §316(a) variance, which must take into account other stressors to a waterbody. In addition, the data collection program is designed to further address concerns regarding Essential Fish Habitat impacts, the Endangered Species Act, and state water quality standards. Furthermore, for this West Springfield permit, BTA was determined on a best professional judgement (BPJ) basis which is consistent with the Phase II Regulations. See Response to Comment 4.

Comment 21: Draft Permit Part I.A.11.a.i (page 9 of 20)

This section of the draft permit calls for weekly entrainment sampling from April through September, and sampling every other week for October through March (37 weeks). This year-round sampling does not appear to be justified or necessary. The sampling program at Vermont Yankee (NPDES No. VT0000264) calls for entrainment sampling from May 1 through July 15. Marcy (1976) forms the basis for the entrainment-sampling program at Vermont Yankee. As Figures 1 and 2 show, 100 percent of the fish eggs and 99.8 percent of the fish larvae reported in Marcy (1976) over the 4-year period came from samples taken in May through July. These data were collected at two stations located in Suffield and Windsor Locks Connecticut, approximately 15 miles south of the Station. Sampling typically occurred from March through September, but in the first year of the study sampling occurred as late as December. Sampling did not occur this late in subsequent years presumably because ichthyoplankton densities were near zero after August. Although the data from Marcy (1976) are dated, only the magnitude of the ichthyoplankton densities should change. The seasonality will be the same. A more reasonable approach would be to extend this entrainment sampling period from April through the end of September. It is not justifiable to more than double the costs of the entrainment program (on an annual basis) to verify that ichthyoplankton densities are near zero for the remainder of the year.

The rationale for the entrainment-monitoring program described in Part I.A.11.a.i appears to be the Essential Fish Habitat (EFH) assessment for Atlantic salmon and the Endangered Species Biological Evaluation for shortnose sturgeon. The EFH assessments states: “the Connecticut River adjacent to West Springfield Station is judged to have little value as suitable habitat for Atlantic Salmon eggs.” With regard to larvae, the EFH assessment states: “the area of the river near West Springfield Station is judged to have little value as suitable habitat for Atlantic Salmon larvae”. With regard to shortnose sturgeon, the Endangered Species Biological Evaluation states: “the intake and discharge of West Springfield Station is not likely to affect the egg and larvae stages of shortnose sturgeon in the Connecticut River.” The reasons for these opinions are the lack of appropriate habitat for the early life stages of Atlantic salmon and shortnose sturgeon in the vicinity of the plant. The complete lack of appropriate habitat, and the early life histories of these species which takes place in areas that are not affected by the intakes of the Station, do not support the contention that year-round entrainment sampling is necessary.

Response 21:

Vermont Yankee has been collecting a substantial amount of environmental data from the Connecticut River continuously since it was first permitted in 1972. West Springfield Station has

no substantial, recently collected body of environmental data to justify reduced or more narrowly focused sampling efforts at this time. Therefore, a comparison of Vermont Yankee's ongoing environmental efforts with West Springfield Station's proposed monitoring plan is not appropriate. Furthermore, Vermont Yankee is located approximately 50 miles upstream from the Station and it is not reasonable to rely entirely on data collected at Vermont Yankee to characterize present or future impacts from the West Springfield Station.

EPA also notes that the information from Marcy (1976) is dated. EPA does not support the judgment that only the magnitude of the ichthyoplankton densities should change. As reproducing fish populations recover, the length of the spawning period may reasonably be expected to increase. Further, EPA does not agree that the onset of spawning will be the same every year. When natural year-to-year variability in river temperature, flow, and other factors effecting spawning are taken into consideration, the beginning of any given spawning period could change substantially from year-to-year. This can be further affected when heated industrial discharges are present in the water body. In a chapter entitled "Heat and Temperature" in *Water Quality Criteria*, a publication of the National Academy of Science / National Academy of Engineers in 1972, a change in spawning time from one year to the next of up to one month is discussed. The objective of the multi-year data collection effort is to attempt to bracket the variability in the presence of eggs and larvae in the river under current conditions in the area of the West Springfield Station.

EPA is not convinced that the projected cost of the entrainment program is more than double, when including October through March sampling. The sampling effort is reduced by half from October through March. Also, it is likely that efforts expended for sorting and taxonomic identification of ichthyoplankton samples represent a substantial percentage of the overall cost of the ichthyoplankton program. If ichthyoplankton samples do show declining numbers of organisms in October through March, they will likely be processed faster and be less costly.

Taking into consideration the continued recovery of the Connecticut River, the requirement of a year round ichthyoplankton monitoring program to document current egg and larval presence and fully evaluate any potential impacts from the Station is reasonable.

EPA's conclusions to date regarding Essential Fish Habitat (EFH) Endangered Species Act (ESA) issues are based on the relatively small amount of site-specific data that is available near West Springfield Station. While these are the best available data and provide reasonable support for the current conclusions, EPA included as part of the EFH and ESA assessments the requirement for site-specific monitoring to support improved assessment of these issues. Restoration efforts have been underway in the Connecticut River for some time. It is reasonable to expect that as the overall population of reintroduced and reproducing species grow, increased numbers of fish will likely take advantage of areas for spawning and growth that they had not been observed in before. Once the prime habitat is fully utilized, additional spawning, feeding and congregation behavior will likely spread to other areas. The newly exploited habitat may or may not be considered fully suitable habitat areas, given the current assessment of the area near the Station. A reasonable monitoring program will provide information concerning the extent to which habitat in this vicinity of the Station is being used. This new site-specific and current data

will support improved assessments of the EFH and ESA issues going forward by improving EPA's ability to evaluate the presence, absence or risk of impacts from the Station under the continually evolving conditions in the Connecticut River. Depending on the results of this monitoring program, it may be possible to reduce this monitoring in the future.

Comment 22: Draft Permit Part I.A.11.a.iii (page 9 of 20)

This section of the draft permit calls for entrainment sampling at the intake and discharge. The reason for sampling at these two locations is not known. The ideal location for entrainment sampling is usually at the intake structure at a location where the ichthyoplankton are completely entrained, meaning that they cannot escape from the intake flow. Other ideal locations are further downstream in the cooling water system where the intake flow might be accessed through a manhole. Sampling in the discharge is often a less desirable location because the ichthyoplankton will have already passed through the plant and may not be in good condition, making identification more difficult. Furthermore, the discharge at the Station presents unique sampling problems as it consists of a port on the bank of the Connecticut River that discharges vertically. At high river flow periods, this port will likely be underwater, making it very difficult to sample only the organisms that have been entrained through the plant.

Entrainment estimates are based on ichthyoplankton densities in entrainment samples multiplied by the volume of water pumped by the cooling water system. If sampling occurs at both the intake and discharge it is not clear which sampling location should be used to estimate entrainment for the Station. Collection of entrainment samples at two separate locations effectively doubles the costs with no increase in the precision or accuracy of the entrainment estimate. Furthermore, samples from the discharge are likely to be contaminated with ichthyoplankton from the river that were not entrained.

Therefore, we recommend that sampling occur at only one location, preferably before the ichthyoplankton have passed through the plant.

Lastly, should entrainment sampling at the discharge remain as a condition of the final permit, we request that the sampling point be specifically identified as Outfall 002 (Unit 3 discharge).

Response 22:

EPA agrees that the Station discharge at Outfall 002 is a less suitable location for entrainment sampling. This entrainment sampling location will be removed from the monitoring plan.

Comment 23: Draft Permit Part I.A.11.b (page 10 of 20)

Paragraph “b.i” needs clarification. Are the screens to run for 8 hours at a time or be cycled after eight hours to count any fish collected?

According to Section 125.94(a)(1)(ii) of the prepublication 316(b) Phase II rule, power plants with maximum through-screen velocity of 0.5 ft/s or less are deemed to have met the impingement mortality performance standard. This calculation should be made before it is determined that an impingement monitoring program is necessary, or if necessary, before the scope of an impingement monitoring program is defined.

While the Study Plan originally submitted by the Station to the U.S. EPA in May 2002 did propose 52 weeks of continuous weekly impingement sampling, it should be noted that the sampling program at Vermont Yankee (NPDES No. VT0000264) is less stringent than either the Station’s Study Plan or the draft permit and calls for impingement sampling only from April through October, even though the withdrawal rate of this plant is seven times greater than that of the Station.

Lastly, in light of the new 316(b) Phase II rule, the Station suggests including language in the permit that would allow the Station to terminate the impingement sampling program and the technology evaluation in Part I.A.10.e if and when it achieves and can demonstrate a through-screen velocity of 0.5 ft/s at the intake.

Response 23:

With reference to paragraph “b.i”, the traveling screens are to be run continuously during the 8 hour impingement monitoring cycles. This mode of operation of the screens will minimize the time period impinged fish are trapped against the screens.

EPA used flow information provided by the Station to determine intake velocities during different river flow scenarios. (See email from Alan Douglass to Sharon Zaya on 5/6/2004) EPA calculated that an intake velocity of **0.9 ft/sec** may occur during low river water levels and high intake flow. At a normal water level of 12' (from screenwell house design notes) and high intake flow, EPA also calculated that an intake velocity of **0.75 ft/sec** may occur. Since these calculated values are greater than 0.5 fps, an impingement monitoring program would be required even pursuant to the new Phase II rule, although this permit is based on a BPJ determination of BTA rather than an application of the technological specifications of the new Phase II regulations, as explained in Response to Comment 4.

It should be noted that the impingement monitoring program also is designed to gather information to support future § 316(a) variance (evaluation of other stressors must be considered), essential fish habitat protection, endangered species, and water quality standards evaluations.

As mentioned previously, it is not appropriate to compare the monitoring program at Vermont Yankee with the monitoring program required at West Springfield Station. See Response to Comment 21.

The request to terminate the impingement sampling program and the technology evaluation in Part 1.A.10.e is premature. If a through-screen design intake velocity of 0.5 fps or less is documented for the intake, the permittee can ask that EPA modify the permit to eliminate the impingement sampling and EPA will consider the request.

Comment 24: Draft Permit Part I.A.11.b.ii (page 10 of 20)

This section also calls for three 8-hour impingement collection each week. There is no justifiable advantage to collecting three 8-hour samples as opposed to one 24-hour sample. Assuming that fish impingement is a random event, there is an equal probability that this random event will occur during one 24-sample as during the three 8-hour samples. Collection of three 8-hour samples results in an almost tripling of field collection costs compared to one 24-hour sample. Impingement sampling at most power plants with such permit requirements, including Vermont Yankee and Seabrook Station, consists of one 24-hour sample each week.

Response 24:

EPA recognizes the substantial effort involved in performing a monitoring program that will provide meaningful data to meet the objectives of the biological and thermal program. Additional efforts that do not result in benefits to the program should not be pursued. However, in the case of impingement sampling, the collection of three 8-hour samples is judged to be a reasonable way to measure station impingement over the widest variety of river conditions.

It is possible that impingement events may not be truly random, but rather may be more likely under certain site-specific river and environmental conditions (for example, low flow, extremely high flow, hot weather, end of spawning, and predator activity). Also, impingement events may happen in pulses of short duration. The current impingement sampling plan includes only a small subset of the potential time when impingement can occur. Brief impingement events, although potentially notable in the number of fish involved, may go unsampled under the current effort. With this uncertainty and the relatively brief sampling duration, the objective of the impingement monitoring program is to assess the impact of the Station under a wide variety of river and environmental conditions. It is judged that one continuous 24 hour sampling period will be less likely to sample under as wide a range of environmental conditions as three 8 hour sampling events spaced throughout the week. This is based on the assumption that on a river the size of the Connecticut River, from one hour to the next, environmental conditions generally will not change a great deal. However, there may be greater likelihood that sampling events separated by over 30 hours may indeed be conducted under different environmental conditions.

Therefore, three 8 hour sampling events were chosen to attempt to sample under the widest range of environmental conditions in the Connecticut River. As mentioned previously, in this case, it is not appropriate to compare the monitoring program at other power plants with the monitoring

program required at West Springfield Station. EPA also points out that entrainment and impingement monitoring has been conducted over many years at both the Vermont Yankee and Seabrook power plants, thus providing a more robust data set over time for those plants. See Response to Comment 21.

Comment 25: Draft Permit Part I.A.11.b.iv (page 10 of 20)

This section calls for the measurement of all impinged fish. Impingement at the Station will probably be very low. However, in the unlikely event that a large amount of impingement takes place, it would be an exceptional burden to have to measure each fish. A provision for measuring a maximum subsample of 50 fish per species would be more reasonable.

Response 25:

EPA agrees that it would be a burden to measure each fish taken from a large impingement event. A provision for measuring a subsample of the total number of impinged fish is already included in the permit. Specifically, the permittee must follow all requirements stipulated in Part I.A.13.b when more than 40 fish are impinged within an eight hour impingement sampling period.

Comment 26: Draft Permit Part I.A.11.c.iii (page 10 of 20)

This section calls for three years of sampling. *The Station requests that this requirement be modified to allow sampling to be suspended after the first year based on the results of the community analysis described in Part I.A.11.c.viii.*

Response 26:

As addressed in the Response to Comment 18, the permittee has the option, after 2 years of monitoring, to request that the scope of the sampling program be discontinued or reduced based on the results of data collected and after EPA approval. See Part I.A.10.d of the final permit.

Comment 27: Draft Permit Part I.A.11.c.ix (page 11 of 20)

The DEP/DWM's Protocols for Conducting Macroinvertebrate Community Evaluation of Point Discharges to Lotic Surface Waters in Massachusetts state:

“Procedures outlined here should only be used to evaluate invertebrate communities in erosional (riffle/run) sites and should not be used to evaluate depositional (pool) sites in streams and rivers or discharges to lakes, ponds, reservoirs or large, low-gradient rivers.”

As a result, consider changing the language in this section to read (revisions in bolded italics):

“..., the permittee shall deploy artificial substrate samplers ~~as outlined~~ ***in accordance with a sampling protocol to be prepared by the permittee in consultation with the Massachusetts DEP. The protocol shall incorporate relevant portions of the DEP/DWM's Protocols for Conducting Macroinvertebrate Community Evaluation of Point Discharges to Lotic Surface Waters in Massachusetts and/or other guidance documents identified by the DEP.***”

Response 27:

EPA agrees and will modify the permit to include the requested language.

Comment 28: Draft Permit Part I.A.11.c.x (page 11 of 20)

Unless there are concerns that the composition of the river bottom sediments will change significantly during the sampling period in this reach of the Connecticut River, the Station requests that this requirement be modified to specifically limit the sediment sampling for the grain size analysis to a single year.

Response 28:

EPA agrees that the grain size analysis will not likely change from one year to another and will require one year's worth of data for grain size.

Comment 29: Draft Permit Part I.A.11.e.ii (page 12 of 20)

This section specifies that the field data gathering activities associated with the thermal plume evaluation be conducted on two separate occasions during extreme low river flow (approaching 7Q10). The objective of gathering field temperature data is to both characterize the actual extent of the plume under low flow conditions and to obtain information necessary to calibrate the

software that will be used to model the plume under different river and discharge flow conditions. The model, once calibrated, will be used to simulate the extent and location of the plume at the 7Q10 low flow condition and under range of other river flows. As a result, it's not clear that performing the field study in accordance with the flow criteria outlined in this section are necessary to meet the requirements of Part I.A.11.c.x.ii. We would recommend instead that field data gathering be conducted once during either an extreme low flow event or the seasonal low flow period (August/September) for the Connecticut River, whichever occurs first. Should hydrologic conditions indicate that the flows that are anticipated to occur during the seasonal low flow period are well above the typical median flow for August/September, data gathering would be postponed until the next extreme or seasonal low flow period.

Response 29:

EPA agrees and has modified this section for the final permit to state that field data gathering activities associated with the thermal plume evaluation be conducted once in the first year of the permit cycle, during either an extremely low flow event or the seasonal low flow period (August/September) for the Connecticut River, whichever occurs first. If during field data collection, river conditions were noticeably above expected low flow conditions (i.e., approximately 1660 cfs or lower as measured just downstream of the Holyoke Dam Project), EPA may require an additional data collection event the following year.

Comment 30: Draft Permit Part I.A.12.a (page 12 of 20)

This section calls for a visual inspection of the shoreline for fish mortality and notification of U.S. EPA if mortality is observed. The Station has a concern with the safety of operators viewing the outfalls, especially in winter and at night. These outfalls are either not readily accessible from the shore (001) or have limited access (002) during high water and in snowy conditions. The Station does not own the access road to the outfalls and they are not plowed in the winter.

The Station requests that this requirement be changed to just during the fish study program or be linked to the amount of fish observed impinged.

Additionally, the discharge pipe for screenwash debris currently empties onto the riverbank near the downstream side of the screenhouse. Under current conditions, any impinged fish would be discharged with screenwash debris and would be deposited on the riverbank (however, see Part I.A.14.j.ii of the draft permit). A literal reading of this section of the draft permit would require that these impinged fish be counted as part of an observed mortality event. Also, there are no provisions to discount dead fish floating from upstream.

The Station request a provision for excluding impinged fish from any fish mortality observations, which would be reasonable, since high impingement events are covered in Section 13.

Response 30:

EPA agrees and will change the requirement for visual inspections at the discharge locations and areas adjacent to these locations from “at least once per operating shift” to “periodically, when not in conflict with safety concerns or other company policies and procedures.”

A provision will be added to the permit which states that all observed fish mortality must be recorded, but those dead fish identified as being washed off the traveling screens or dead fish floating from upstream can be identified as such and placed in a separate category, along with the justification for making the determination.

Comment 31: Draft Permit Part I.A.13 (page 13 of 20)

Paragraph 13.a requires visual inspection of screens every eight hours for dead or live fish.

The Station requests that this be revised to be required only when circulating pumps are in operation.

This section calls for rotating the screens every 8 hours and enumerating all dead impinged fish. If more than 25 dead fish are collected in any 24-hour period (just over 1 fish/hour), continuous screenwashes will be started and the U.S. EPA must be notified. To ensure that the permit conditions for unusual impingement events are straight-forward, reasonable to implement, and do not place undue burdens on Station personnel, the Station suggests that the U.S. EPA raise and modify the reporting limit for dead fish to 40 (5 fish/hour on average) during any 8-hour period, so that the mortality rate threshold would be identical to the impingement rate threshold identified in Part IA.14.k and coincide with the rotation and inspection period for the intake screens. Under this scenario, screens would be rotated and checked every 8 hours (when circulating pumps are in operation). If more than five impinged fish per hour were observed, continuous washing would commence. If five or more fish per hour were observed to be both impinged and dead, in addition to continuous screen washing, the information described in Part 1A.13.b.ii(1) would be collected on the dead fish and reported to the U.S. EPA as required.

Response 31:

EPA will revise paragraph 13.a to require visual inspection of screens every eight hours for dead or live fish “*when circulating pumps are in operation.*”

The final permit specifies that the reporting limit for impinged fish is 40 (5 fish/hour on average) during any 8-hour period.

Comment 32: Draft Permit Part I.A.14.j (pages 15 and 16 of 20)

This section prohibits the returning to the river of any material removed from the screens except live fish.

As natural debris such as leaves and sticks are not materials that are being added to the receiving water by the permittee (i.e. “pollutants”), the Station requests that natural debris be allowed to be returned to the river via the screenwash system. Collection of leaf debris for land disposal is a waste of landfill space and removes a naturally occurring process from the river.

In light of the requirements presenting in Part I.A.10.(e) regarding the evaluation of technologies for reducing impingement and entrainment, which presumably would incorporate an analysis of biological monitoring data gathered pursuant to Part I.A.10., requirements to install a low pressure screen spray wash and fish return trough should be delayed until the data collection efforts and the technology evaluation described in Part I.A.10.e have been completed or otherwise terminated. The new 316(b) rule for existing facilities describes a number of methods for reducing impingement, including design and construction technologies and operational measures, to meet impingement performance standards. As an outcome to the technology evaluation, and noting the future requirements associated with the new 316(b) rule, should the facility identify an alternative technology or operational measure for reducing impingement other than retrofitting the current traveling screen, the modifications being proposed may result in an unnecessary expense for the facility while only yielding a marginal environmental benefit.

Additionally, under paragraph “i” the assumption is that the pressure at the screen, or what a fish would realize, is greater than 30 pounds per square inch (psi). This has yet to be determined. Under paragraph “ii” the assumption is made that the return chute to the river was intended for fish return; it is not. Also, the time to research, design, procure and permit the installation of a fish return system is insufficient.

The Station requests that language be added to paragraph ”i” to the effect that “should the existing screenwash pressure at the screen be greater than 30 psi then the permittee...”. Also, we request up to 18 months to complete installation following completion of the technology evaluation described in Part I.A.10.e.

The Station requests up to 18 months following completion of the technology evaluation described in Part I.A.10.e for the design, procurement and installation of the fish return system as this site has significant design constraints with high fluctuation in water levels and substantial risk of damage from logs and ice, as well as significant permitting lead times.

As discussed above, we request that a paragraph be added that allows the permittee to propose and install alternative fish protection technologies and/or operational measures to minimize adverse environmental effects as part of the technology evaluation described in Part I.A.10.e.

Response 32:

EPA modified the draft permit to allow for natural debris, not including trash, to be returned to the river.

EPA has considered the permittee's argument that they should not have to make changes to their CWIS until they have performed data collection and technology evaluations. However, EPA believes that a screen wash spray having a pressure of no greater than 30 psi and the safe return of aquatic life to the river are minimum standards that should be applied in this case and are considered components of BTA for this facility. In addition, EPA has added additional flexibility for the permittee to choose another method to afford a safe return of aquatic organisms to the Connecticut River. Furthermore, the time period for these improvements has been extended to one year to accommodate that construction permits may contain seasonal restrictions.

Permit language that identifies the screenwash pressure to be over 30 psi and labels the debris return chute as a "fish return trough" has been removed.

Comment 33: Draft Permit Part I.A.14.k (page 16 of 20)

Paragraph "k" requires rotation of screens at least every 8 hours. This assumes fish will be present on the screens.

The Station requests that this be done only if the impingement study indicates a problem with impinged fish.

Response 33:

The potential for impingement is present whenever the Unit 3 pump(s) is/are operating. Currently, there is no technology at the intake that ensures impingement will not take place. Part I.A.14.j of the final permit requires that all live aquatic organisms collected or trapped on the intake screens shall be returned to their natural habitat with minimal stress. EPA believes the longer fish remain impinged against the screen, the more stress they are subjected to, and the greater the risk of directly or indirectly caused mortality. Rotating the screens, at a minimum, every (8) eight hours will prevent impinged fish from being subjected to a long period of time pressed against the traveling screen. The reasonable, protective approach is to minimize adverse impacts to fish from any impingement that does take place. Therefore, this requirement is retained in the final permit.

Comment 34: Draft Permit Part I.A.14.q (page 18 of 20)

Impingement and entrainment sampling required under Part I.A.11 may require the operation of the circulating water pumps of Unit 3 independent of the Station's power generation or other operational needs. As a result, the language in this paragraph should be modified to allow for operation of the pumps consistent with the requirements of Part I.A.11, specifically paragraph (a)(ii).

Additionally, paragraph "q" does not allow the use of the circulating of water to prevent freezing in the winter months. Also, the language does not allow emergency crossties to other pumps should a circulating pump go down.

The Station requests that sampling needs, "freezing conditions," and "emergency conditions" be added to the allowable uses of the circulating pumps.

Response 34:

Part I.A.11.a.i. has been modified to include the following language: "For entrainment monitoring, Unit 3 pumps may be operated independent of the Station's power generation or other operational needs."

For consistency with the entrainment monitoring requirements, Part I.A.11.b.i. for impingement has been modified to include the following language: "At least one of the cooling water pumps for Unit 3 will be operated continuously during the sample period. For impingement monitoring, Unit 3 pumps may be operated independent of the Station's power generation or other operational needs."

The draft permit has been modified to allow for use of the Unit 3 pumps to prevent freezing and during emergency situations. Part I.A.14.r of the final permit reads: "The Unit 3 pumps can be used during freezing conditions at the intake structure and for emergency conditions within the Station. EPA/DEP shall be notified within 24 hours of these conditions."

II. The following are Earth Tech/ Consolidated Edison Energy of Massachusetts, Inc. (CEEMI) Comments on NPDES Fact Sheet

The Station provided the following comments on the Fact Sheet for the Draft Permit and EPA has responded to them below. When issuing a Final Permit, EPA does not modify the Fact Sheet that was produced in conjunction with the Draft Permit. However, EPA will include the Station's comments and these responses to them in the administrative record for the Final Permit.

Comments:

Section 1.0, Proposed Action, Type of Facility, and Discharge Location (Page 3 of 26)

The second paragraph (and other locations) indicates that CEEMI is engaged in power distribution. CEEMI only generates power.

CEEMI's West Springfield Station has a total MW output of approximately 220 MW (Unit 3 – 104 MW, Unit CTG1 – 49 MW, CTG2 – 49 MW, and WSS 10 – 18 MW).

Section 4.2, Facility Information (Page 6 of 26)

The Station received a permit to operate CTG1 and CTG2 for a total of 4,840 hours (each unit) on natural gas. The permit was amended to allow 720 hours of oil operation. For each hour of oil operation, gas operating hours are reduced to maintain annual emission limits at the 4,840 gas-fired levels. The oil operating hours are not in addition to the 4,840 hours of gas operation.

Table 4.0 – The Auxiliary Boiler operates on either No. 2 fuel oil or natural gas.

Section 4.3, Permitted Outfalls (Page 9 of 26)

The description of sand filter operation needs revision. Typically, the sand filters are backwashed from anywhere between ½ hour to 1 hour up to 8 times per day; or total operating time of 4 to 8 hours per day, depending on the season.

Section 4.3, Permitted Outfalls (Page 11 of 26)

The reference to the ponds needs clarification. We suggest: “The three settling ponds are no longer used and do not receive plant wastewater. Pond closure is expected in the next several years.”

Section 4.3, Permitted Outfalls (Page 12 of 26)

The pressure of the screenwash water is not known at this time. It has been conjectured to be as high as 100 psi, but the true value has yet to be measured. We suggest the language be changed to reflect this unknown condition (see draft NPDES Permit comment above).

Also, the actual drop from the end of the debris return chute is approximately 3 feet, not eight feet.

Section 4.3, Permitted Outfalls-Outfall 006 (Page 13 of 26)

Outfall 006 receives only rainwater from the following locations: parking lot areas, yard areas, office roof drains and electrical control room roof drains. It does not receive water from the boiler house or turbine hall roof drains. In the original permit, rainwater from the boiler house was discharged to the ponds and out through Outfall 021.

Section 5.1.1, 316(b), Cooling Water Intake Structures (Page 18 of 26)

The “Design and Construction” section refers to the screenwash pressure as being 100 psi. This has yet to be determined. Also, the actual drop from the end of the debris return chute is approximately 3 feet, not 8 feet.

Section 5.1.1 316(b), Cooling Water Intake Structures (Page 20 of 26)

We request that the Draft Permit language regarding “no circ pump mode” be amended to include emergency and icing conditions. If changed in the permit, the Fact Sheet would also need to be changed.

Response:

EPA notes these comments and has no reason to dispute them. A copy of these comments will be attached to the Fact Sheet for the record. None of these comments, however, necessitate any change in the Final Permit conditions for several reasons: 1- no change to the Final Permit is warranted because the comment is irrelevant to the permit conditions (for example, one comment indicating that the drop from the end of the debris return chute is 3 feet and not 8 feet, is inconsequential because ultimately the result is the same - that fish are not afforded a safe return to the river), 2- a permit change was made as a function of a Response to Comment on the Draft Permit, and 3- the permit condition was already correct comparative to the mis-stated Fact Sheet information.

III. Commonwealth of Massachusetts Riverways Programs Comments on West Springfield Station Draft Permit.

Comment 1:

The facility is to be commended on their efforts to so significantly reduce the volume of discharge for this facility into the river. Outfall 001 remarkable volume reduction of 98% is testimony to the advances in technology and the facility’s commitment to reducing effluent volume.

Response 1:

These comments are noted, but do not necessitate any change in the permit.

Comment 2:

A point of clarification, please concerning Outfall 001 effluent. The permit lists cooling water as a constituent of the discharge but whether it is contact or non-contact cooling water is not specified. It is assumed the cooling water is non-contact cooling water and there is no likelihood lube oil from the CTG unit cooling system, the system the cooling water is directed to, can enter the cooling waters in any way. Neither the draft permit nor the Fact Sheet is specific about this point. If there is any possibility of oils or grease entering the effluent, EPA should consider adding an oil and grease limit and monitoring requirement.

Response 2:

Section 4.3 Permitted Outfalls, Outfall 001 on page 9 of the Fact Sheet indicates that “The CTG’s use non-contact cooling water (NCCW) from the river to cool the lube oil system for

these units via a heat exchanger.” Therefore, oil and grease is not expected to enter the effluent and no change has been made to the Final Permit.

Comment 3:

The continuous monitoring requirement for this outfall and outfall 002A& B is enthusiastically supported. The deficiency in data concerning the temperature impacts of these discharges points to the need for such level of detail in the temperature data. It is important to know both the influent, river and effluent temperatures. Given the observation in the Fact Sheet about the relative shallowness and location of the outfalls in a bend in the river means temperature impacts could be even more magnified than if the outfalls were located at depth and in deeper, faster moving waters.

Response 3:

These comments are noted, but do not necessitate any change in the permit.

Comment 4:

Outfall 002B is allowed a (seasonal) delta T of 37 to 48°F. These are significant deviations in temperature between the ambient river temperatures and the effluent - well above the change allowed by Massachusetts Water Quality Standards - and outfall B is the largest permitted discharge volume coming from this facility. The EPA provides a reasonable argument for not implementing more restrictive temperature regimes in the effluent: a paucity of data and the cost of installing upgrades such as cooling towers to lower both the overall temperature of the effluent and the delta T. Certainly this new permit is a marked improvement over the existing 1988 issued permit but there is only 12:1 dilution, (a dilution calculated using only outfall 002 volumes and does not include the adjacent outfall with heated effluent) and such large deviations in flow are a concern to the integrity and health of the river ecosystem and the resident and transient species dependent on the waterway. There is a multi[-]state effort to restore salmon to the river as well as other fish restoration efforts of anadromous and catadromous fish: efforts hampered by innumerable impacts to the greater Connecticut River watershed waters. Reducing or eliminating as many degraders to the river system would help these and other efforts to improve the watershed. In this spirit, would EPA consider a reduction in the daily maximum discharge volume if changes to the temperature limits are not appropriate at this time due to limited data? The Fact Sheet states the facility is less dependent on Unit 3, the source of outfall 002 B’s heated flows, and flows through outfall 002 have averaged well below 69 mgd in recent years. A significant reduction in the daily max volume would help alleviate some of the impacts temperature likely has on the riverine ecosystem. This would be an interim measure until such time as data is collected to make a more informed decision about temperature limitation to the effluent.

Response 4:

EPA is aware of the efforts to restore salmon to the Connecticut River as well as other fish restoration efforts of anadromous and catadromous fish. EPA has worked closely with the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NOAA Fisheries), the U.S. Geologic Survey, and the Commonwealth of Massachusetts to create an Essential Fish Habitat Assessment to address potential impacts to Atlantic salmon and prepare a Biological

Evaluation to address potential impacts to the dwarf wedge mussel and the shortnose sturgeon under the Endangered Species Act. In particular, the USFWS and NOAA Fisheries have concurred with the EPA determination that the renewal of the permit, with the sizable reduction in cooling water used and the multi-year monitoring program, is not likely to affect these species of concern.

EPA does share the Riverways Program's concerns about the affects of multiple discharge sources to the Connecticut River system as a whole. However, in this case, EPA will not require a reduction in the daily maximum discharge volume at this time, for two reasons:

First, historical records from the Station reveal that the maximum discharge temperature allowed by the permit is not consistently reached during generation, especially during cooler weather. A further reduction in the amount of cooling water used by the facility would likely have the unintended consequence of actually raising the discharge temperature to the maximum allowed limit more often and for longer periods, whereas discharge temperatures would remain below the limit if the daily maximum discharge volume remained the same. Thus, the current water use at the facility has the affect of reducing the temperature of the discharge. While this must be balanced against potential negative impacts of impingement and entrainment from greater water use, in this case, the use of river water allowed by the permit is deemed acceptable.

Second, once the permit is in effect, the permittee is required to employ a CORMIX or similar model to predict the spatial extent and intensity of the thermal plume from the Station discharge under maximum station generation and low river flow conditions. These results, once calibrated with temperature data collected in the field, will be shared with resource agencies to better understand potential impacts of the thermal plume to Atlantic salmon, shortnose sturgeon, and other species residing in the Connecticut River. At that time, the need for additional modification to the Station's discharge will be explored.

Comment 5:

Outfall 006 requires samples of stormwater be collected within the first hour of a rain event. Obviously the intent is to capture the often worst quality first flush flows. One potential problem with this monitoring stipulation centers on the definition of a rain event. The first hour of a rain event might produce a minute amount of rain if the intensity of the event is minimal. We suggest a qualifier that there has to be at least one eighth of an inch of rain, enough rain fall to produce a steady stream of runoff to the drain collection system.

Response 5:

EPA has incorporated into the final permit that sampling shall be consistent with USEPA's Multi-Sector General Permit for storm water discharges associated with industrial activities.

Comment 6:

The definition of rain event raises another question. The frequency of monitoring for this outfall is just twice per year and may not adequately capture the nature of the effluent discharged from this outfall because it is not just rain events triggering discharges. The draft permit's monitoring biannual requirement may fail to capture the flows from snow melt. Accumulated snow piles

from repeated snow storms accumulates petroleum based pollutants, sand and salt and metals which can send a large slug of pollutants to the storm system independent of a rain event. There should be some attempt to capture these flows if they are pertinent to this site, (i.e. snow is stockpiled to some degree within the drainage area of this outfall). The size of the contribution area to this outfall or an estimate of the volumes or range of volumes discharged are not presented in the Fact Sheet to allow for a perspective on the contribution of effluent to the receiving water. Given this outfall drains the fuel unloading area, parking areas and roof runoff, there is a potential for impacts to the receiving water. An additional requirement to test for TSS and even metal if the roof material of the buildings may potentially add metals to the runoff, would be warranted for spring monitoring.

Response 6:

EPA determined that it is reasonable to include sampling during snow melt of stockpiled snow for informational purposes, in this case. Therefore, this requirement is incorporated into the final permit. The roofs, however, are coated with rubber and are not expected to contribute metals to the runoff.

Comment 7:

The draft permit adds an extensive monitoring program requirement and this is a much needed addition given the constraints the current dearth of information on temperature impacts, aquatic ecosystem integrity and fisheries impairments related to the discharges from this facility. It is unfortunate there has not been on-going studies and biological monitoring studies and the significant length of time that has elapsed between the existing permit expiration and renewal since these factors have delayed the much needed assessment and potential remediation work to curtail any impacts these discharges may be having on the receiving water. EPA's position concerning their quandary of not having the data to justify major changes in the temperature limits in the permit and other measures to address impingement of fish is understandable but it is still unfortunate delays may mean the Connecticut River will suffer. This draft permit goes far to guarantee the needed data will be collected and can be used to make any necessary changes to the permit to improve the biological integrity of the Connecticut River. We hope the data will be used in as timely a fashion as possible should negative impacts be documented associated with the heated effluent or entrainment.

Response 7:

Comment is noted and if negative impacts are documented, EPA may revisit the permit conditions and a modification may be issued if necessary to remediate those impacts.

Comment 8:

The Fact Sheet did not contain any information [associated with] the compliance record of this facility. Most Fact Sheets accompanying draft permit provide a synopsis of recent year's information. The EPA ECHO page has recently stopped providing DMR data so it was not possible to review the ranges of the different parameters. How was the compliance record of this facility?

Response 8:

Indeed, the summary of data ranges for particular parameters is included with some Fact Sheets. However, in this particular case, the Station operates sporadically as a “peaking plant.” Data from when the plant is not operating is averaged with data from when the plant is operating. The overall averages of this data is not an appropriate or meaningful indicator of the impacts to the receiving water over short durations. Currently, there are no NPDES compliance issues associated with this facility.