

**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"),

**Department of the Army  
Cold Regions Research and Engineering Laboratory**

is authorized to discharge from a facility located at

**72 Lyme Road  
Hanover, New Hampshire 03755**

to receiving water named

**Connecticut River (Hydrologic Code; 01080104)**

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

This permit is effective May 1, 2005.

This permit and the authorization to discharge expires at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on October 25, 1973 and modified on March 20, 1975 and February 26, 1976.

This permit consists of 9 pages in Part I including effluent limitations and monitoring requirements; Attachment A (11 pages); and 35 pages in Part II including General Conditions and Definitions.

Signed this 17<sup>th</sup> day of February, 2005

/s/ SIGNATURE ON FILE

Linda M. Murphy, Director  
Office of Ecosystem Protection  
U.S. Environmental Protection Agency  
New England Region  
Boston, Massachusetts

**PART I.**

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning on the effective date of this Permit and lasting through the expiration date, the Permittee is authorized to discharge non-contact cooling water from outfall Serial Number 001 into the Connecticut River. Such discharges shall be limited and monitored by the Permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent<sup>1</sup>.

Effluent Characteristic	Discharge Limitations		Monitoring Requirement	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Flow; MGD	Report	1.9	Continuous	Calculation or other approved method <sup>2</sup>
Temperature, °C	Report	24 (75°F)	3/Week	Grab
Trichloroethylene (TCE), ug/l	_____	5.0	1/Month	Grab <sup>3</sup>
pH <sup>4</sup> , Standard Units	6.5-8.0		3/Week	Grab

PART I.A.1.a (Continued)

Effluent Characteristic	Discharge Limitations	Monitoring Requirement	
		Measurement Frequency	Sample Type
Whole Effluent Toxicity <sup>5</sup>			
LC50 <sup>6,7</sup> ; in percent	Report	2 Tests	24-Hour Composite
C-NOEC <sup>7,8</sup> ; in percent	Report	2 Tests	24-Hour Composite
Ammonia Nitrogen as Nitrogen; mg/l <sup>9</sup>	Report	2 Tests	24-Hour Composite
Hardness; mg/l <sup>9</sup>	Report	2 Tests	24-Hour Composite
Total Recoverable Aluminum; mg/l <sup>9</sup>	Report	2 Tests	24-Hour Composite
Total Recoverable Cadmium; mg/l <sup>9</sup>	Report	2 Tests	24-Hour Composite
Total Recoverable Chromium; mg/l <sup>9</sup>	Report	2 Tests	24-Hour Composite
Total Recoverable Copper; mg/l <sup>9</sup>	Report	2 Tests	24-Hour Composite
Total Recoverable Nickel; mg/l <sup>9</sup>	Report	2 Tests	24-Hour Composite
Total Recoverable Lead; mg/l <sup>9</sup>	Report	2 Tests	24-Hour Composite
Total Recoverable Zinc; mg/l <sup>9</sup>	Report	2 Tests	24-Hour Composite

(Note: See page 4-5 for explanation of footnotes.)

**EXPLANATION OF FOOTNOTES TO PART I.A.1.a ON PAGE 2**

- (1) Samples taken in compliance with the monitoring requirements shall be taken at a location prior to any commingling with storm water discharges.
- (2) Non-contact cooling water flow shall be determined by subtracting the quantity of metered Trichloroethylene backwash water discharged to Hanover's POTW from the quantity of metered source waters (wells) pumped to the facility's various non-contact cooling water (NCCW) systems (heat exchangers). All source waters pumped to the various NCCW systems and backwash flows discharged to the POTW shall be measured continuously and recorded on totalizers. To obtain approval for an alternative method of flow reporting, the permittee shall submit a written description of the proposed method to EPA-New England and receive written authorization via certified letter.
- (3) Trichloroethylene shall be sampled directly after discharge from the Trichloroethylene treatment system.
- (4) This is a State Certification requirement. pH shall be in the range of 6.5 to 8.0 standard units (S.U.).
- (5) The Permittee shall conduct two chronic (and modified acute) survival and reproduction WET tests on effluent samples using two species, Daphnid (Ceriodaphnia dubia) and Fathead Minnow (Pimephales promelas) following the protocol listed in ATTACHMENT A, *Freshwater Chronic and Modified Acute Toxicity Test Procedure and Protocol*, (dated December 1995). The first WET test shall be completed within 90 days after the receipt of the issued Permit. The second test shall be completed 180 days after the first test. Toxicity tests results shall be submitted to the EPA and NHDES-WD.
- (6) LC50 is the concentration of wastewater (effluent) causing mortality to 50 percent (%) of the test organisms. See ATTACHMENT A (VII. TOXICITY TEST DATA ANALYSIS) on page A-9 for additional clarification.
- (7) This Permit may be modified, or alternatively, revoked and

reissued to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the WET tests indicate the discharge exceeds any State of New Hampshire water quality criterion. Results from these toxicity tests are considered "New Information" and the Permit may be modified as provided in 40 CFR §122.62(a)(2).

- (8) C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results (growth, survival, and/or reproduction) exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, report the lowest concentration where there is no observable effect. See ATTACHMENT A (VII. TOXICITY TEST DATA ANALYSIS) on page A-9 for additional clarification.
- (9) For each WET test the Permittee shall report on the appropriate Discharge Monitoring Report (DMR) the concentrations of Ammonia Nitrogen as Nitrogen, Hardness, and Total Recoverable Aluminum, Cadmium, Chromium, Copper, Nickel, Lead and Zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the Minimum Quantification Level (MLs) shown in Attachment A and B; Section VI. Chemical Analysis, or as amended. The Permittee should also note that all chemical parameter results must still be reported in the appropriate WET test toxicity report.

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)**

2. The discharge shall not cause a violation of the water quality standards of the receiving water
3. The discharge shall remain free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible pollutants. It shall remain free from pollutants which produce odor, color, taste or turbidity in the receiving

waters which is not naturally occurring and would render it unsuitable for its designated uses.

4. The Permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts. No biocides, including chlorine compounds, may be used without explicit approval from the EPA and New Hampshire Department of Environmental Services - Water Division (NHDES-WD).
5. The discharge shall not cause the turbidity in the receiving water to exceed naturally occurring conditions by 10 Nephelometric Turbidity Units (NTU) as specified in Env-WS 432.13.
6. The Regional Administrator reserves the right to modify this Permit to incorporate additional Chemical Specific and/or Toxicity Testing requirements including limits if results of any toxicity tests of the receiving waters in the vicinity of the Permittee's outfall indicates the Permittee's discharge causes or has a "reasonable potential" to cause an exceedance of any water-quality criterion. Results from these toxicity tests are considered "new information" and the Permit may be modified as provided at 40 CFR §122.62(a)(2).
7. All existing manufacturing, commercial, mining, and silvicultural dischargers in accordance with 40 CFR §122.42 must notify the EPA and NHDES-WD as soon as they know or have reason to believe (as summarized):
  - 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 (as defined in 40 CFR §122.2) 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 ug/L);
    - (2) 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;

(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).

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 ug/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).

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.

8. 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 the effluent limitation in the Permit;  
or

b. Controls any pollutants not limited in the Permit.

The Permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

**B. MONITORING AND REPORTING**

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

Signed and Dated original DMRs and all other reports required herein, shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency  
Water Technical Unit (SEW)  
P.O. Box 8127  
Boston, Massachusetts 02114-8127

Duplicate signed copies of all reports required herein shall be submitted to the State at:

New Hampshire Department of Environmental Services  
Water Division  
Wastewater Engineering Bureau  
29 Hazen Drive, P.O. Box 95  
Concord, New Hampshire 03302-0095

All verbal reports or notifications shall be made to both EPA and NHDES-WD.

**C. SPECIAL CONDITIONS**

pH Limit Adjustment

The permittee may submit a written request to the EPA-New England requesting a change in the permitted pH limit range to be not less restrictive 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-New England indicating the pH limit range has been changed, the permittee is required to meet the permitted pH limit range in the respective permit.

**D. STATE PERMIT CONDITIONS**

1. The permittee shall comply with the following conditions which are included as State Certification requirements. The pH range of 6.5-8.0 Standard Units (S.U.) must be achieved in the final effluent unless the permittee can demonstrate to NHDES-WD: (1) that the range should be widened due to naturally occurring conditions in the receiving water or (2) that the naturally occurring receiving water pH is not significantly altered by the permittee's discharge. The scope of any demonstration project must receive prior approval from NHDES-WD. In no case, shall the above procedure result in pH limits outside of the range of 6.0 to 9.0 S.U., which is the pH range consistently applied in National Effluent Limitation Guidelines.
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 Supply and Pollution Control 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 affect the validity or status of the 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.