

**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. Sections 1251 et seq.; the "CWA"),

**North Atlantic Energy Service Corporation  
P.O. Box 300  
Seabrook, NH 03874**

is authorized to discharge from a facility located at

**North Atlantic Energy Service Corporation  
Seabrook Station  
Route 1  
Seabrook, NH**

to receiving water named

**Atlantic Ocean**

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

This permit shall become effective on April 1, 2002.

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

This permit supersedes the permit issued on September 30, 1993.

This permit consists of 30 pages in Part I including effluent limitations, monitoring requirements, etc., 19 pages in Part II including General Conditions and Definitions, 5 pages in Attachment A, 1 page in Attachment B, 11 pages in Attachment C, and 18 pages in Attachment D. [Note: Attachments on file and not posted electronically].

Signed this 12<sup>th</sup> day of February, 2002

/Signature on File/

Linda M. Murphy,  
Director, Office of Ecosystem Protection  
U.S. Environmental Protection Agency

Region I

## **PART I**

### **A. Effluent Limitations and Monitoring Requirements**

1. This permit shall be modified, revoked or reissued to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b) (2), and 307(a) (2) of the CWA, if the effluent standard or limitation so issued or approved:
  - a. contains different conditions or is otherwise more stringent than any effluent limitation in this permit; or
  - b. controls any pollutant not limited by this permit.

If the permit is modified or reissued, it shall be revised to reflect all currently applicable requirements of the CWA.

2. The design, construction and capacity of all components of the cooling water system seaward of the inlets to the main condensers or other heat exchangers (“Cooling Water System”) of Seabrook Station shall comply with the following:
  - a. The permittee shall use and maintain an anti-fouling protective coating on all appropriate components of the intake structures. The permittee shall perform manual cleaning of the intake structures twice per year.
  - b. The velocity of water as it enters the intake structures shall at no time exceed 1.0 foot per second.
  - c. The intake structures shall incorporate such behavioral or other deterrents or barriers as the Regional Administrator determines to be appropriate. This determination will be made under Section 316(b) of the Clean Water Act after reviewing the results of any studies or other information provided by the permittee.
  - d. The Regional Administrator has determined that the Cooling Water Intake System, as presently designed, employs the best technology available for minimizing adverse environmental impact. Therefore, no change in the location, design or capacity of the present system can be made without prior approval of the Regional Administrator and the Director. The present design shall be reviewed for conformity to regulations pursuant to Section 316(b) when such are promulgated.

3. Should the intake tunnel and/or discharge tunnel require dewatering during an emergency condition, the permittee shall submit to the Regional Administrator and the Director an Emergency Dewatering Plan for their approvals as required in Paragraphs II.B.4 and II.B.5 of this permit which define "Bypass" and "Upset" operating conditions.
4. All material shall be removed from the traveling screens and disposed of in accordance with all existing Federal, State, and/or Local laws and regulations that apply to waste disposal. Such material shall not be returned to the receiving waters.
5. Chlorine and/or EVAC™ may be used as a biocide. No other biocide shall be used without explicit approval from the Regional Administrator and the Director.
6. The permittee shall submit an annual Chlorine Minimization Report to the Regional Administrator and the Director. The objective of this chlorination report is to document the amount of chlorine used to maintain suitable biofouling control of the intake cooling water system and thereby maintaining a high condenser efficiency. The Chlorine Minimization Report should include, at a minimum:
  - a. The seasonal chlorination cycle employed during the reporting period: the months the system was chlorinated, the sodium hypochlorite dosage level, the TRO reported in the Discharge Monitoring Reports, an evaluation of the chlorine demand of the marine water, and the results of any inspections of the intake structures by divers or robots.
  - b. The permittee shall report on the likelihood that the thermal backflushing operation will be needed to compliment the continuous chlorination program in the ensuing year (frequency and reason for the backflushing).

The data developed for this report shall be incorporated into the statistical hydrological and biological data base for future operational data comparison.

7. The discharge shall not jeopardize any Class B use of the nearshore Atlantic Ocean and shall not violate State Water Quality Standards of the receiving water.
8. 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 receiving waters except waste 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).

9. There shall be no discharge of polychlorinated biphenyl compounds such as commonly used for transformer fluid.
10. The discharge of radioactive materials shall be in accordance with the Nuclear Regulatory Commission requirements (10 CFR 20 and the Seabrook Station Operating License, Appendix A, Technical Specifications).

**PART I****A. Effluent Limitations, Conditions, and Monitoring Requirements (Continued)**

11. During the period beginning the Effective Date and lasting through the Expiration Date, the permittee is authorized to discharge from outfall serial number **001**, Circulating Water System Discharge.

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

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>	
	<u>Avg. Monthly</u>	<u>Max. Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow, MGD	720	720	Continuous <sup>1</sup>	Estimate
Temperature Rise, (Delta-T), °F <sup>2</sup>	39	41	Continuous <sup>2</sup>	Recorder
Temperature Rise, (Delta-T), °F <sup>2,3</sup>	45	47	Continuous <sup>2</sup>	Recorder
Temperature (Maximum), °F	Report	Report	Continuous	Recorder
Total Residual Oxidants (TRO), mg/l	0.15	0.20	1/day <sup>4</sup>	Grab
pH, s.u. <sup>5</sup>	6.5 to	8.0	1/week	Grab
Whole Effluent Toxicity <sup>6</sup>	Report	Report	1/Quarter	24-Hour
		Composite		
EVAC, mg/l	-----	3.0 <sup>7</sup>	When in Use	Grab
EVAC, mg/l	-----	4.3 <sup>8</sup>	When in Use	Calculation

<sup>1</sup>The flow rate may be estimated from pump capacity curves.

<sup>2</sup>Temperature Rise is the difference between the discharge temperature (Discharge Transition Structure) and intake temperature (Intake Transition Structure). The intake and discharge temperatures will be recorded by instruments or computers. The Temperature Rise and Maximum Temperature shall be calculated as a hourly average based upon at least twelve readings per hour (12 times per hour). These hourly average values will then be reported in the monthly DMRs.

<sup>3</sup>These average monthly and maximum daily temperature values are allowed up to a maximum of 15 days per year and only when one circulating water pump has been taken out-of-service for corrective or preventative maintenance. The Delta-T limits of 39 °F and 41 °F (average monthly and maximum daily, respectively) shall remain in effect at all other times of the year.

<sup>4</sup>Samples to be taken once per day at approximately the same time period. See Subparagraph "b" below for additional TRO requirements.

<sup>5</sup>See Part I.D.1 of this permit for State pH requirements.

<sup>6</sup>See Part I.A.22 of this permit for WET testing requirements.

<sup>7</sup>See Part I.A.11.f of this permit for EVAC use requirements.

<sup>8</sup>This limit may apply after the permittee has demonstrated that 4.3 ppm at the DTS is equivalent to 3.0 ppm or lower EVAC concentration at the Diffuser Nozzles. See Part I.A.11.f of this permit.

- b. Total Residual Oxidants shall be tested using the Amperometric Titration Method, Method 4500-CL D in Standard Methods for the Examination of Water and Wastewater, 18th or subsequent edition(s), as approved in 40 CFR Part 136, or Method 330.1 in the EPA Manual of Methods of Analysis of Water and Wastes.
- c. Samples taken for compliance with the monitoring requirements as specified in I.A.11.a above shall be taken at the Discharge Transition Structure, except for the intake water temperature, prior to the cooling water entering the discharge tunnel. See Part I.A.11.f of this permit for EVAC sampling requirements.
- d. The discharge plume from the Seabrook Station shall:
  - (1) not block zones of fish passage,
  - (2) not interfere with spawning of indigenous populations,
  - (3) not change the balanced indigenous population of the receiving water,
  - (4) not contact surrounding shorelines, and,

- (5) not violate Section 1707 of the State of New Hampshire Surface Water Quality Regulations.
- e. The thermal component of the discharge shall in all aspects be in accordance with the discharge described in the permittee's NPDES Permit Application No. NH0020338, dated August 1, 1974, as modified in the reapplication dated April 1998, except as specifically modified below.
- (1) The thermal component of the discharge from the Seabrook Station shall not cause a monthly mean temperature rise of more than 5 °F in the "near-field jet mixing region." The 5 °F monthly limit shall apply only at the surface of the receiving waters. For the purposes of this paragraph the "near-field jet mixing region" means that portion of the receiving waters within 300 feet of the submerged diffuser in the direction of discharge.

Permit compliance with this requirement shall be demonstrated by comparing the temperature difference between sampling point DS, (inside the mixing region) and sampling point T7 (reference sampling station). The locations of sampling points DS and T7 are shown in Attachment B. No change in the location of the sampling point is allowed without prior approval from the Regional Administrator and the Director. Temperature measurements shall be taken and recorded every fifteen minutes. The daily temperature shall be the arithmetic average of these measurements. The monthly mean temperature shall be determined by the arithmetic average of the daily temperature. Delta T shall be determined by taking the difference of the monthly mean temperature between DS and T7.

This paragraph shall apply only to temperature rises caused by the addition of heat to the receiving waters by the permittee. This temperature requirement does not apply during the cooling water flow reversal (thermal backflushing) used for biological control. This monthly temperature limit constitutes the need for a CWA 316(a) thermal variance. See Attachment A.

- (2) During operation of Seabrook Station, the permittee shall conduct additional thermal plume prediction studies as determined by the Regional Administrator and/or the Director. Such studies will be for the purpose of evaluating the accuracy of the thermal plume predictions the permittee has submitted to EPA in support of the

NPDES Permit Application No. NH0020338. Any such studies may apply to both the normal operation and thermal back-flushing operation at Seabrook Station.

- (3) During operation of Seabrook Station, the permittee shall conduct biological/environmental studies as determined by the Regional Administrator and/or the Director. The purpose of any such studies shall be to evaluate the effects of Seabrook Station's discharge on the balanced, indigenous population of shellfish, fish and wildlife in and on the Atlantic Ocean.
  - (4) This NPDES permit may be modified to contain additional or different thermal limitations if the above studies and/or other available information indicates such modifications are necessary to assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the receiving waters.
  - (5) The effluent limitations of this permit shall apply to all thermal components of the discharge from the Seabrook Station including, but not limited to, discharge during normal station operation and discharge during cooling water flow reversal for bio-fouling control.
  - (6) The permittee is allowed to discontinue temperature monitoring, for a period of up to 48 hours, during non-power operations and when the nuclear reactor is shutdown. The permittee may perform maintenance on the temperature monitoring equipment and/or other equipment sharing common power supplies during these non-monitoring periods.
- f. The molluscicide EVAC may be applied twice per year, in late spring and late summer. Each application shall occur over a period not to exceed 48 hours. The discharge concentration shall not exceed 3.0 mg/l, at the Diffuser Nozzles. The discharge concentration shall be determined by grab sample at the Diffuser Nozzles after the concentration has reached a steady state condition throughout the plant. This steady state application concentration is expected to be approximately 4.3 ppm. Seabrook shall also sample and analyze for EVAC at the Discharge Transition Structure concurrently with the grab sample at the Diffuser Nozzles.

At least 3 months prior to the first application, the permittee shall submit the result of hydrological modeling which demonstrates the dissipation of EVAC. This model shall show the expected dissipation of EVAC concentration, until its concentration is undetectable (include EVAC half-life). Results of the modeling shall be submitted to the Regional Administrator and the Director.

At least 30 days prior to each planned use of EVAC, the permittee shall notify the EPA and the NH DES. Such notification shall include the dates over which the application is expected to occur, the amount (in pounds) of the molluscicide to be used, and the calculated discharge concentration. After the initial dosing with EVAC, the permittee shall also include, in the notification, an estimate of the effectiveness of EVAC.

The permittee may request that compliance be determined at the DTS, by calculation, after demonstration that a calculated 4.3 ppm DTS EVAC concentration results in a 3.0 ppm or lower discharge EVAC concentration at the Diffuser Nozzles. At least 4 consecutive EVAC applications and sampling events must occur prior to the permittee requesting such a change in compliance sampling point.

**PART I**

**A. Effluent Limitations, Conditions, and Monitoring Requirements (Continued)**

12. During the period beginning on the Effective Date and lasting through the Expiration Date, the permittee is authorized to discharge from outfall serial numbers: **022**, **023**, and **024**. These outfalls are Secondary Plant Leakage and Drainage, Vault #1; Secondary Plant Leakage and Drainage, Vault #2; and Plant System Leakage and Drainage, Vault #3; respectively.

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>	
	<u>Avg. Monthly</u>	<u>Max Daily</u>	Measurement <u>Frequency</u>	Sample <u>Type</u>
Flow, gpd	Report	122,400	Monthly	Estimate
Oil and Grease, mg/l	15	20	Weekly	Grab
Total Suspended Solids(TSS), mg/l	30	100	Weekly	Grab

b. The samples taken in compliance with the monitoring requirements specified above shall be taken at a representative point prior to mixing with any other waste stream.

**PART I**

**A. Effluent Limitations, Conditions, and Monitoring Requirements (Continued)**

13. During the period beginning on the Effective Date and lasting through the Expiration Date, the permittee is authorized to discharge from outfall serial number **025A**, Steam Generator Blowdown.
- 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>	
	<u>Avg. Monthly</u>	<u>Max. Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow, gpd	Report	425,000	Continuous <sup>1</sup>	Estimate
Oil and Grease, mg/l	15	20	1/Quarter <sup>1</sup>	Grab
Total Suspended Solids, mg/l	30	100	1/Week <sup>1</sup>	Grab

<sup>1</sup>This discharge is considered continuous, although the frequency and duration may vary depending on plant operation. Therefore the frequency of measurement for flow is continuous when in use. The measurement frequency for TSS is once per discharge, and weekly if the discharge continues for more than seven days. The discharge may be interrupted and restarted but will still be considered continuous, as long as the discharge is reinitiated within four hours of interruption.

- b. Samples taken in compliance with the monitoring requirements specified above shall be taken at a representative point prior to mixing with any other waste stream.

**PART I**

**A. Effluent Limitations, Conditions, and Monitoring Requirements (Continued)**

14. During the period beginning on the Effective Date and lasting through the Expiration Date, the permittee is authorized to discharge from outfall serial number **025B**, Steam Generator Blowdown Demineralizer Rinse.

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>		
	<u>Avg. Monthly</u>	<u>Max. Daily</u>	Measurement	Sample Frequency	Type
Flow, gpd	Report	210,000		Continuous <sup>1</sup> Estimate	
Oil and Grease, mg/l	15	20		1/Quarter <sup>1</sup> Grab	
Total Suspended Solids, mg/l	30	100		1/Week <sup>1</sup>	Grab

<sup>1</sup>This discharge is considered continuous, although the frequency and duration may vary depending on plant operation. Therefore the frequency of measurement for flow is continuous when in use. The measurement frequency for TSS is once per discharge, and weekly if the discharge continues for more than seven days. The discharge may be interrupted and restarted but will still be considered continuous, as long as the discharge is reinitiated within four hours of interruption.

b. Samples taken in compliance with the monitoring requirements specified above shall be taken at a representative point prior to mixing with any other waste stream.

## PART I

### A. Effluent Limitations, Conditions, and Monitoring Requirements (Continued)

15. During the period beginning on the Effective Date and lasting through the Expiration Date, the permittee is authorized to discharge from outfall serial number **025C**, Waste Holdup Sump.

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>	
	<u>Avg. Monthly</u>	<u>Max. Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow, gpd	Report	60,000	1/Batch	Estimate
Oil and Grease, mg/l	15	20	1/Batch	Grab
Total Suspended Solids, mg/l	30	100	1/Batch	Grab

b. Samples taken in compliance with the monitoring requirements specified above shall be taken at a representative point prior to mixing with any other stream.

**PART I**

**A. Effluent Limitations, Conditions, and Monitoring Requirements (Continued)**

16. During the period beginning on the Effective Date and lasting through the Expiration Date, the permittee is authorized to discharge from outfall number serial **025D**, Waste Test or Recovery Test Tanks.

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>	
	<u>Avg. Monthly</u>	<u>Max. Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow, gpd	Report	100,000	1/Batch	Estimate
Oil and Grease, mg/l	15	20	1/Batch	Grab
Total Suspended Solids, mg/l	30	100	1/Batch	Grab

b. Samples taken in compliance with the monitoring requirements specified above shall be taken at a representative point prior to mixing with any other waste stream.

**PART I**

**A. Effluent Limitations, Conditions, and Monitoring Requirements (Continued)**

17. During the period beginning on the Effective Date and lasting through the Expiration Date, the permittee is authorized to discharge from outfall serial number **026**, Metal Cleaning Wastes from stationary or portable treatment equipment.

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>	
	<u>Avg. Monthly</u>	<u>Max. Daily</u>	<u>Measurement Frequency</u> <sup>1</sup>	<u>Sample Type</u>
Flow, gpd	Report	450,000	1/Batch	Estimate
Oil and Grease, mg/l	15	20	1/Batch	Grab
Copper, mg/l	1.0	1.0	1/Batch	Grab
Iron, mg/l	1.0	1.0	1/Batch	Grab
Total Suspended Solids, mg/l	30	100	1/Batch	Grab
pH, s.u.	6.0 to 9.0		1/Batch	Grab

<sup>1</sup>Sample frequency is once per batch prior to release when treated chemical cleaning waste is being discharged from either stationary or portable holding tanks.

- b. A minimum of one Circulating Water System pump shall be in operation when the Treated Chemical Cleaning Wastes are discharged.
- c. The samples taken in compliance with the monitoring requirements specified above shall be taken at a representative point from stationary or portable holding tanks and prior to mixing with any other stream. The ultimate discharge shall be through the Circulating Water System, Outfall 001.
- d. The permittee shall notify the Regional Administrator and the Director in writing, at least 72 hours prior to the discharge from any chemical cleaning operations and provide an estimate of the duration of the operation, the chemicals to be used, and the point or location of wastewater release into the discharge tunnel.

**PART I**

**A. Effluent Limitations, Conditions, and Monitoring Requirements (Continued)**

18. During the period beginning on the Effective Date and lasting through the Expiration Date, the permittee is authorized to discharge from outfall serial number **027**, Cooling Tower Blowdown.

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>		
	<u>Daily Max.</u>	<u>Avg. Concentration</u>	<u>Max. Concentration</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow, gpd	-----	Report	Report	Daily <sup>1</sup> Estimate	
Total Residual Oxidants	-----	-----	0.5 <sup>2</sup> mg/l	Daily <sup>1</sup>	Grab
Total Residual Oxidants	2.6 <sup>3</sup> pounds	Report	-----	Daily <sup>1</sup> Calculation <sup>3</sup>	
pH, s.u.		6.0 to 9.0		Daily <sup>1</sup>	Grab

<sup>1</sup>Sample frequency is once daily when the Cooling Tower has a discharge.

<sup>2</sup> This limit is an instantaneous maximum concentration, mg/l.

<sup>3</sup> This is calculated over a single period of chlorine release, not to exceed two hours per day. The following equation shall be used: Mass TRO (pounds/event) = [Flow of outfall 027 (gallons per minute)] x [average TRO concentration (mg/l)] x [3.78 liters/gallon] x [120 minutes/event] ÷ [454,000 mg/pound].

b. None of the 126 priority pollutants shall be used for cooling tower maintenance chemicals.

c. The samples taken in compliance with the monitoring requirements specified above shall be taken at a representative point prior to mixing with any other stream.

d. See Section I.A.11.b for Total Residual Oxidants analytical requirements.

**PART I**

**A. Effluent Limitations, Conditions, and Monitoring Requirements (Continued)**

19. 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**, Thermal Back-flushing Operation.<sup>1</sup>

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>	
	<u>Avg. Monthly</u>	<u>Max. Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow, gpm	Report	500,000	When in use	Estimate <sup>2</sup>
Temperature, Maximum (T <sub>MAX</sub> )°F	Report	120	Continuous when in use	Recording Max. Temp.

<sup>1</sup>During the back-flushing operation, the diffuser serves as the intake and the intake structure is the discharge point.  
<sup>2</sup>Flow rate may be estimated from pump curves.

- b. The permittee shall perform back-flushing (cooling water flow reversal for bio-fouling control) only during times when hydrological and meteorological conditions are such that the plume flows off-shore and/or temperature increases are minimized at the Outer Sunk Rocks.
- c. The multiport diffuser shall be maintained free of marine fouling organisms. The permittee has coated the external surfaces of the diffuser with a material approved by the Regional Administrator and the Director. The permittee may propose alternate chemicals or methods for minimizing biological growth on the diffuser nozzles to the Regional Administrator and the Director for approval.

- d. 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, Par. I.D.1.a (Sampling not required.)
- e. There shall be no visible discharge of oil sheen, foam, or floating solids in the vicinity of the discharge (the intake structures). Naturally occurring sea foam in the intake transition structure is allowed.
- f. The continuous back-flushing flow shall not exceed 120 °F maximum and the duration at the maximum temperature shall not exceed 2 hours. The total back-flushing cycle shall not exceed 6 hours.
- g. The permittee shall not conduct more than 4 back-flushing cycles per calendar year unless prior approval is obtained from the Regional Administrator and the Director.
- h. There shall be no chlorination operations during the thermal backflushing process except for safety related functions, i.e.: Service Water System Chlorination.
- i. The permittee shall notify the Regional Administrator and the Director, in writing, 15 days before each back-flushing operation is initiated.
- j. The permittee shall include the date, maximum temperature, and duration in the monthly submittal of the Discharge Monitoring Report each time Discharge 003 is used.
- k. Should the permittee propose to use thermal backflushing, then the December 16, 1994, thermal backflushing report entitled “Alternatives to Thermal Backflushing”, shall be expanded to include the environmental impact and technical feasibility of each alternative, including EVAC. The report shall describe seasonal impacts on fish migration and spawning, endangered species, initial dilution, and plume dispersion. This report shall define the hydrological and meteorological conditions that would minimize the thermal impact on the biologically rich Sunk Rocks. Data shall be collected for a period of at least one year prior to submittal to EPA.

The updated study shall be submitted to the EPA and the NH DES at least 6 months before thermal backflushing is used.

20. The chemicals listed in Attachment C are approved, with limits, for water discharge. The permittee may propose to conduct feasibility studies involving new chemicals not currently approved for water discharge. The permittee shall gain approval from the Regional Administrator and the Director before any such studies take place. A report summarizing the results of any such studies shall be submitted to the Regional Administrator and the Director regarding discharge frequency, concentration, and the impact, if any, on the indigenous populations of the receiving water. The Regional Administrator or the Director may require Whole Effluent Toxicity testing as part of feasibility studies.

The permittee may substitute or add laboratory chemicals that are discharged in de minimis amounts without conducting feasibility studies. The permittee shall submit, to the Regional Administrator and the Director, relevant information on the proposed addition/substitution regarding toxicity, frequency of discharge, concentration, and anticipated impacts. This submittal shall include a certification that the proposed chemical(s) is not carcinogenic, mutagenic, teratogenic or will bioaccumulate..

Prior approval from the Regional Administrator and the Director is not necessary before any such addition/substitution of laboratory chemicals takes place. The permittee will continue to employ its Best Management Practice procedures entitled "Disposal of Laboratory Chemicals and Reagents" for laboratory chemicals. The permittee may not use any laboratory chemicals that are carcinogenic, mutagenic, teratogenic or that will bioaccumulate.

No increase in chemical discharge concentrations, chemical substitution, or the use of additional chemicals is allowed without written approval by the Regional Administrator and the Director or their designees. Laboratory chemical use is excluded from this requirement.

No use of chemicals that bioaccumulate is allowed.

21. There shall be no visible discharge of oil sheen, foam, or floating solids in the vicinity of the diffuser ports. Naturally occurring sea foam in the discharge transition structure is allowed. Except in cases of condenser leak seeking and sealing, use of a reasonable amount of biodegradable and non-toxic material may be used to the extent necessary to locate and/or seal any condenser leak. The permittee shall report in the appropriate monthly DMR the occasions wherein this material was used giving the date(s) of the incident, the type of materials used and the amount of materials discharged.
22. The permittee is required to report the results of chronic (and modified acute) WET tests using Inland Silverside (Menidia beryllina), acute WET tests using Mysid Shrimp (Mysidopsis bahia) and chronic Sea Urchin (Arbacia punctulata) WET tests on a quarterly basis. A 24-Hour composite sample is the required "sample type" for WET testing. If after eight consecutive sampling periods (two

years), no toxicity is found, the permittee may request a reduction in toxicity testing to twice per year. The permittee shall use the procedures and protocols contained in Attachment D to this permit when conducting the WET testing.

The toxicity tests shall be performed at times when various chemicals and waste tanks are discharged at the facility. The permittee shall document and submit to EPA the various scenarios under which the toxicity test has been performed. The permittee shall conduct quarterly toxicity testing as outlined below:

Administrative controls shall be in-place to control these discharges according to the following restrictions:

- (a) NPDES Permit Outfalls 025 (A, B, C & D) will not be discharged during EVAC, molluscicide applications (expected frequency to be twice per year with a duration of up to about two days).
- (b) When Outfall 025B (Steam Generator Blowdown rinses) is being discharged, none of the other Outfall 025 can be discharged.

**Quarter #1 WET Testing (January - March)**

<b>Day 1</b>	<b>Day 3</b>	<b>Day 5</b>
<b>(Acute and sample #1 for chronic)</b>	<b>(sample #2 for chronic)</b>	<b>(sample #3 for chronic)</b>
Outfalls 025A and 025C and 025D or EVAC	Outfalls 025A and 025B or Outfalls 025C and 025D	Outfalls 025A and 025B or Outfalls 025C and 025D

Note: If EVAC is not applied during the quarter, then 025A, 025C, and 025D shall be discharged and sampled. Day 3 and Day 5 cover both “or” conditions. For example: if Day 3 samples were obtained with 025A and 025B being discharged, then Day 5 samples should be obtained with 025C and 025D being discharged.

**Quarter #2 WET Testing (April - June)**

<b>Day 1</b>	<b>Day 3</b>	<b>Day 5</b>
<b>(Acute and sample #1 for chronic)</b>	<b>(sample #2 for chronic)</b>	<b>(sample #3 for chronic)</b>
Outfalls 025A and 025B (These discharges shall not be concurrent) or EVAC	Outfalls 025C or 025D	Outfalls 025C or 025D

Note: If EVAC is not applied during the quarter, then 025A and 025B shall be discharged and sampled. Day 3 and Day 5 cover both “or” conditions. For example: if Day 3 samples were obtained with 025C being discharged, then Day 5 samples shall be obtained with 025D being discharged.

**Quarter #3 WET Testing (July - September)**

<b>Day 1</b>	<b>Day 3</b>	<b>Day 5</b>
<b>(Acute and sample #1 for chronic)</b>	<b>(sample #2 for chronic)</b>	<b>(sample #3 for chronic)</b>
Outfalls 025A and 025C and 025D or EVAC	Outfalls 025A and 025B or Outfalls 025C and 025D	Outfalls 025A and 025B or Outfalls 025C and 025D

Note: If EVAC is not applied during the quarter, then 025A, 025C, and 025D shall be discharged and sampled. Day 3 and Day 5 cover both “or” conditions. For example: if Day 3 samples were obtained with 025A and 025B being discharged, then Day 5 samples should be obtained with 025C and 025D being discharged.

**Quarter #4 WET Testing (October - December)**

<b>Day 1</b>	<b>Day 3</b>	<b>Day 5</b>
<b>(Acute and sample #1 for chronic)</b>	<b>(sample #2 for chronic)</b>	<b>(sample #3 for chronic)</b>
Outfalls 025A and 025C and 025D or EVAC	Outfalls 025B and 025C or Outfalls 025B and 025D (These discharges shall not be concurrent)	Outfalls 025C and 025D

Note: \* If EVAC is not applied during the quarter, then 025A, 025C, and 025D shall be discharged and sampled.

23. Chlorine Transit Study. The permittee shall conduct a “chlorine transit study” a minimum of twice per year for the first three years of the permit. This study shall be based on the 1993 Chlorine Transit Study performed at Seabrook Station. The study(s) shall measure the TRO concentration at the Discharge Transition Structure and the corresponding (taking into account the transit time) TRO at the Discharge Diffuser Nozzles (DDN). The study shall be conducted during periods of low chlorine demand of the cooling water. At least one of these studies shall be conducted when the plant is shut down and the effluent is not heated.

The permittee shall submit a study proposal to the Regional Administrator and the Director 30 days after the effective date of this permit and yearly thereafter. The study shall, to the maximum extent possible, represent “worst case” situations. That is, the facility shall be discharging TRO, as measured at the Discharge Transition Structure (DTS), as close to the permitted daily maximum as possible and the cooling water shall be exerting its lowest chlorine demand. Upon approval from the Regional Administrator and the Director, the permittee shall implement the study and submit the results to the Regional Administrator and the Director.

Should any of the Chlorine Transit Study results indicate that the permitted TRO concentration, as measured at the DTS, is not sufficiently stringent to ensure that the chronic and acute water-quality standards for chlorine are met at the DDN, this permit may be reopened to incorporate stricter limits.

24. Biological and Water Quality Monitoring Program

- a. The Biological and Water Quality Monitoring Program (BP) shall be submitted to EPA for approval within 30 days of the effective date of this permit. Upon approval from EPA, the BP is an enforceable element of this permit. This BP shall be based on the 1996 Biological and Water Quality Monitoring Program, except for the following alternative regimes which will replace those previously employed:
  - (1) Intertidal Monitoring only will be implemented if Seabrook Station decides to employ back flushing of the Cooling Water System to control macrofouling. Any such Intertidal Monitoring Program will begin at least one year prior to back flushing.
  - (2) The Impingement Monitoring Program will be enhanced to include: collecting two 24-hour impingement samples each week, the evaluation of screen wash efficiencies using dead fish, and a sampling protocol for high impingement events.
  - (3) Ichthyoplankton Entrainment Sampling Program will allow greater understanding of diel variability in ichthyoplankton densities and will include more definitive day-night sampling (4 x 2-hour samplings/week: morning, day, evening, night), increased sample volume, and decreased net mesh size.

- (4) The previous reviews by EPA and NH DES and Fish & Game of the long-term studies of coastal New Hampshire have concluded that the kelp communities in the study area should not be adversely influenced by plant operation. Therefore, monitoring of kelp communities is no longer required.

b. The Contingency Plan

This Contingency Plan identifies actions that Seabrook Station may undertake when improvements to the BP are necessary. The Contingency Plan authorizes the evaluation, annually at a minimum, of the BP and associated data, and, if necessary, requires recommendations for improvements in the BP and the development of a Management Plan (See Management Plan, below).

1. BP Evaluation

At a minimum, the BP is evaluated through the following:

- i. An annual review of the environmental/biological sampling and analysis plan and data,
- ii. The identification of change in the aquatic or biological system,
- iii. The determination of statistically significant change,
- iv. The determination of biological importance,
- v. The determination of the likelihood that Seabrook Station contributed to the change,
- vi. A review and analysis of BP data variability and power analysis update,
- vii. The identification of improved sampling and/or analysis technologies, including, but not limited to: statistical methods, sampling equipment, and modeling technologies.

2. BP Evaluation Schedule

The BP will undergo an annual review according to the following schedule:

- i. Sept. 1: Permittee submits the results from the previous year's BP to the Permitting Authority.
- ii. Nov. 1: Permitting Authority submits comments and questions to the Permittee.
- iii. Dec. 1: Permittee schedules meeting to present data and review proposed BP for the following year.
- iv. Feb. 1: Improvements reviewed and approved by the Permitting Authority.
- v. Mar. 1: Permittee continues BP and implements improvements, if applicable.

3. Management Plan

The BP requires the Permittee to determine whether any adverse environmental impacts are occurring due to facility operations. If they are, then the Permittee must, in a timely manner, develop and implement a Management Plan, approved by the Permitting Authority, to prevent such impacts. A report on these efforts must be submitted to EPA and NH DES every thirty days until the issue has been resolved.

c. BP Improvements

This permit authorizes improvements, as approved by the Permitting Authority, to the BP when indicated by results and analysis of BP data (acceptable data from other sources may also be considered). Analysis of data from measured parameters such as temperature, delta T, and rates of impingement, and entrainment indicate the need for monitoring program enhancements or improvements.

The Permitting Authority will require a review, at least annually, of sampling data and protocols and an evaluation of the need for more frequent sampling. Additional sampling locations and any other justified analytical or biological program improvements may be authorized. Prior to authorization, the permittee must seek input from biologists from NHDES, NHF&G, U.S. Fish and Wildlife, and EPA. This review will be chaired by the EPA with input from NHDES, NHF&G, U.S. Fish and Wildlife, and other agencies or experts as appropriate.

Within 30 days of authorization of biological program improvements, the permittee shall update and resubmit the Biological and Water Quality Monitoring Program to include any such improvements.

Examples of BP improvements include, but are not limited to:

1. Additional sampling stations,
  2. Increased sampling frequency,
  3. Changes demonstrated to reduce data variability or increased analysis sensitivity,
  4. Changes demonstrated to increase the power to detect statistical significance,
  5. Collection of additional data demonstrated to more definitively determine Seabrook Station impacts,
  6. Additional predictive models such as species-specific population, community, and/or trophic level risk.
- d. Biological, hydrological, and chlorination study reports shall be submitted on a semi-annual basis with the annual report summarizing the previous year's information and conclusions. The report is due in February.

The semi-annual mid-year report shall be a letter report providing the status of the on-going programs, the expected effort in the ensuing six months, and a synopsis of the data and information obtained since the last annual report. This report shall be submitted in July.

- e. Fish Mortality Monitoring and Reporting.

Any incidence of fish mortality associated with the discharge plume or of unusual number of fish impinged on the Intake Traveling Screens shall be reported to the Regional Administrator and the Director within 24-Hours by telephone report as required in Paragraph II.D.1.e of this permit. A written confirmation report is to be provided within five (5) days. This report should include the following:

1. The species, sizes, and approximate number of fish involved in the incident.

2. The time, date, and duration of the occurrence.
  3. The operating mode of the station at the time of the occurrence.
  4. The opinion of the permittee as to the cause of the incident.
  5. The remedial action that the permittee will undertake to prevent a recurrence of the incident.
25. Requirements for Seabrook Station Discharge Diffuser Nozzles
- a. The 22 submerged offshore diffuser nozzles shall be maintained when necessary to ensure proper operation. Proper operation means that the plumes from each nozzle will be balanced relative to each other and that they all have unobstructed flow. maintenance may include dredging in the vicinity of the diffuser nozzles, removal of marine growth or other solids on the interior surfaces of the diffuser nozzles or repair/replacement of the nozzle structure.
  - b. Any necessary maintenance dredging must be performed only during the marine construction season authorized by the New Hampshire Fish and Game Department and only after receiving all necessary permits from the DES Wetlands Bureau, U.S. Coast Guard, U.S. Army Corps of Engineers, etc.
  - c. To determine if maintenance will be required the diffuser nozzles will be inspected by a licensed diver or licensed marine contractor at least every 36 months. The as-found or pre-maintenance condition of the nozzles will be documented on videotape. The maintenance performed on any nozzle and the as-left or post maintenance conditions will be documented in a written report prepared by the diver or marine contractor.
  - d. Copies of the videotape and written report of the maintenance provided on any nozzle will be submitted to EPA and NHDES WD within 60 days of each inspection. Where it is determined that additional maintenance will be necessary, the permittee shall provide the proposed scope and schedule for the maintenance.

## **B. MONITORING AND REPORTING**

Monitoring results obtained during the previous month shall be summarized and reported on 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 Regional Administrator and one signed copy to the State at the following addresses:

Environmental Protection Agency  
NPDES Program Operation Section  
P. O. Box 8127  
Boston, MA 02114

The State Agency is:

New Hampshire DES  
Water Division  
Permits and Compliance Section  
6 Hazen Drive, P.O. Box 95  
Concord, New Hampshire 03302-0095

**C. NOTIFICATION**

1. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe (40 CFR §122.42):

a. 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:”

- (1) One hundred micrograms per liter (100 µg/l);
- (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (mg/l) for antimony;
- (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or
- (4) Any other notification level established by the Director in accordance with 40 CFR §122.44(f) and New Hampshire regulations.

- b. 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:”
  - (1) Five hundred micrograms per liter (500 µg/l);
  - (2) One milligram per liter (1 mg/l) for antimony;
  - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or
  - (4) Any other notification level established by the Director in accordance with 40 CFR §122.44(f) and New Hampshire regulations.
- c. 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.

**D. State Permit Conditions**

- 1. The permittee shall comply with the following conditions which are included as State Certification requirements:
  - a. "The pH for Class B waters is 6.5 to 8.0 s.u. or as naturally occurs in the receiving water. The 6.5 to 8.0 s.u. range must be achieved in the final effluent, outfall 001, unless the permittee can demonstrate to the Division: (1) that the range should be widened due to naturally occurring conditions in the receiving water or (2) that the naturally occurring source water pH is unaltered by the permittee's operations. The scope of any demonstration project must receive prior approval from the Division. In no case shall the above procedure result in pH limits less restrictive than any applicable federal effluent limitation guidelines."
  - b. "The permittee shall submit the Executive Summary and Section D (Surface Water) of the Seabrook Station Annual Radiological Environmental Operating Report to NH DES at the address in Par. I.B as well as to EPA, NH Fish and Game, and NMFS within 30 days of preparation."

2. This NPDES Discharge Permit is issued by the U.S. Environmental Protection Agency (EPA) under Federal and State law. Upon final issuance by the federal EPA, the New Hampshire Department of Environmental Services, Water Division, may adopt this permit, including all terms and conditions, as a State discharge permit pursuant to RSA 485-A:13.

Each agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not effect the validity or status of this Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this Permit is declared invalid, illegal or otherwise issued in violation of State law, such permit shall remain in full force and effect under Federal law as an NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this Permit, if adopted as a state permit, shall remain in full force and effect under State law as a Permit issued by the State of New Hampshire.

#### **E. Special Conditions**

1. Whole Effluent Toxicity Test Frequency Adjustment

The permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than twice per year) of required toxicity testing, after completion of a minimum of eight (8) successive toxicity tests of effluent all of which must be valid tests and must demonstrate acceptable toxicity. Until written notice is received by certified mail from the EPA indicating that the Whole Effluent Testing requirement has been changed, the permittee is required to continue testing at the frequency specified in the respective permit.

2. pH Range Adjustment

The permittee may submit a written request to the EPA requesting a change in the permitted pH limit range to no more than 6.0 to 9.0 Standard Units. The permittee's written request must include the State's approval letter containing an original signature (no copies). The State's letter shall state that the permittee has demonstrated to the State's satisfaction that as long as discharges to the receiving water from a specific outfall are within a specific numeric pH range the naturally occurring receiving water pH will be unaltered. That letter must specify for each outfall the associated numeric pH limit range.

Until written notice is received by certified mail from the EPA indicating the pH limit range has been changed, the permittee is required to meet the permitted pH limit range in the respective permit.

**F. Re-opener Clause**

1. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable standard or limitation promulgated or approved under sections 301(b)(2)(C) and (d), 304 (b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
  - (a) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
  - (b) Controls any pollutants not limited in the permit.
2. This permit may be modified to incorporate necessary Total Residual Oxidant (TRO) adjustments should the results of any of the “Chlorine Transit Study(s)”, as required in Part I.A.23 of this permit, indicate potential violation(s) of the water-quality standards for chlorine at the diffuser nozzles. Results of the “Chlorine Transit Study(s)” are considered “New Information” and the permit can be modified as provided in 40 CFR Section 122.62(a)(2).