## NOTE

Only the cover page of this document is being provided/posted on the EPA Region 1's Merrimack Station NPDES Draft Permit Web page.

For further viewing, the full document is available at EPA Region 1.

The full document may contain a Table of Contents, Executive Summary, List of Figures, List of Tables, etc.





## DRAFT REPORT

# MERRIMACK STATION THERMAL DISCHARGE EFFECTS ON DOWNSTREAM SALMON SMOLT MIGRATION

PRIVILEGED AND CONFIDENTIAL
ATTORNEY WORK PRODUCT
PREPARED AT THE DIRECTION OF COUNSEL
PREPARED IN ANTICIPATION OF LITIGATION

**MAY 2006** 





January 24, 2007

PSNH Energy Park 780 North Commercial Street, Manchester, NH 03101

Public Service Company of New Hampshire P.O. Box 330 Manchester, NH 03105-0330 (603) 669-4000 www.psnh.com

The Northeast Utilities System

#### 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.

- Merrimack Station, Proposal for Information Collection, April 2005
- Merrimack Station, Proposal for Information Collection Revisions, October 2006
- 3. Newington Station, Proposal for Information Collection, September 2006
- Schiller Station, Proposal for Information Collection, October 2006
- Merrimack Station, Draft Report, Thermal Discharge Effects on Downstream Salmon Smolt Migration, May 2006
- 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
- 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.

Mr. John P. King D25615/Page 2 January 23, 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

#### DRAFT REPORT

## MERRIMACK STATION THERMAL DISCHARGE EFFECTS ON DOWNSTREAM SALMON SMOLT MIGRATION

PRIVILEGED AND CONFIDENTIAL
ATTORNEY WORK PRODUCT
PREPARED AT THE DIRECTION OF COUNSEL
PREPARED IN ANTICIPATION OF LITIGATION

**MAY 2006** 

#### DRAFT REPORT

## MERRIMACK STATION THERMAL EFFLUENT EFFECTS ON DOWNSTREAM SALMON SMOLT MIGRATION

Privileged and Confidential
Attorney Work Product
Prepared at the Direction of Counsel
Prepared in Anticipation of Litigation

Prepared for
PUBLIC SERVICE OF NEW HAMPSHIRE
Environmental Services
780 North Commercial Street
Manchester, NH 03105

Prepared by
NORMANDEAU ASSOCIATES, INC.
25 Nashua Road
Bedford, NH 03110

R-20410.002

May 2006

### **Table of Contents**

		Page
1.0	INTRODUCTION	1
2.0	METHODS	2
3.0	RESULTS	5
4.0	DISCUSSION	37
5.0	LITERATURE CITED	38
A PPI	FNDIX A. River Discharge During Fish Releases	

## **List of Figures**

		Page
Figure 2-1.	Merrimack River fish release and monitoring stations for the Merrimack Station downstream Atlantic salmon smolt migration study, spring 2003 and 2005	4
Figure 3-1.	Water temperature at the five water quality stations relative to ambient river water (as determined at Release Site) for the 2003 Atlantic salmon smolt releases. Black box denotes that temperature measurement was with 0.5 °C, blue box denotes temperature was within $0.5 - 1.0$ °C, and green box denotes that temperature was greater than $1.0$ °C above ambient.	17
Figure 3-2.	Water temperature at the five water quality stations relative to ambient river water (as determined at Release Site) for the 2005 Atlantic salmon smolt releases. Black box denotes that temperature measurement was with 0.5 °C, blue box denotes temperature was within $0.5 - 1.0$ °C, and green box denotes that temperature was greater than $1.0$ °C above ambient.	18
Figure 3-3.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 1, 2003	19
Figure 3-4.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 2, 2003	21
Figure 3-5.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 3, 2003	22
Figure 3-6.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 4, 2003	24
Figure 3-7.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 5, 2003	26
Figure 3-8.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 1, 2005	27
Figure 3-9.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 2, 2005	29
Figure 3-10.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 3, 2005	30
Figure 3-11.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 4, 2005	32
Figure 3-12.	Migration routes of radio tagged Atlantic salmon smolts past the Merrimack Station Discharge during Release 5, 2005	33
Figure 3-13.		34

### **List of Tables**

		Page
Table 3-1.	Temperature profiles of the thermal discharge and radio tagged Atlantic salmon smolt migration routes and travel times past the Merrimack Station discharge during spring 2003.	6
Table 3-2.	Temperature profiles of the thermal discharge and radio tagged Atlantic salmon smolt migration routes and travel times past the Merrimack Station discharge during spring 2005.	
Table 3-3.	Downstream travel times and speeds for Atlantic salmon smolts released during 2003 and 2005, Merrimack Station.	