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October 8, 2009

The Northeast Utilities System

Prepared in Conjunction with Settlement Discussions

By Overnight Mail

David Webster
Office of Ecosystem Protection
United States Environmental Protection Agency
One Congress Street, Suite 1100, Mail Code CMA
Boston, MA 02114-2023

Re: **Public Service Company of New Hampshire**
Merrimack Station, Bow, New Hampshire
National Pollutant Discharge Elimination System Permit No. NH0001465

Dear Mr. Webster:

Public Service Company of New Hampshire ("PSNH") is pleased to provide the enclosed report from Enercon Services, Inc. entitled *Supplemental Alternative Technology Evaluation, PSNH Merrimack Station, Units 1 and 2, Bow, New Hampshire*. PSNH is submitting this report—and recently submitted the companion report from Normandeau Associates Inc. entitled *Biological Performance of Intake Screen Alternatives to Reduce Annual Impingement Mortality and Entrainment at Merrimack Station*—to meet the United States Environmental Protection Agency's ("EPA's") request, following our December 2008 meeting to discuss PSNH's pending application for renewal of Merrimack Station's existing National Pollutant Discharge Elimination System ("NPDES") permit, for an enhanced conceptual cooling water intake structure ("CWIS") technology evaluation for the Station.

The more detailed conceptual evaluation jointly presented in the Enercon and Normandeau reports demonstrates that seasonal operation of cylindrical wedgewire ("CWW") screens, in combination with the use of upgraded fish return systems, is the preferred conceptual CWIS technology option for Merrimack Station with regard to Clean Water Act ("CWA") §316(b), because it is expected to reduce impingement mortality by approximately 84%, and entrainment by up to approximately 79%, from baseline. Based on this evaluation, PSNH is proposing a three-year *in situ* pilot study of the seasonal deployment of CWW screens at the Station prior to screen selection and installation, as discussed in more detail below.

PSNH is confident that the Enercon and Normandeau reports, in conjunction with the several reports submitted since December 2006 addressing CWA §316(a), provide the basis for a complete resolution of Merrimack Station's pending NPDES permit, including with respect to both intake and thermal considerations, and therefore give EPA and PSNH a starting point for discussions aimed at reaching a favorable consensus resolution of the pending NPDES permit renewal process for the Station. To this end, PSNH requests a meeting with EPA to discuss the details of our proposal, and the substance of any proposed draft NPDES permit for the Station.

Detailed Discussion

As you will recall, EPA asked PSNH to prepare and submit an enhanced conceptual CWIS technology evaluation to refine the evaluation that PSNH had already provided to EPA in November 2007 in response to EPA's July 2007 information request letter under CWA §308 (the "§308 Response Report"). Following the December 2008 meeting with PSNH, Enercon and Normandeau regarding the §308 Response Report, EPA requested a more detailed assessment of the following CWIS technologies: (1) seasonal deployment of narrow slot CWW screens in front of the Station's CWISs, (2) seasonal deployment of an aquatic filter barrier in front of the Station's existing CWISs, and (3) installation of fine mesh traveling screens to replace the Station's existing coarse mesh traveling screens.

As part of this focused evaluation, Normandeau undertook additional analysis to determine the expected biological performance of seasonally deployed CWW screens of different slot sizes at Merrimack Station. More specifically, using data from both peer-reviewed, published technical studies and site-specific impingement mortality and entrainment ("IM&E") monitoring, Normandeau estimated the potential monthly and annual IM&E reductions from the installation and seasonal operation of CWW screens with slot sizes ranging from 1.0 mm to 9.0 mm at the Station.¹ Overall, the results of Normandeau's analysis show that the Phase II §316(b) Rule's performance standards of a 60-90% reduction in entrainment and an 80-95% reduction in impingement mortality could be attained at Merrimack Station by installing CWW screens with any of five slot sizes evaluated (1.5 mm through 9 mm) at both Unit 1 and Unit 2, operating them from April through July of each year, and installing and operating upgraded fish return systems (in combination with the existing traveling screens) during August through November.

More specifically, by operating CWW screens with a 1.5 mm slot size from April to July and the existing coarse mesh traveling screens with upgraded fish return systems from August through November, an up to 79% reduction in entrainment and an 84% reduction in impingement mortality could be attained. By operating CWW screens with a 9.0 mm slot size from April to July and the existing coarse mesh traveling screens with upgraded fish return systems from August through November, an up to 73% reduction in entrainment and an 84% reduction in impingement mortality could be attained. Moreover, reductions in adult equivalent losses for IM&E combined could range from 76% for the 3.0 mm through 9.0 mm slot size CWW screens to 81% for the 1.5 mm slot size CWW screens. In short, the total annual IM&E reductions potentially achievable through PSNH's proposal compare favorably to those achievable by closed-cycle cooling, in that each would satisfy the Rule's IM&E performance standards, but would avoid potential adverse electric-system and other adverse impacts associated with the retrofitting of closed cycle cooling.

Because of the significant potential for screen fouling, prior to final design and construction, a three-year site-specific study is necessary to obtain information on the effect of site-specific parameters (e.g., river velocity, silting, debris, fouling) on the performance of this conceptual CWW screen option and to verify the potential IM&E reductions achievable. In particular, this site-specific study is required to evaluate CWW screens with slot sizes ranging from 1.5 mm to 9.0 mm, in order to determine the magnitude of the

¹ Because the installation and operation of CWW screens with smaller slot sizes (i.e., <1.5 mm) is expected to result in fouling sufficiently significant to negatively affect Station operations and, therefore, reliability for this important baseload facility, the installation of CWW screens with a 1 mm slot size was not further evaluated. This is consistent with EPA's determination in the Phase II §316(b) Rule that CWW screens with a 1.75 mm slot size constitute "the most appropriate [CWA §316(b)] compliance technology" for Merrimack Station.

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expected fouling and establish the optimum slot size and operational period of the screens at the Station. PSNH proposes that this study provide the basis for a compliance schedule and agreement—along the lines of a Technology Installation and Operation Plan and Verification Monitoring Plan—that would govern PSNH's implementation of this proposal and NPDES compliance at Merrimack Station. Thus, and without understating the significant costs inherent in this proposal, PSNH expects that its proposal would accomplish EPA's goals of protecting the environment while minimizing potential adverse impacts to the electric system or our customers.

This correspondence is provided for settlement purposes. As in the past and of necessity, this correspondence respectfully reserves PSNH's rights to challenge any aspect of the Permit that EPA ultimately issues for the Station. Nothing herein is intended to, or should be in any way construed, as waiving PSNH's rights with respect to any pending considerations.

Please feel free to call me if you have any questions.

Very truly yours,



William H. Smagula, P.E.
Director - PSNH Generation

cc: Harry T. Stewart, P.E., NHDES
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