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The Northeast Utilities System

October 6, 2006

David M. Webster
Chief, Industrial Permits Branch
Office of Ecosystem Protection
EPA Region 1
One Congress Street, Mail Code CAA
Boston, MA 02114-2023

Reference: December 30, 2004 correspondence from Linda Murphy, EPA Region 1, to John M. MacDonald, PSNH; Merrimack Station NPDES Permit (#NH0001465)

September 18, 2006 correspondence from David M. Webster, EPA Region 1, to John M. MacDonald, PSNH; Merrimack Station NPDES Permit (#NH0001465)

Dear Mr. Webster:

As directed by EPA in the above-referenced correspondence dated September 18, 2006, Public Service Company of New Hampshire ("PSNH") herein submits a set of revisions to its Proposal for Information Collection ("PIC") for Merrimack Station ("Station") pursuant to the U.S. Environmental Protection Agency's ("EPA's") regulations ("Phase II Regulations") implementing §316(b) of the Clean Water Act, 33 U.S.C. §1326(b). *See* 40 C.F.R. Part 125, Subpart J. PSNH is providing these revisions to the PIC in the form of inserts to the PIC document that are attached hereto. *See* Attachment A (new Section 5.1.2); Attachment B (new Section 5.2.2); Attachment C (new Section 8.2); Attachment D (new Appendix 3). In addition, as directed by EPA in the above-referenced correspondence dated December 30, 2004, PSNH herein proposes, as its "preliminary compliance alternative selection" for the Station, to submit a site-specific determination of best technology available for minimizing adverse environmental impacts in accordance with 40 C.F.R. §125.94(a)(5)(ii).

Please be advised that PSNH maintains the positions it has previously stated, in correspondence to and discussions with EPA Region 1 staff, with respect to EPA's interpretation and application of the entrainment reduction performance standards and the "calculation baseline" requirements of the Phase II Regulations. In addition, as you are aware, the Phase II Regulations are currently subject to a challenge pending in the U.S. Second Circuit Court of Appeals. For these reasons and as noted in the PIC, PSNH respectfully must reserve its rights with respect to the interpretation and application of the

Phase II Regulations and their substance. In addition, notwithstanding the foregoing, PSNH respectfully must reserve its right to challenge any requirements that EPA imposes under §316(b) based on "Best Professional Judgment," prior to the issuance of a permit that reflects the Station's compliance with the Phase II Regulations.

Please further be advised that PSNH continues to assert a claim of business confidentiality with regard to Sections 3.0, 4.0 and 5.0 of the PIC (including new Sections 5.1.2 and 5.2.2), and requests that EPA handle these sections in full accordance with 40 C.F.R. Part 2, Subpart B.

If you have any questions or concerns regarding the PIC revisions, please contact Mr. Allan Palmer, Senior Engineer, at (603) 634-2439.

Very truly yours,

Linda T. Landis
for William H. Smagula

William H. Smagula
Director – PSNH Generation

cc: Mark Stein, Esq., EPA
Harry Stewart, NHDES
Linda T. Landis, Esq., PSNH
Elizabeth F. Mason, Esq.

ATTACHMENT A

October 7, 2006 Revisions to Merrimack Station Proposal for Information Collection

5.1.2 Entrainment

Operational flow reductions have provided up to an annual average reduction in entrainment abundance of 26.9% for Unit 1 and 23.5% for Unit 2 compared to expected baseline conditions of maximum intake design flows and under the assumptions that (1) there is a direct (1:1) relationship between flow reductions and the number of fish eggs and larvae entrained, and (2) there is 100% mortality of entrained fish in the non-contact cooling water drawn into Unit 1 and Unit 2 through their respective CWISs. The results of the new entrainment studies described in Section 8.2 (below) will be applied on a weekly, monthly and annual basis to the intake flows for Unit 1 and Unit 2 to obtain flow-weighted reductions in entrainment abundance for these time intervals compared to baseline conditions.

ATTACHMENT B

October 7, 2006 Revisions to Merrimack Station Proposal for Information Collection

5.2.2 Entrainment

PSNH intends to consider the costs, benefits and site-specific effectiveness of the following three technological options to further reduce entrainment at one or more units withdrawing non-contact cooling water from Merrimack Station's two CWISs: (1) USEPA's technology evaluated in the Phase II Rule separately for Merrimack Station Unit 1 and Unit 2 based on the addition of a passive fine-mesh screen system (cylindrical wedgewire) near the shoreline with a mesh width of 1.75 mm, (2) installation of variable speed intake pumps to replace the existing intake pump(s) and reduce intake flows during periods of excess cooling capacity within the existing NPDES permit thermal limits, and (3) seasonal deployment of an aquatic filter barrier system.

Under the assumption (fundamental to the Phase II Regulations) that entrainment abundance is directly proportional to CWIS flow, PSNH will also consider one or more of the following operational flow reductions as conditions of a renewed NPDES discharge permit to further reduce entrainment at one or more units withdrawing non-contact cooling water from Merrimack Station's two CWISs: (1) seasonal flow reductions achieved by scheduling maintenance outages or other outages during periods of high entrainment, or (2) installation and operation of variable speed intake pumps to replace the existing intake pump(s) and reduce intake flows during seasonal periods of high entrainment.

If appropriate, in accordance with 40 C.F.R. §125.94(a)(5), PSNH may estimate whether the costs of these technological options will be significantly greater than (a) the costs considered by USEPA for a like facility in establishing the applicable performance standards, corrected to the extent necessary to account for errors in USEPA's calculation, or (b) the demonstrable benefits of complying with the applicable performance standards (i.e., demonstrable reductions in entrainment abundance that would be obtained by installation and operation of variable speed pumps to reduce flows or other appropriate technology). If appropriate, PSNH may request a site-specific determination of best technology available for minimizing adverse environmental impacts in accordance with 40 C.F.R. §125.94(a)(5).

USEPA estimated the §316(b) compliance costs for each Unit at Merrimack Station individually and presented these in Appendix A of the preamble to the final Phase II Regulations (See 69 Fed. Reg. 41670). For the Unit 1 CWIS, USEPA estimated that the annualized compliance cost would be $120,181, the total capital cost would be $808,777, and the total net revenue losses from net construction down time would be $5,399,114 (for both units). For the Unit 2 CWIS, USEPA estimated that the annualized compliance cost would be $218,874, the total capital cost would be $1,524,044, and the total net

revenue losses from net construction down time would be $5,399,114 (for both units). The USEPA-estimated annualized 316(b) compliance costs comprise the annualized capital and operation and maintenance ("O&M") using a USEPA design intake flow (See 69 Fed. Reg. 41646). These costs also reflect a USEPA-selected technology of "addition of passive fine-mesh screen system (cylindrical wedgewire) near shoreline with mesh width of 1.75 mm."

ATTACHMENT C

October 7, 2006 Revisions to Merrimack Station Proposal for Information Collection

8.2 Entrainment

The goal of the proposed entrainment program is to estimate the annual total abundance and mortality of fish eggs, fish larvae and post-yolk-sac larvae that become entrained in the cooling water drawn through the traveling screens of the Unit 1 CWIS. Entrainment data obtained from the proposed new studies at Merrimack Station from Unit 1 will be applied to both Unit 1 and Unit 2 on a weekly, monthly and annual basis using the intake flows for each Unit to obtain flow-weighted total entrainment abundance for these time intervals.

The entrainment program will be documented in a project-specific Quality Assurance Plan ("QAP") consistent with USEPA protocols (USEPA 2001). The QAP will describe the Standard Operating Procedures to be used for the field, laboratory and data file preparation activities, and is included with this PIC as Appendix 3.

The entrainment sampling protocol for Merrimack Station will reflect a seasonally stratified, fixed-date design, which is consistent with numerous entrainment programs completed or ongoing at CWISs throughout the United States (EPRI 2005). Entrainment sampling will be conducted between April and September 2007. Entrainment sampling will be conducted at the Unit 1 CWIS on one sampling day per week when the plant is operating during the mid-May through August seasonal period of peak ichthyoplankton abundance, and at the Unit 1 CWIS on one sampling day every other week when the plant is operating during the April to mid-May and September seasonal periods of non-peak ichthyoplankton abundance. This entrainment sampling design for Merrimack Station will provide 22 sampling days and 44 total entrainment samples if the CWIS at Unit 1 is operating on all of the scheduled days.

Each day of entrainment sampling will consist of collecting two 100 m^3 samples from Unit 1 on the same, systematically selected day each week. Biweekly entrainment sampling will consist of collecting two 100 m^3 samples from Unit 1 on the same, systematically selected day every other week. On each sampling day, one daytime sample and one nighttime sample will be collected. The intention is to separate the collection of daytime and nighttime entrainment samples symmetrically within the daytime and nighttime periods of each sampling date. Daytime is defined as occurring between one hour after meteorological sunrise and one hour before meteorological sunset as observed at the plant site. Nighttime is defined as occurring between one hour after meteorological sunset and one hour before meteorological sunrise as observed at the plant site.

Each entrainment sample will be collected outside the Unit 1 screen houses from a 3-inch raw-water tap drawing un-chlorinated ambient cooling water at low pressure (about 15 to

22 psi) from the condenser supply line at a point after the feed lines from each intake pump have joined into a common line. Drawing the entrainment sample at this location from Unit 1 will allow sampling to occur if only one out of the two circulating water pumps is operating. The circulating water flow from the 3-inch line will be supplied from above into a 0.300 mm mesh plankton net that is suspended in a tank (barrel sampler). When sufficient volume of water has been filtered through the plankton net (flow measured and recorded continuously with an in-line flowmeter), each entrainment sample will be concentrated into the 0.300 mm cod-end cup of the plankton net, rinsed into a one-liter sample jar, preserved with 10% buffered formalin, labeled with the date and time of collection and a unique sample number, and taken to the laboratory for analysis. Water temperature, dissolved oxygen concentration (DO), and conductivity will be recorded in the barrel sampler outflow near the beginning of each entrainment sample collection. DO and conductivity measurements will be converted into percent saturation and salinity at 25°C (conductivity) during data analysis.

Each entrainment sample will be processed in the laboratory to separate the fish from other material and to enumerate and identify the sorted contents. Due to the relatively small sample volume of about 100 m^3 for each entrainment sample collected in this program, the need for subsampling is expected to be limited. Samples with extremely high numbers of ichthyoplankton eggs, or larvae will be subsampled in the lab with Motoda plankton splitters according to established protocols. In such cases, a minimum of 200 eggs and larvae will be sorted and identified from the subsample. For subsampling due to high detrital load when ichthyoplankton densities are low, high detrital load will be defined as more than 400 milliliters of settled volume of solids in the sample (detritus and plankton), and a maximum of one-half of the sample will be sorted.

The ichthyoplankton in each entrainment sample will be processed to identify individuals to species (lowest distinguishable taxon, generally species) and enumerate them by life stage. Ichthyoplankton will be enumerated into the following life stages: eggs, yolk-sac larvae, post-yolk-sac larvae, and juveniles. The total length to the nearest 0.1 mm will be measured for up to 30 individuals of each ichthyoplankton life stage (except eggs). If more than 30 ichthyoplankton larvae are present, a random selection of 30 specimens will be measured.

8.2.1 Entrainment Survival

PSNH plans to perform entrainment survival studies monthly at Merrimack Station to determine the survival of entrained ichthyoplankton larvae that have passed through the Unit 1 CWIS. Such entrainment survival collections will be scheduled for one randomly selected day per month on a day already selected for entrainment sampling. The regularly scheduled entrainment sample will be collected and preserved, and then a second sample will be collected and observed for entrainment survival. The entrainment survival studies will be staffed continuously during the collection and observation periods, and sufficient volume of water will be filtered through the entrainment collection device to insure that at least 100 fish larvae are available for initial (0-hour) and latent (24-hour) survival observations or eight hours of sampling has occurred.

A barrel-type entrainment sampler (modified from EA 1982) will be set up near screen house for entrainment survival sampling. Unlike the plankton net suspended in the barrel, the entrainment survival sampler consists of two nested cylindrical tanks (Figure 8-1). The inner tank is 24 inches in diameter and 36 inches tall and is fitted at the bottom with a funnel that tapers from 24 inches down to 3 inches and protrudes 12 inches through the floor of the outer tank. The outlet of the funnel is fitted with a 3-inch ball valve and either a collection cup (for entrainment abundance samples) or a flexible section of clear vinyl tubing leading to a collection tray (for entrainment survival samples). The walls of the inner tank are covered with 0.300 mm mesh Nitex plankton netting. The outer tank (barrel) is 36 inches in diameter and 48 inches tall. Circulating water flow into the entrainment sampler will be controlled by a ball valve on the feed side, and the outlet of the 4-inch supply line will enter standing water near the bottom of the inner tank. The supply water outlet will be oriented at a tangential angle to the inner tank so that the incoming water will swirl slowly to disperse the incoming energy throughout the tank. In addition, the swirling motion will cause solids (i.e. fish eggs and larvae) to concentrate towards the center of the tank so that they are not subjected to abrasion against the netting covering the walls of the inner tank. The water level in the barrel will be maintained by an overflow system so that the water velocity of the supply line (at 15 to 22 psi) is dispersed over the entire inner tank, minimizing the possibility of net abrasion of ichthyoplankton.

Following collection of an entrainment survival sample, the initial (0-hour) survival status of live and dead ichthyoplankton eggs and larvae will be determined by initially sorting the contents of the collection tray on site to classify each ichthyoplankter in the initial observation period as live, stunned or dead according to the following criteria:

- **Live**
  - Larvae swimming vigorously; no apparent difficulty in swimming orientation.
  - Eggs are translucent, with chorion intact, and not cloudy in any internal portion.

- **Stunned**
  - Larvae (only) swimming abnormally, struggling to maintain swimming position, or swimming sideways or upside down; or non-motile except when gently prodded.

- **Dead**
  - Larvae showing no vital signs, no body or operculum movement; no movement when gently prodded.
  - Eggs are opaque, with chorion ruptured, or cloudy in any internal portion.

Dead eggs and larvae will be removed from the initial observation sample after processing, placed in a label sample containers using a separate container for each initial survival category (live, stunned, dead), and preserved in 10% buffered formalin. After initial survival status is determined, live eggs will be carefully transferred from the collection tray into one-liter glass holding containers using a pipette. After initial

survival status is determined, live and stunned larvae will be carefully transferred using a plastic spoon from the collection tray into one-liter glass holding containers that have been filled with ambient, filtered (300 microns) unchlorinated river water. A maximum of five larvae will be held in each one-liter container. Small larvae will be held separately from large larvae to reduce the possibility of predation or cannibalism. These holding containers will be aerated and held in a water bath of ambient water until they are processed again at the latent (24-hour) observation time. After a 24-hour holding period, the latent survival status of the fish eggs and larvae will be determined using the same criteria and procedures described above for the initial survival observations. All eggs and larvae will be removed from the latent observation samples after processing, placed in a label sample container using a separate container for each latent survival category (live, stunned, dead), and preserved in 10% buffered formalin. Preserved samples will be transported to the laboratory for identification, life stage determination, and enumeration. Total length of each ichthyoplankton larva collected in the entrainment survival samples will be measured to the nearest 0.1 mm. Entrainment survival samples will be processed in the laboratory without subsampling.

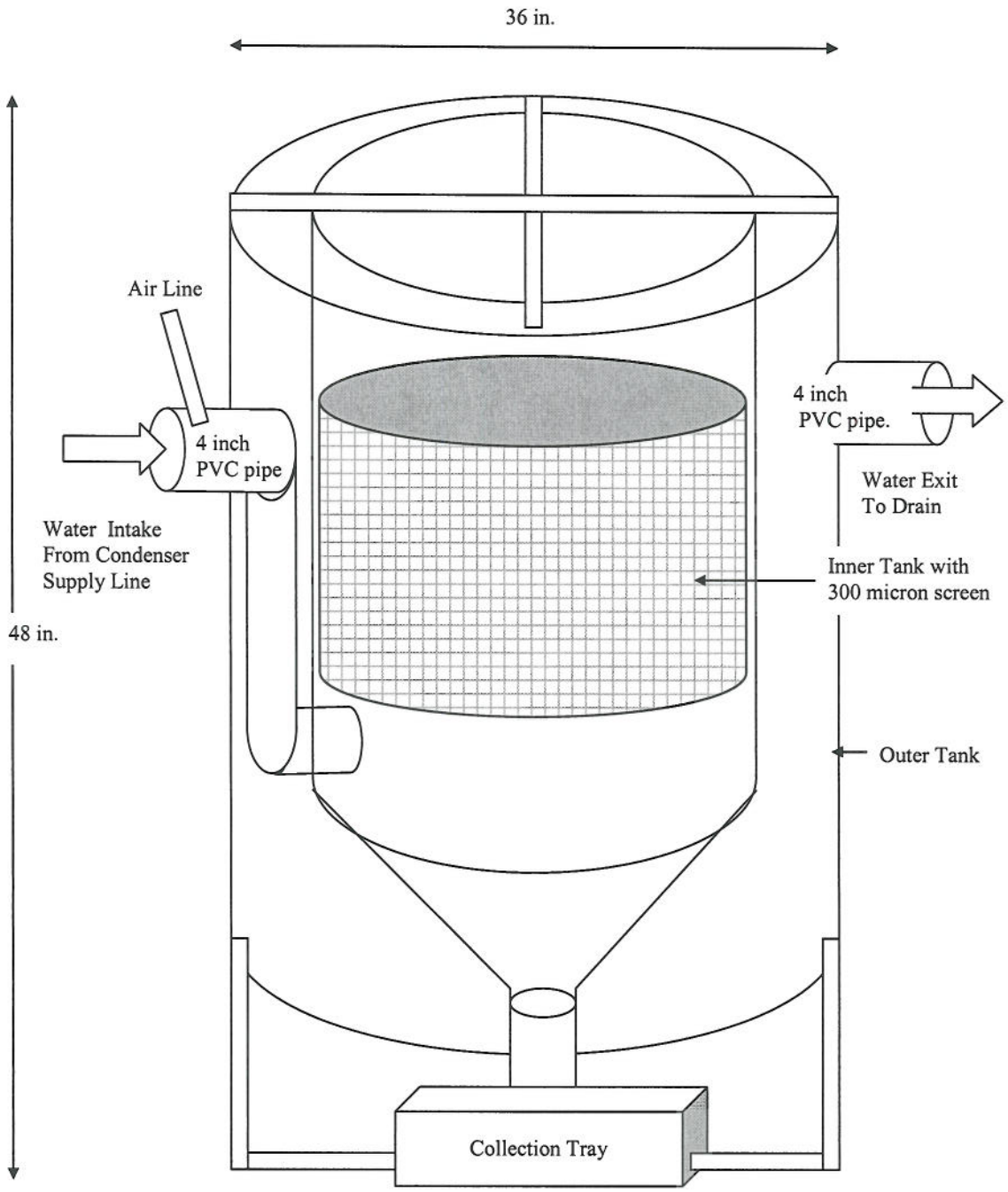

Figure 8-1. Schematic diagram of entrainment sampling device (barrel sampler).

ATTACHMENT D

October 7, 2006 Revisions to Merrimack Station Proposal for Information Collection

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The Northeast Utilities System

January 24, 2007

D25615

Mr. John P. King
U.S. Environmental Protection Agency
Region 1: New England
Office of Ecosystem Protection (OEP)
NPDES Industrial Permits Branch (CPE)
1 Congress Street, Suite 1100
Boston, MA 02114-2023

RE: Release of Confidential Business Information

Dear Mr. King:

In response to your concerns and in the spirit of cooperation, Public Service Company of New Hampshire ("PSNH") has determined that the "Confidential Business Information" label may be removed from the following reports submitted to the EPA in order to facilitate review and to move the process along.

AR-707

1. Merrimack Station, Proposal for Information Collection, April 2005
2. Merrimack Station, Proposal for Information Collection Revisions, October 2006
3. Newington Station, Proposal for Information Collection, September 2006
4. Schiller Station, Proposal for Information Collection, October 2006
5. Merrimack Station, Draft Report, Thermal Discharge Effects on Downstream Salmon Smolt Migration, May 2006
6. Merrimack Station, Draft Report, An Examination of Fish Catch between Trap Nets with 0.75-In and 2.00-In Mesh Sizes Deployed in Hooksett Pool of the Merrimack River (Bow, NH) During 2004 and 2005, June 2006
7. Merrimack Station, Draft Report, Fisheries Survey Results of 2004 and 2005 and Historic Trends Analysis of 1967 to 2005 Surveys, May 2006

PSNH plans to submit a final version of the Salmon Smolt Migration Study later this month, along with the Hydrothermal Modeling Report that was discussed during our meeting this past October. We also expect to submit a final version of the Historic Trends Analysis and a 316(a) Summary Report by March 15, 2007.

However, I would like to emphasize that by releasing the documents specifically listed herein, PSNH is not waiving its right to assert a business confidentiality claim, as appropriate, on other 316 documents and reports.

We hope this action by PSNH demonstrates our desire to work with EPA to resolve all 316 issues at our three power stations. Please contact Allan Palmer at (603) 634-2439 if you have any other concerns.

Very truly yours,

William H. Smagula, P.E.
Director – Generation

cc: David Webster, USEPA
Harry Stewart, NHDES
Linda Landis, PSNH