Public Service of New Hampshire

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The Northeast Utilities System

Admin #293

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U.S. Environmental Protection Agency
Region 1: New England
Office of Ecosystem Protection
NPDES Industrial Permit Branch (CIP)
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Dear Sir/Madam:

Merrimack Station
NPDES Permit No. NH0001465
2007 Annual Fish Impingement Report

Public Service of New Hampshire (PSNH) submits this Annual Fish Impingement Report for the year 2007 pursuant to Part I., Section A.10.b of the Merrimack Station NPDES Permit, No. NH0001465. This permit condition requires PSNH to conduct impingement monitoring at Merrimack Station according to the provisions below.

- PSNH shall provide impingement monitoring at Merrimack Station when flows from Garvins Falls Hydroelectric Station are less than 900 cfs during any period from July 1 through October 15.
- PSNH shall collect all fish from both MK-1 and MK-2 traveling screen washes during one continuous 48-hour period per week when the conditions outlined above are met.
- PSNH shall report in writing to the New Hampshire Fish & Game Department (NHFGD), United States Fish and Wildlife Service (USFWS), New Hampshire Department of Environmental Services (NHDES) and the United States Environmental Protection Agency (USEPA) any Extraordinary Impingement Event (EIE) at Merrimack Station. An EIE is defined as an event when 50 or more fish at any one time, of any size or species, are either distressed or killed as a result of impingement.

Based on river flows at Garvins Falls Hydro, Merrimack Station was required to collect fourteen weekly samples from the intake screens between July 1 and October 15. A total of ten (10) fish were collected in the fourteen samples. Impingement rates for the sampling periods were calculated by dividing the total number of fish collected by the total volume of water passed through the units. The volume of water is based on circulating pump capacities and the number of pumps operating during each screen wash cycle. Each operating unit has two pumps; the pumps servicing Unit 1 are rated at 63 cfs each (126 cfs total), the pumps servicing Unit 2 are rated at 144.5 cfs each (289 cfs total).

Table 1 shows the total number of fish collected and the impingement rate for each sampling period. The average impingement rate for 2007 was 0.01 fish per million cubic feet of screen water. Similar to all previous seasons, this rate is very low by all industry standards even though the data was collected during worse case conditions, i.e., when river flows are less than 900 cfs. Table 2 identifies the impinged fish by common name as well as the respective total lengths. Table 3 provides corresponding scientific names of the fish species commonly found in this section of the Merrimack River. There were no extraordinary impingement events during the 2007 monitoring period.

Should you have any questions regarding this program, please contact Allan Palmer at (603) 634-2439.

Very truly yours,

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

cc: Ms. Sharon M. Zaya
US Environmental Protection Agency
Region 1: New England
Massachusetts Office of Ecosystem Protection
1 Congress Street, Mail Code CIP
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Mr. Eric Nelson
US Environmental Protection Agency
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NH Department of Environmental Services
Water Division.
Wastewater Engineering Bureau
Permits and Compliance Section
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Mr. Joseph F. McKeon
US Fish and Wildlife Service
Central New England Fishery Resources Complex
151 Broad Street
Nashua, NH 03063

New Hampshire Fish and Game Department
11 Hazen Drive
Concord, NH 03301-6500

TABLE 1

Merrimack Station
Fish Impingement Monitoring Program
2007 Schedule & Impingement Rates

48 Hour Sample Dates	Unit(s) Sampled	48 Hour Flow Through the Units	Impingement Rate	Fish Count
07/01 - 07/03	1&2	71,712,000 cu. ft.	0.03/million cu. ft.	2
07/08 - 07/10	1&2	71,712,000 cu. ft.	0.03/million cu. ft.	2
07/28 - 07/30	1&2	71,712,000 cu. ft.	0.03/million cu. ft.	2
07/31 - 08/02	1&2	71,712,000 cu. ft.	0.01/million cu. ft.	1
08/05 - 08/07	1&2	71,712,000 cu. ft.	0	0
08/12 - 08/14	1&2	71,712,000 cu. ft.	0	0
08/20 - 08/22	1&2	71,712,000 cu. ft.	0	0
08/26 - 08/28	1&2	71,712,000 cu. ft.	0.01/million cu. ft.	1
09/02 - 09/04	1&2	71,712,000 cu. ft.	0	0
09/09 - 09/11	1&2	71,712,000 cu. ft.	0	0
09/20 - 09/22	2*	49,939,200 cu. ft.	0.02/million cu. ft.	1
09/24 - 09/26	1&2**	46,222,200 cu. ft.	0.02/million cu. ft.	1
09/30 - 10/02	1**	46,742,400 cu. ft.	0	0
10/07 - 10/09	1&2	71,712,000 cu. ft.	0	0

* Unit 1 was off-line for a planned preventative maintenance outage.

** Unit 2 came off-line on 09/25 for a planned preventative maintenance outage.

The average impingement rate for the fourteen sampling periods was 0.01 fish per million cubic feet of screened water.

TABLE 2

Merrimack Station
Fish Species Collected During Impingement Monitoring
July 1 - October 15, 2007

Sampling Period	Fish Species Collected	Total Length (cm)
07/01 - 07/03	Unidentifiable	5.0
	Unidentifiable	14.0
07/08 - 07/10	Unidentifiable	20.3
	American Eel	81.3
07/28 - 07/30	Redbreasted Sunfish	6.0
	Redbreasted Sunfish	25.0
07/31 - 08/02	Common Shiner	8.0
08/26 - 08/28	Common Shiner	4.0
09/20 - 09/22	Northern Pike	19.0
09/24 – 09/26	Red breasted Sunfish	10.0

TABLE 3

Merrimack Station
Scientific Names of Species
Common in the Merrimack River

Smallmouth Bass	*Micropterus dolomieui*
Largemouth Bass	*Micropterus salmoides*
Bluegill Sunfish	*Lepomis macrochirus*
Pumpkinseed Sunfish	*Lepomis gibbosus*
Redbreasted Sunfish	*Lepomis auritus*
Brown Bullhead	*Ictalurus nebulosus*
White Sucker	*Catastamus commersoni*
Yellow Perch	*Perca flavescens*
Common Shiner	*Notropis cornutus*
Spottail Shiner	*Notropis hudsonius*
Alewife	*Alosa pseudoharengus*
Chain Pickerel	*Esox niger*
Northern Pike	*Esox lucius*
Creek Chub	*Semotilus atromacultas*
Common Carp	*Cyprinus carpio*
American Eel	*Anguilla rostrata*