

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act,
as amended, (33 U.S.C. §§1251 et seq.; the "CWA"),

Public Service Company of New Hampshire
Merrimack Station

is authorized to discharge from a facility located at

Bow, New Hampshire

to receiving waters named

Merrimack River

in accordance with effluent limitations, monitoring requirements and
other conditions set forth herein.

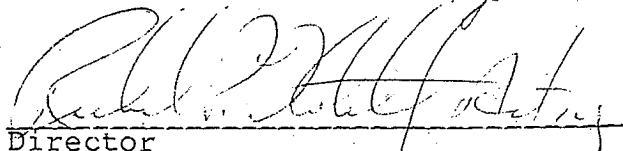
This permit shall become effective 30 days from date of
signature.

This permit and the authorization to discharge expire at midnight,
five years from the date of issuance.

This permit supersedes the permit issued on June 22, 1979.

This permit consists of 14 pages in Part I including effluent
limitations, monitoring requirements, etc., and 19 pages in Part II
including General Conditions and Definitions.

Signed this 30th day of Sep 1985



Director
Water Management Division
Environmental Protection Agency
Boston, MA

REGION I

A. Effluent limitations and Monitoring Requirements

1. Except as specified in Paragraph 1 through 7 herein, the permittee shall not discharge to Merrimack River, a final effluent to which it has added any pollutants.
 - a. The term "Regional Administrator" means the Regional Administrator of Region I of the U.S. Environmental Protection Agency and the term "Executive Director" means the Executive Director of the New Hampshire Water Supply and Pollution Control Commission (NHWSPCC).
 - b. Chlorine may be used as a biocide. No other biocide shall be used without explicit approval from the Regional Administrator and the Executive Director. Total Residual Chlorine may not be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is not permitted.
 - c. The discharges shall not jeopardize any Class B use of the Merrimack River and shall not violate applicable water quality standards. Pollutants which are not limited by this permit, but which have been specifically disclosed in the permit application, may be discharged at the frequency and level disclosed in the application, provided that such discharge does not violate Section 307 or 311 of the Act or applicable water quality standards.
 - d. All live fish, shellfish, and other aquatic organisms collected or trapped on the intake screens shall be returned to their natural habitat. All solid materials removed from the screens shall have land disposal.
 - e. This permit shall be modified, revoked or reissued to comply with any applicable effluent standard or limitation issued or approved under Section 301(b)(2)(C) and (D), 304(b)(2), and 207(a)(2) of the Act, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in this permit;
or
 - (2) controls any pollutant not limited by this permit.
 - f. It has been determined, based on engineering judgement, that the circulating water intake structure presently employs the best technology available for minimizing adverse environmental impact. Any change in the location,

design or capacity of the present structure shall be approved by the Regional Administrator and the Executive Director. The present design shall be reviewed for conformity to regulations pursuant to Section 316(b) of the Act when such are promulgated.

- g. The thermal plume shall not interfere with the natural reproductive cycles, movements, or migratory pathways of the indigenous populations within the water body segment.
- h. The permittee shall direct and control the plume such that it does not interfere with the passage of migratory fish.
- i. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

- j. All existing manufacturing, commercial, mining, and silvi-cultural dischargers must notify the Director as soon as they know or have reason to believe:
1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (a) One hundred micrograms per liter (100 ug/l);
 - (b) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
 - (c) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or
 - (d) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f).
 2. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (a) Five hundred micrograms per liter (500 ug/l);
 - (b) One milligram per liter (1 mg/l) for antimony;
 - (c) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or
 - (d) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f).
 3. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning on the effective date and lasting through the expiration date the permittee is authorized to discharge from outfall serial number 003, circulating cooling water including ash settling pond discharge (003A/003B).

a. Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Avg. Monthly	Max. Daily	Measurement Frequency	Sample Type
Flow (MGD)	300	315	Continuous	N/A
Total Residual Chlorine (mg/l)	-	0.1 *	Weekly, when in use	Grab
Oil and Grease	None Visible	None Visible	Daily	Observation

*INTERIM LIMIT: The permittee shall conduct a study of the persistence of chlorine in the discharge canal. The study shall determine, to the satisfaction of EPA and NHWSPCC, the chlorine level at each unit condenser outlet necessary to assure a Total Residual Chlorine concentration of 0.027 mg/l at the end of the canal prior to discharge into the receiving water. The final Total Residual Chlorine limitation at the condenser outlet will be established based on this study. The permittee shall consult with EPA and NHWSPCC on the proposed test plan prior to its implementation. The results of this study shall be submitted within six months of the effective date of the permit. Until the results of this study are received and reviewed by EPA and NHWSPCC, the permittee shall not exceed a daily maximum concentration of 0.1 mg/l TRC at the condenser outlets.

b. Simultaneous multi-unit chlorination is not allowed. Samples for Total Residual Chlorine measurement shall be taken during the chlorination of circulating water.

- c. The pH shall not be less than 6.5 standard units nor greater than 8.0 standard units, or shall be as naturally occurs in the receiving water. The pH shall be monitored continuously (see paragraph 7.a., page 10 of 14).
- d. There shall be no discharge of floating solids or visible foam in other than trace amounts.
- e. With the exception of monitoring for Total Residual Chlorine, samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: At a representative point prior to discharge of the cooling canal into the receiving water.
Samples taken in compliance with the monitoring requirements specified above for Total Residual Chlorine shall be taken at the following location: At the condenser outlets prior to mixing with any other wastestream.
- f. Temperature - See paragraph 6. "Temperature Monitoring and Power Spray Module (PSM) Operation," page 10 of 14.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning on the effective date and lasting through the expiration date the permittee is authorized to discharge from outfall serial number 003A -- ash settling pond discharge during routine operation.
- a. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>	
	Avg. Monthly	Max. Daily	Measurement Frequency	Sample Type
Flow (MGD)	9.0	19.1	Continuous	N/A
Suspended Solids (mg/l)	30.0	100.0	Monthly*	Grab
Total Copper (mg/l)	0.2	0.2	Monthly*	Grab
Total Iron (mg/l)	1.0	1.0	Monthly*	Grab
Oil and Grease	None Visible	None Visible	Daily	Observation

* The measurement frequency during Chemical Cleaning Waste Discharges will be daily, using composite sampling technique (see page 7a).

- b. The pH shall be monitored continuously during routine operations.
- c. There shall be no discharge of floating solids or visible foam in other than trace amounts.
- d. Chemical cleaning operations shall occur no more than 30 days during each year. The permittee shall notify the Regional Administrator and the Executive Director at least 72 hours in advance of such operations and furnish an estimate of the length of time over which the operation shall occur.
- e. All routine analyses for each month will be grouped and reported on a single discharge monitoring report form. The analytical results for each separate chemical cleaning waste discharge shall be reported on a separate discharge monitoring report form.
- f. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Point of discharge prior to dilution with the circulating cooling water (at the weir).

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning on the effective date and lasting through the expiration date the permittee is authorized to discharge from outfall serial number 003B -- ash settling pond discharge during chemical cleaning.
- a. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>	
	Avg. Monthly	Max. Daily	Measurement Frequency	Sample Type
Flow (MGD)	-	19.1	Continuous	N/A
Suspended Solids (mg/l)	30.0	100.0	Daily	Composite
Total Copper (mg/l)	0.2	0.2	Daily	Composite
Total Iron (mg/l)	1.0	1.0	Daily	Composite
Oil and Grease	None Visible	None Visible	Daily	Observation

- b. The pH shall be monitored continuously during chemical cleaning.
- c. There shall be no discharge of floating solids or visible foam in other than trace amounts.
- d. Chemical cleaning operations shall occur no more than 30 days during each year. The permittee shall notify the Regional Administrator and the Executive Director at least 72 hours in advance of such operations and furnish an estimate of the length of time over which the operation shall occur.
- e. All routine analyses for each month will be grouped and reported on a single discharge monitoring report form. The analytical results for each chemical cleaning waste discharge shall be reported on a separate discharge monitoring report form.
- f. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Point of discharge prior to dilution with the circulating cooling water (at the weir).

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

4. During the period beginning on the effective date and lasting through the expiration date the permittee is authorized to discharge from outfall serial number 004 - east coal pile runoff.

a. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>	
	Avg. Monthly	Max. Daily	Measurement Frequency	Sample Type
Flow (MGD)	-	-	Daily, when in use	Estimate
Total Suspended Solids (mg/l)	-	50.0	Daily, when in use	Grab
Oil and Grease	None Visible	None Visible	Daily, when in use	Observation

- b. The discharge shall not cause visible discoloration of the receiving water.
- c. The pH shall not be less than 6.5 standard units nor greater than 8.0 standard units, or as naturally occurs in the receiving water and shall be monitored daily, when in use, by a grab sample.
- d. There shall be no discharge of floating solids or visible foam in other than trace amounts.
- e. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: at a representative point prior to discharge into the receiving water.

5. Biological Monitoring

a. Impingement Monitoring, Juvenile Anadromous Fish

(1) Clupeid Juveniles:

Juvenile Clupeid impingement monitoring at the Merrimack Generating Station shall be performed each year during the period from September 15 to October 31. All clupeid fish will be collected from all travelling screen washes performed during one continuous 48 hour period per week. Impingement monitoring will alternate weekly between Units I and II. A monitoring program report shall be submitted to the NHWSPCC and the Regional Administrator on an annual basis.

(2) Atlantic Salmon Smolts:

Emigrating Atlantic Salmon smolt impingement monitoring at the Merrimack Generating Station shall be performed each year during the period from April 15 to June 15. All Atlantic Salmon smolts will be collected from all travelling screen washes performed during one continuous 48 hour period per week. Impingement monitoring will alternate weekly between Units I and II. A monitoring program report shall be submitted to the NHWSPCC and the Regional Administrator on an annual basis.

b. Pump Entrainment Monitoring, American Shad Ichthyoplankton.

American Shad ichthyoplankton pump entrainment monitoring at the Merrimack Generating Station shall be reactivated for the period June 15 to July 15 when significant numbers of American Shad have been restored to the Hooksett Pond reach of the Merrimack River. Ichthyoplankton pump entrainment monitoring will be conducted at Unit I for 24 continuous hours, twice per week. Continuation of this program beyond the first year of reactivation will be the subject of negotiation between the NHWSPCC and Regional Administrator, and the permittee, after review of the monitoring program results.

The NHWSPCC, with the aid of its technical staff and on advice of the Fish and Game Department, shall determine when the reactivation of this program is required and will provide the permittee with ample advance notice of the necessity for the program's reactivation. A monitoring program report will be submitted to the NHWSPCC and the Regional Administrator on an annual basis.

c. Revisions of the Biomonitoring Program

The permittee may submit proposed revisions of the existing biological monitoring program to the Regional Administrator and the NHWSPCC for their approval, as new information becomes available. Upon approval, the revised biological monitoring program shall be incorporated as part of this permit.

6. Temperature Monitoring and Power Spray Module (PSM) Operation

a. Continuous River Surface Temperature Monitoring

Continuous river surface temperature monitoring in the vicinity of the Merrimack Generating Station shall be conducted on the following basis. Open-river surface-water temperatures will be continuously monitored at control Station N-10, effluent discharge station Zero, and mixing zone Station S-4 (Figure 1). The discharge Station Zero temperature monitoring probe will remain in place and in operation year round. Stations N-10 and S-4 temperature monitoring probes will be removed from the river and from operation in the fall when ambient river water temperatures have dropped below 40°F (4.4°C) and replaced when ambient river water temperatures have risen to above 40°F in the spring. Ambient river water temperatures for removal and installation of the probes are defined as measured at Station N-10 for the fall probe removal, and at the Merrimack Station Unit II condenser inlet water box Station N-5 for the spring probe replacement.

Monitoring program data shall be submitted to the NHWSPCC and the Regional Administrator on an annual basis.

b. Power Spray Module (PSM) Operation.

The Power Spray Module system shall be operated, as necessary, to maintain either a mixing zone station S-4 river temperature not in excess of 69°F, or a station N-10 to S-4 ΔT of not in excess of 1°F when the N-10 ambient river temperature exceeds 68°F. All available PSM's shall be operated when the S-4 river temperature exceeds both of the above criteria.

7. Dissolved Oxygen and pH Monitoring.

- a. The permittee shall continuously monitor the pH of both an ambient river control station and the circulating water discharge. The circulating water discharge shall be monitored at the point of cooling canal discharge into the Merrimack River (at the footbridge in the vicinity of Station Zero-west). The ambient river control station will be at a Merrimack Station inlet structure (Station N-5).
- b. The permittee shall continuously monitor the dissolved oxygen content of both an ambient river control station and the circulating water discharge. Dissolved oxygen monitoring will be suspended in the fall when ambient river water temperatures have dropped below 40°F (4.4°C), and reinstated when ambient river water temperatures have risen to above 40°F in the spring (reference the temperature monitoring

requirements of Section 6.a., above). The circulating water discharge shall be monitored at the point of cooling canal discharge into the Merrimack River (at the footbridge in the vicinity of Station Zero-west). The ambient river control station will be at a Merrimack Station inlet structure (Station N-5).

- c. Monitoring program data shall be submitted to the NHWSPCC and the Regional Administrator on an annual basis.

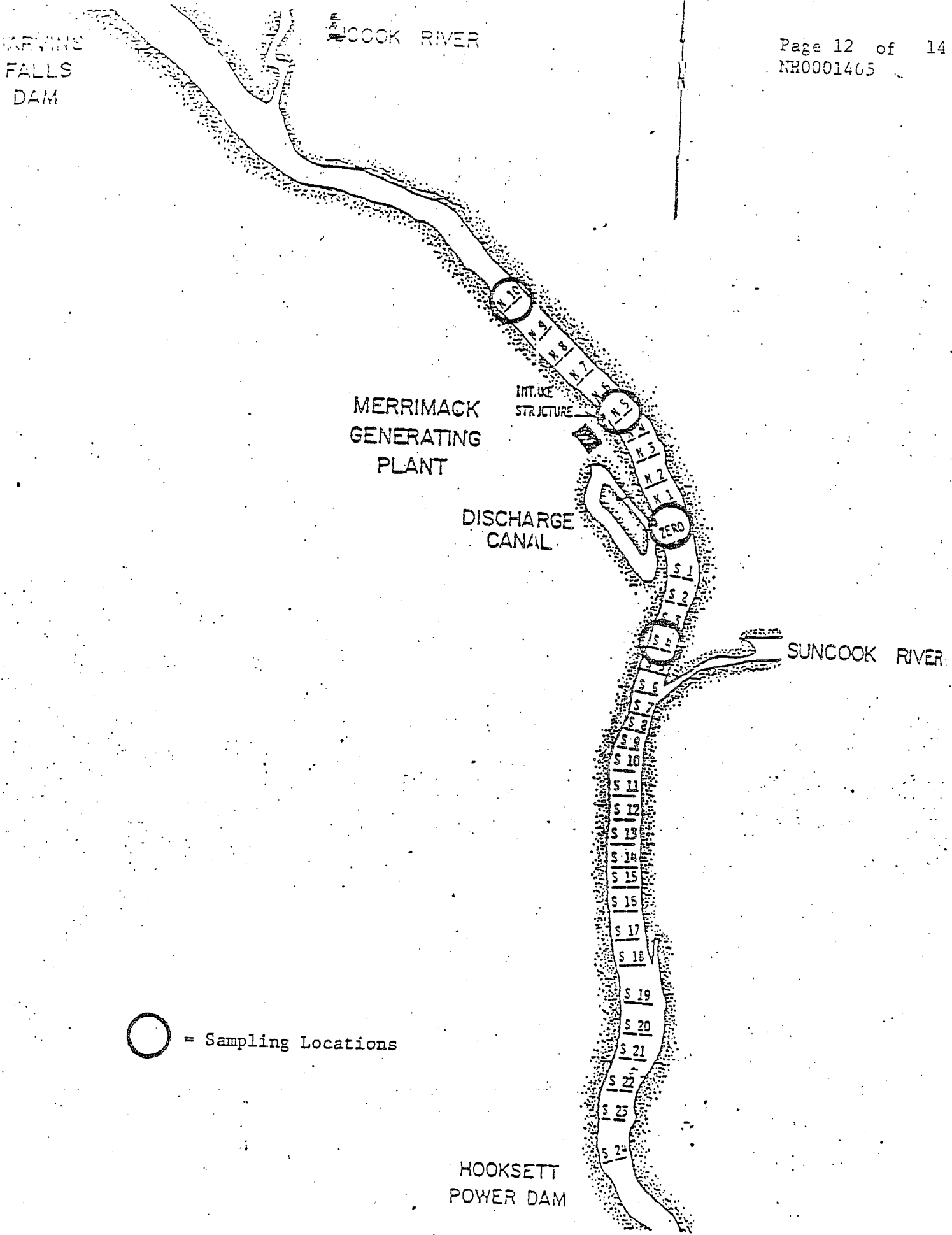


Figure 1. Location of sampling stations. Hooksett Pond, Merrimack River, NH.

B. MONITORING AND REPORTING

1. Reporting

Monitoring results shall be summarized for each month and reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the completed reporting period.

Duplicate signed copies of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

Permit Compliance Section, WCC 2103
Compliance Branch
Water Management Division
Environmental Protection Agency
JFK Federal Building
Boston, MA 02203

The state agency is:

New Hampshire Water Supply and
Pollution Control Commission
Hazen Drive, P.O. Box 95
Concord, New Hampshire 03301

C. STATE PERMIT CONDITIONS

1. The permittee shall comply with the following conditions which are included as State Certification requirements.
 - a. The permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of any waste into the said receiving waters except that has been treated in such a manner as will not lower the Class B quality or interfere with the uses assigned to said waters by the New Hampshire Legislature (Chapter 311, Laws of 1967).
 - b. The discharge from the facility shall not cause the turbidity of the receiving water to exceed 10 standard turbidity units (State Law NH, RSA 149:3).



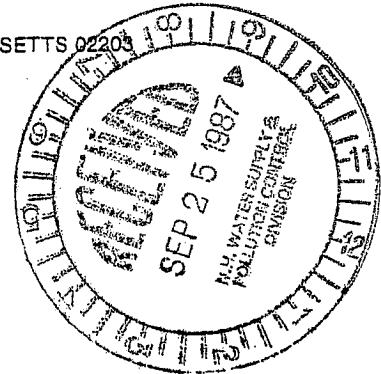
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

September 23, 1987

Mr. Warren Harvey, Vice President
Public Service Co. of New Hampshire (PSNH)
1000 Elm Street, P.O. Box 330
Manchester, NH 03105



Re: Request for suspension of the juvenile anadromous fish impingement monitoring requirement at PSNH Merrimack Station at Bow, NH (NPDES Permit NO. NH0001465).

Dear Mr. Harvey:

This letter is in response to your company's request for suspension of the biological monitoring program at Merrimack Station, in accordance with paragraph I.A.5.c. of NPDES permit No. NH0001465. EPA has reviewed the fish impingement data for 1985 and 1986, and has received comments on your request from the New Hampshire Department of Environmental Services (NHDES), the New Hampshire Fish and Game Department (NHFGD), and the United States Fish and Wildlife Service, (USFWS).


The biomonitoring data submitted indicate that during normal flow conditions, there is minimal impingement of juvenile clupeid and salmonid fish at the facility. Therefore, EPA, upon the recommendation of USFWS, NHFGD and NHDES, hereby authorizes the suspension of impingement monitoring at Merrimack Station in Bow, NH, in accordance with paragraph I.A.5.c. of NPDES Permit No. NH0001465, with the following provisions:

- 1.) PSNH incorporate impingement monitoring at the Merrimack Station when flows from the Garvins Falls Station drop below 900 cfs during any period from July through October.
- 2.) PSNH report in writing to the New Hampshire Fish and Game Department, U.S. Fish and Wildlife Service, New Hampshire Department of Environmental Services, and the U.S. Environmental Protection Agency any extraordinary impingement events at Merrimack Station. An extraordinary impingement event is defined as an event 50 or more fish at any one time, of any size or species, are either distressed or killed as a result of impingement.

3.) The U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the New Hampshire Department of Environmental Services, and the New Hampshire Fish and Game Department retain the right to require the resumption of impingement monitoring at any time during the life of NPDES Permit No. NH0001465.

If you have any questions, please contact Michael Marsh, an Environmental Engineer on my staff.

Sincerely yours,


David A. Fierra, Director
Water Management Division

Enc.

cc: Wayne E. Nelson
Senior Biologist, PSNH

Daniel Kuzmeskus
Senior Biologist, PSNH

Lynn Woodard, NHDES

Russell Nylander, NHDES

William Ingham, NHF&GD

Gordon E. Beckett, USFWS

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The NHWSPCC, with the aid of its technical staff and on advice of the Fish and Game Department, shall determine when the reactivation of this program is required and will provide the permittee with ample advance notice of the necessity for the program's reactivation. A monitoring program report will be submitted to the NHWSPCC and the Regional Administrator on an annual basis.

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