

**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”,

**U.S. Army Corps of Engineers
Engineer Research and Development Center
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

**Wilder Lake Impoundment, Connecticut River
Assessment Unit: NHLAK801040402-03**

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

This permit shall become effective on the first day of the calendar month immediately following 60 days after signature.¹

This permit expires at midnight, five years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on September 18, 2012.

This permit consists of **Part I** (13 pages), **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February, 2011, 8 pages), **Attachment B** (Freshwater Chronic Toxicity Test Procedure and Protocol, March, 2013, 7 pages), and **Part II** (NPDES Part II Standard Conditions, April 2018, 21 pages).

Signed this day of

Ken Moraff, Director
Office of Ecosystem Protection
Environmental Protection Agency
Region 1
Boston, MA

¹ Pursuant to 40 Code of Federal Regulations (C.F.R.) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, this permit shall become effective upon the date of signature.

PART I**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge commingled treated non-contact cooling water and stormwater through Outfall Serial Number 001 to the Wilder Lake Impoundment of the Connecticut River. The discharge shall be limited and monitored as specified below; the receiving water shall be monitored as specified below.

Effluent Characteristic	Effluent Limitation		Monitoring Requirements ^{1,2,3}	
	Average Monthly	Maximum Daily	Measurement Frequency ⁴	Sample Type ⁵
Effluent Flow ⁶	Report MGD	1.9 MGD	1/week	Meter
pH ⁷	6.5 – 9.0 S.U.		1/week	Grab or Continuous
Temperature	Report °F	75 °F	1/week	Grab or Continuous
Trichloroethylene (TCE) ⁸	Report µg/L	5 µg/L	1/month	Grab
Priority pollutant scan ⁹	---	Report	1/permit term	Grab
Whole Effluent Toxicity (WET) Testing ^{9,10,11,12}				
LC ₅₀	---	Report %	2/permit term	Composite
C-NOEC	---	Report %	2/permit term	Composite
Hardness	---	Report mg/L	2/permit term	Composite

Effluent Characteristic	Effluent Limitation		Monitoring Requirements ^{1,2,3}	
	Average Monthly	Maximum Daily	Measurement Frequency ⁴	Sample Type ⁵
Ammonia Nitrogen	---	Report mg/L	2/permit term	Composite
Total Aluminum	---	Report mg/L	2/permit term	Composite
Total Cadmium	---	Report mg/L	2/permit term	Composite
Total Copper	---	Report mg/L	2/permit term	Composite
Total Nickel	---	Report mg/L	2/permit term	Composite
Total Lead	---	Report mg/L	2/permit term	Composite
Total Zinc	---	Report mg/L	2/permit term	Composite
Receiving Water Chemical Analysis ^{11,12}				
Hardness	---	Report mg/L	2/permit term	Grab
Ammonia	---	Report mg/L	2/permit term	Grab
Total Aluminum	---	Report mg/L	2/permit term	Grab
Total Cadmium	---	Report mg/L	2/permit term	Grab
Total Copper	---	Report mg/L	2/permit term	Grab
Total Nickel	---	Report mg/L	2/permit term	Grab
Total Lead	---	Report mg/L	2/permit term	Grab
Total Zinc	---	Report mg/L	2/permit term	Grab

Effluent Characteristic	Effluent Limitation		Monitoring Requirements ^{1,2,3}	
	Average Monthly	Maximum Daily	Measurement Frequency ⁴	Sample Type ⁵
pH ¹³	---	Report S.U.	2/permit term	Grab
Temperature ¹³	---	Report °C	2/permit term	Grab

Footnotes:

1. Effluent samples shall yield data representative of the discharge. Samples of non-contact cooling water can be obtained from the same pipe shared with stormwater discharges if either of the following two conditions is met: 1) the cooling water is not commingled with another discharge or 2) there has not been a storm event with a magnitude of precipitation of more than 0.1 inches within the previous 24 hours. If neither of these two conditions are met and an effluent sample is required, flow proportioned samples shall be obtained from the individual chilling equipment non-contact cooling water discharges. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA) and the State. The Permittee shall submit the results to EPA and the State of any additional testing above that required herein, if testing is done in accordance with 40 C.F.R. § 136.
2. In accordance with 40 C.F.R. § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 C.F.R. Part 136 or required under 40 C.F.R. Chapter I, Subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is “sufficiently sensitive” when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 C.F.R. Part 136 or required under 40 C.F.R. Chapter I, Subchapter N or O for the measured pollutant or pollutant parameter. The term “minimum level” refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.
3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L).
4. Measurement frequency of continuous is defined as the recording of more than one measurement in a 24-hour period. Measurement frequency of 1/week is defined as the sampling of one discharge event in each seven-day calendar week. Measurement frequency of 1/month is defined as the sampling of one discharge event in each calendar month. Measurement frequency of 1/permit term is defined as the sampling of one discharge event during the permit term. If no discharge occurs during the measurement frequencies defined above, the Permittee must report a No Data Indicator Code (e.g., “C” for “No Discharge”).
5. Each composite sample will consist of at least eight grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow. The timing of the grab samples shall coincide with the timing of composite sampling.

6. Effluent flow shall be reported in million gallons per day (MGD).
7. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.). See Part I.C.1 below for a provision to modify the pH range.
8. Trichloroethylene (TCE) shall be sampled directly after discharge from the trichloroethylene treatment system.
9. The priority pollutant scan and Whole Effluent Toxicity testing shall be completed at least 180 days before the permit expires.
10. The Permittee shall conduct acute toxicity tests (LC₅₀) and chronic toxicity tests (C-NOEC) in accordance with test procedures and protocols specified in **Attachment A and B** of this permit. LC₅₀ and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. The complete report for each toxicity test shall be submitted as an attachment to the toxicity DMR submittal immediately following the completion of the test. Samples of non-contact cooling water can be obtained from the same pipe shared with stormwater discharges if either of the following two conditions is met: 1) the cooling water is not commingled with another discharge or 2) there has not been a storm event with a magnitude of precipitation of more than 0.1 inches within the previous 24 hours. If neither of these two conditions are met and an effluent sample is required, flow proportioned samples shall be obtained from the individual chilling equipment non-contact cooling water discharges. The first WET test shall be conducted during August of the first year of the permit and the second WET test shall be conducted during August of the second year of the permit. The complete report for each toxicity test shall be submitted as an attachment to the monthly DMR submittal immediately following the completion of the test.
11. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in Attachment A and B, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in Attachment A and B, Section IV., DILUTION WATER. Minimum levels and test methods are specified in Attachment A and B, Part VI. CHEMICAL ANALYSIS.
12. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in Attachment A and B, Part VI. CHEMICAL ANALYSIS for the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in Attachment A and B. Minimum levels and test methods are specified in Attachment A and B, Part VI. CHEMICAL ANALYSIS.

13. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

Part I.A. continued.

2. The discharge shall not cause a violation of the water quality standards of the receiving water.
3. The discharge shall be free from substances in kind or quantity that settle to form harmful benthic deposits; float as foam, debris, scum or other visible substances; produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses; result in the dominance of nuisance species; or interfere with recreational activities.
4. Tainting substances shall not be present in the discharge in concentrations that individually or in combination are detectable by taste and odor tests performed on the edible portions of aquatic organisms.
5. The discharge shall not result in toxic substances or chemical constituents in concentrations or combinations in the receiving water that injure or are inimical to plants, animals, humans or aquatic life; or persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in edible portions of fish, shellfish, other aquatic life, or wildlife that might consume aquatic life.
6. The discharge shall not result in benthic deposits that have a detrimental impact on the benthic community. The discharge shall not result in oil and grease, color, slicks, odors, or surface floating solids that would impair any existing or designated uses in the receiving water.
7. The discharge shall not result in an exceedance of the naturally occurring turbidity in the receiving water by more than 10 NTUs.
8. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe (40 C.F.R. § 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) 100 micrograms per liter ($\mu\text{g/L}$);
 - (2) 200 $\mu\text{g/L}$ for acrolein and acrylonitrile; 500 $\mu\text{g/L}$ for 2,4-dinitrophenol; and one milligram per liter (mg/L) for antimony;
 - (3) Five 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
 - (4) Any other notification level established by the Director in accordance with 40 C.F.R. § 122.44(f) and State 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) 500 µg/L;
 - (2) One mg/L for antimony;
 - (3) 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
 - (4) Any other notification level established by the Director in accordance with 40 C.F.R. § 122.44(f) and State 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.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall(s) listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources are not authorized by this permit and shall be reported in accordance with Part D.1.e.(1) of the Standard Conditions of this permit (24-hour reporting).

C. SPECIAL CONDITIONS

1. The pH range may be modified if the Permittee satisfies conditions set forth in Part I.E.3 below. Upon notification of an approval by the State, EPA will review and, if acceptable, will submit written notice to the Permittee of the permit change. The modified pH range will not be in effect until the Permittee receives written notice from EPA.
2. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall provide an alternate power source with which to sufficiently operate the TCE treatment facility, as defined at 40 C.F.R. § 122.2, which references the definition at 40 C.F.R. § 403.3(q). Wastewater facility is defined by RSA 485A:2.XIX as the structures, equipment, and processes required to collect, convey, and treat domestic and industrial wastes, and dispose of the effluent and sludge.

3. Discharges of Chemicals and Additives

The discharge of any chemical or additive, including chemical substitution, which was not reported in the application submitted to EPA and the State or provided through a subsequent written notification submitted to EPA and the State is prohibited. Upon the effective date of this permit, chemicals and/or additives which have been disclosed to EPA and the State may

be discharged up to the frequency and level disclosed, provided that such discharge does not violate §§ 307 or 311 of the CWA or applicable State water quality standards. Discharges of a new chemical or additive are authorized under this permit 30 days following written notification to EPA and the State unless otherwise notified by EPA and/or the State. To request authorization to discharge a new chemical or additive, the Permittee must submit a written notification to EPA and the State in accordance with Part I.D.3 of this permit, and include the following information, at a minimum:

a. Information for each chemical and/or additive that will be discharged

- (1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;
- (2) Purpose or use of the chemical/additive;
- (3) Safety Data Sheet (SDS), Chemical Abstracts Service (CAS) Registry number, and EPA registration number, if applicable, for each chemical/additive;
- (4) The frequency (e.g., daily), magnitude (i.e., maximum application concentration), duration (e.g., hours), and method of application for the chemical/additive;
- (5) The maximum discharge concentration; and
- (6) The vendor's reported aquatic toxicity, if available (i.e., NOAEL and/or LC50 in percent for aquatic organism(s)).

b. Written rationale which demonstrates that the discharge of such chemicals and/or additives as proposed will not:

- (1) Add any pollutants in concentrations which exceed permit effluent limitations;
- (2) Exceed any applicable water quality standard; and
- (3) Add any pollutants that would justify the application of permit conditions that are different from or absent in this permit.

D. REPORTING REQUIREMENTS

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

- a. The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State no later than the 15th day of the month electronically using NetDMR. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessed from the internet at <https://netdmr.zendesk.com/hc/en-us>.

2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. *See* Part I.D.5. for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this permit.

3. Submittal of Requests and Reports to EPA/OEP

- a. The following requests, reports, and information described in this permit shall be submitted to the EPA/OEP NPDES Applications Coordinator in the EPA Office Ecosystem Protection (OEP):

- (1) Transfer of Permit notice;
- (2) Request for changes in sampling location;
- (3) Request to discharge new chemicals or additives;
- (4) Request for pH Effluent Limitation Adjustment;
- (5) Request for change in WET testing requirements;
- (6) Report on unacceptable dilution water/request for alternative dilution water for WET testing.

- b. These reports, information, and requests shall be submitted to EPA/OEP electronically at R1NPDES.Notices.OEP@epa.gov or by hard copy mail to the following address:

**U.S. Environmental Protection Agency
Office of Ecosystem Protection
EPA/OEP NPDES Applications Coordinator
5 Post Office Square - Suite 100 (OEP06-03)
Boston, MA 02109-3912**

4. Submittal of Reports in Hard Copy Form

- a. The following notifications and reports shall be signed and dated originals, submitted in hard copy, with a cover letter describing the submission:

- (1) Written notifications required under Part II.

- b. This information shall be submitted to EPA/OES at the following address:

**U.S. Environmental Protection Agency
Office of Environmental Stewardship (OES)
Water Technical Unit
5 Post Office Square, Suite 100 (OES04-SMR)
Boston, MA 02109-3912**

5. State Reporting

Unless otherwise specified in this permit or by the State, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports, information, requests or notifications described in Parts I.D.3 and I.D.4. shall also be submitted to the New Hampshire Department of Environmental Services, Water Division (NHDES–WD) at the following address(es):

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

6. Verbal Reports and Verbal Notifications

- a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to both EPA and to the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).
- b. Verbal reports and verbal notifications shall be made to EPA’s Office of Environmental Stewardship at:

617-918-1510
- c. Verbal reports and verbal notifications shall also be made to the Permittee’s assigned NPDES inspector at NHDES–WD.

E. STATE PERMIT CONDITIONS

1. The Permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving water unless it has been treated in such a manner as will not lower the legislated water quality classification or interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:12).
2. This NPDES Discharge Permit is issued by the EPA under Federal and State law. Upon final issuance by the EPA, the NHDES–WD may adopt this permit, including all terms and conditions, as a State 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.

3. The pH range of 6.5 to 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 the range of 6.0 to 9.0 S.U., which is the federal effluent limitation guideline regulation for pH for secondary treatment and is found in 40 C.F.R. § 133.102(c).

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6°C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at <http://www.epa.gov/region1/enforcement/water/dmr.html> for further important details on alternate dilution water substitution requests.

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS¹

1.	Test type	Static, non-renewal
2.	Temperature (°C)	20 ± 1°C or 25 ± 1°C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and <u>Selenastrum</u> to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water ²	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q ^R or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	≥ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

series.

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| 16. Effect measured | Mortality-no movement of body or appendages on gentle prodding |
| 17. Test acceptability | 90% or greater survival of test organisms in dilution water control solution |
| 18. Sampling requirements | For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection. |
| 19. Sample volume required | Minimum 1 liter |

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

**EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW
(PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST¹**

1. Test Type	Static, non-renewal
2. Temperature (°C)	20 ± 1 ° C or 25 ± 1°C
3. Light quality	Ambient laboratory illumination
4. Photoperiod	16 hr light, 8 hr dark
5. Size of test vessels	250 mL minimum
6. Volume of test solution	Minimum 200 mL/replicate
7. Age of fish	1-14 days old and age within 24 hrs of each other
8. No. of fish per chamber	10
9. No. of replicate test vessels per treatment	4
10. Total no. organisms per concentration	40
11. Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12. Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13. dilution water ²	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q ^R or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14. Dilution series	≥ 0.5, must bracket the permitted RWC

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| 15. Number of dilutions | 5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series. |
| 16. Effect measured | Mortality-no movement on gentle prodding |
| 17. Test acceptability | 90% or greater survival of test organisms in dilution water control solution |
| 18. Sampling requirements | For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection. |
| 19. Sample volume required | Minimum 2 liters |

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

<u>Parameter</u>	Effluent	Receiving Water	ML (mg/l)
Hardness ¹	x	x	0.5
Total Residual Chlorine (TRC) ^{2, 3}	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

- Hardness may be determined by:
 - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 2340B (hardness by calculation)
 - Method 2340C (titration)
- Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
 - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 4500-CL E Low Level Amperometric Titration
 - Method 4500-CL G DPD Colorimetric Method
- Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Kärber
- Trimmed Spearman-Kärber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

FRESHWATER CHRONIC TOXICITY TEST PROCEDURE AND PROTOCOL USEPA Region 1

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic toxicity data shall be reported as outlined in Section VIII.

II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition, October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at <http://www.epa.gov/waterscience/WET/> . Exceptions and clarification are stated herein.

III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6° C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2, Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of an alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at <http://www.epa.gov/region1/enforcementandassistance/dmr.html> for further important details on alternate dilution water substitution requests.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.1. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.1.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥ 3 standard deviations for IC25 values and \geq two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

<u>Parameter</u>	Effluent	Receiving Water	ML (mg/l)
Hardness ^{1, 4}	x	x	0.5
Total Residual Chlorine (TRC) ^{2, 3, 4}	x		0.02
Alkalinity ⁴	x	x	2.0
pH ⁴	x	x	--
Specific Conductance ⁴	x	x	--
Total Solids ⁶	x		--
Total Dissolved Solids ⁶	x		--
Ammonia ⁴	x	x	0.1
Total Organic Carbon ⁶	x	x	0.5
Total Metals ⁵			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02

Other as permit requires

Notes:

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 2340B (hardness by calculation)
 - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
 - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 4500-CL E Low Level Amperometric Titration
 - Method 4500-CL G DPD Colorimetric Method
 - USEPA 1983. Manual of Methods Analysis of Water and Wastes
 - Method 330.5
 3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
 4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
 5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
 6. Analysis to be performed on initial samples only

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013.

Guidance for this review can be found at

<http://water.epa.gov/scitech/methods/cwa/> . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value, for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.
- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: [Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program](#) can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater than the PMSD lower bound, then the treatment is considered statistically significant.
- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
 - Facility name
 - NPDES permit number
 - Outfall number
 - Sample type
 - Sampling method
 - Effluent TRC concentration
 - Dilution water used
 - Receiving water name and sampling location
 - Test type and species
 - Test start date
 - Effluent concentrations tested (%) and permit limit concentration
 - Applicable reference toxicity test date and whether acceptable or not
 - Age, age range and source of test organisms used for testing
 - Results of TAC review for all applicable controls
 - Test sensitivity evaluation results (test PMSD for growth and reproduction)
 - Permit limit and toxicity test results
 - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s)
- Reference toxicity test control charts
- All sample chemical/physical data generated, including minimum limits (MLs) and analytical methods used
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis
- A discussion of any deviations from test conditions
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)¹

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¹Updated July 17, 2018 to fix typographical errors.

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A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

- a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
- b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

- (a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than \$2,500 nor more than \$25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation or by imprisonment of not more than 2 years, or both.
- (b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than 6 years, or both.
- (c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than \$250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

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endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

- (d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.
- (2) *Civil Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).
- (3) *Administrative Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:
- (a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).
- (b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit

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condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

- (1) The name and address of any permit applicant or Permittee;
- (2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

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covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

- (1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.
- (2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

- b. *Bypass not exceeding limitations*. The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

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- (1) *Anticipated bypass.* If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.
- (2) *Unanticipated bypass.* The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

- (1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:
 - (a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
 - (c) The Permittee submitted notices as required under paragraph 4.c of this Section.
- (2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

- a. *Definition.* *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or

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- improper operation.
- b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
 - c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
 - (2) The permitted facility was at the time being properly operated; and
 - (3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
 - (4) The Permittee complied with any remedial measures required under B.3. above.
 - d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

C. MONITORING REQUIREMENTS

1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.
- c. Records of monitoring information shall include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.
- d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.
- e. The Clean Water Act provides that any person who falsifies, tampers with, or

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knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

D. REPORTING REQUIREMENTS

1. Reporting Requirements

- a. *Planned Changes.* The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
 - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or
 - (2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).
 - (3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. *Anticipated noncompliance.* The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

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- c. *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.
- d. *Monitoring reports.* Monitoring results shall be reported at the intervals specified elsewhere in this permit.
 - (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.
 - (2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
 - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. *Twenty-four hour reporting.*
 - (1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

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reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

- (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
 - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
 - (b) Any upset which exceeds any effluent limitation in the permit.
 - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).
 - (3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.
- f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
- g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.
- h. *Other information.* Where the Permittee becomes aware that it failed to submit any

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relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

- i. *Identification of the initial recipient for NPDES electronic reporting data.* The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

- a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.
- b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

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“approved States,” including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

Average monthly discharge limitation means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.

Average weekly discharge limitation means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily discharges” measured during a calendar week divided by the number of “daily discharges” measured during that week.

Best Management Practices (“BMPs”) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of “waters of the United States.” BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bypass see B.4.a.1 above.

C-NOEC or “*Chronic (Long-term Exposure Test) – No Observed Effect Concentration*” means the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a “discharge” which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483 and Public Law 97-117, 33 U.S.C. 1251 *et seq.*

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the “discharge of a pollutant” measured during a calendar day or any

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other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the “daily discharge” is calculated as the average measurement of the pollutant over the day.

Direct Discharge means the “discharge of a pollutant.”

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts’ authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

- (a) When used without qualification, *discharge* means the “discharge of a pollutant.”
- (b) As used in the definitions for “interference” and “pass through,” *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report (“DMR”) means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by “approved States” as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA’s.

Discharge of a pollutant means:

- (a) Any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source,” or
- (b) Any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any “indirect discharger.”

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of “pollutants” which are “discharged” from “point sources” into “waters of the United States,” the waters of the “contiguous zone,” or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise “effluent limitations.”

Environmental Protection Agency (“EPA”) means the United States Environmental Protection

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Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Indirect discharger means a nondomestic discharger introducing “pollutants” to a “publicly owned treatment works.”

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

- (a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (b) Therefore is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

LC₅₀ means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC₅₀ = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable “daily discharge.”

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

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publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

- (a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.
- (b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an “approved program.”

New Discharger means any building, structure, facility, or installation:

- (a) From which there is or may be a “discharge of pollutants;”
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source;” and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site.”

This definition includes an “indirect discharger” which commences discharging into “waters of the United States” after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a “site” for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a “site” under EPA’s permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

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An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a “new discharger” only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a “discharge of pollutants,” the construction of which commenced:

- (a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or
- (b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means “National Pollutant Discharge Elimination System.”

Owner or operator means the owner or operator of any “facility or activity” subject to regulation under the NPDES programs.

Pass through means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation).

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permit means an authorization, license, or equivalent control document issued by EPA or an “approved State” to implement the requirements of Parts 122, 123, and 124. “Permit” includes an NPDES “general permit” (40 C.F.R § 122.28). “Permit” does not include any permit which has not yet been the subject of final agency action, such as a “draft permit” or “proposed permit.”

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

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(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

- (a) Sewage from vessels; or
- (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a “POTW.”

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary industry category means any industry which is not a “primary industry category.”

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does

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not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (see 40 C.F.R. § 302.4).

Sludge-only facility means any “treatment works treating domestic sewage” whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Toxic pollutant means any pollutant listed as toxic under Section 307(a)(1) or, in the case of “sludge use or disposal practices,” any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, “domestic sewage” includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

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disposal in 40 C.F.R. Part 503 as a “treatment works treating domestic sewage,” where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Waste pile or pile means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States or waters of the U.S. means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (b) All interstate waters, including interstate “wetlands;”
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

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Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test.

Zone of Initial Dilution (ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl ₂	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M ³ /day	Cubic meters per day
DO	Dissolved oxygen

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kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH ₃ -N	Ammonia nitrogen as nitrogen
NO ₃ -N	Nitrate as nitrogen
NO ₂ -N	Nitrite as nitrogen
NO ₃ -NO ₂	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	“Whole effluent toxicity”
ZID	Zone of Initial Dilution

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912**

FACT SHEET

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO
THE CLEAN WATER ACT (CWA)**

NPDES PERMIT NUMBER: NH0001619

PUBLIC NOTICE START AND END DATES: May 2, 2019 - May 31, 2019

NAME AND MAILING ADDRESS OF APPLICANT:

U.S. Army Corps of Engineers
Engineer Research and Development Center
3909 Halls Ferry Road
Vicksburg, Mississippi 39180

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

U.S. Army Corps of Engineers
Engineer Research and Development Center
Cold Regions Research and Engineering Laboratory
72 Lyme Road
Hanover, New Hampshire 03755

RECEIVING WATER AND CLASSIFICATION:

Wilder Lake Impoundment, Connecticut River
Assessment Unit: NHLAK801040402-03
Class B

SIC CODE: 8734 – Testing Laboratories

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1.0 Proposed Action

The Army Corps of Engineers (the “Permittee”) has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge treated groundwater, non-contact cooling water (NCCW), and stormwater from the Cold Regions Research and Engineering Laboratory (the “Facility”) into the Connecticut River.

The permit currently in effect was issued on September 18, 2012 and expired on August 31, 2017 (the “2012 Permit”). The Permittee filed an application for permit reissuance with EPA dated April 7, 2017, as required by 40 Code of Federal Regulations (C.F.R.) § 122.6. Since the permit application was deemed timely and complete by EPA on April 12, 2017, the Facility’s 2012 Permit has been administratively continued pursuant to 40 C.F.R. § 122.6 and § 122.21(d). EPA and the NHDES conducted a site visit on September 12, 2017.

2.0 Statutory and Regulatory Authority

Congress enacted the Clean Water Act (CWA), “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” *See* CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 303(a), 402(a). Section 402(a) established one of the CWA’s principal permitting programs, the NPDES Permit Program. Under this section, EPA may “issue a permit for the discharge of any pollutant or combination of pollutants” in accordance with certain conditions. *See* CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA’s NPDES permit program are generally found in 40 C.F.R. §§ 122, 124, 125, and 136.

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: “technology-based” effluent limitations (TBELs) and “water quality-based” effluent limitations (WQBELs). *See* CWA §§ 301, 304(b); 40 C.F.R. §§ 122, 125, and 131.

2.1 Technology-Based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under §§ 301(b) and 402 of the CWA to meet best practicable control technology currently available (BPT) for conventional pollutants and some metals, best conventional control technology (BCT) for conventional pollutants, and best available technology economically achievable (BAT) for toxic and non-conventional pollutants. *See* 40 C.F.R. § 125 Subpart A.

Subpart A of 40 C.F.R. § 125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under § 301(b) of the CWA, including the application of EPA promulgated Effluent Limitation Guidelines (ELGs) and case-by-case determinations of effluent limitations under § 402(a)(1) of the CWA.

In general, ELGs for non-POTW facilities must be complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989. *See* 40 C.F.R. § 125.3(a)(2). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit. In the absence of published technology-based effluent guidelines, the permit writer is authorized under § 402(a)(1)(B) of the CWA to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ).

2.2 Water Quality-Based Requirements

The CWA and federal regulations require that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* § 301(b)(1)(C) of the CWA and 40 C.F.R. §§ 122.44(d)(1) and 122.44(d)(5).

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQSs) for all water bodies within the State. *See* CWA § 303 and 40 C.F.R. §§ 131.10-12. Generally, WQSs consist of three parts: 1) beneficial designated use or uses for a water-body or a segment of a water-body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) anti-degradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 C.F.R. § 131.12. The applicable State WQSs can be found in the New Hampshire Code of Administrative Rules, Surface Water Quality Regulations, Chapter Env-Wq 1700 *et seq.* Also see generally, Title 50, Water Management and Protection, Chapters 485A, Water Pollution and Waste Disposal Section 485-A.

Receiving water requirements are established according to numerical and narrative standards in WQSs adopted under State law for each water body classification. When using chemical-specific numeric criteria to develop permit limits, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and are therefore typically applicable to monthly average limits.

When permit effluent limits are necessary for a pollutant to meet narrative water quality criteria, the permitting authority must establish effluent limits in one of three ways: based on a “calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated

use,” on a “case-by-case basis” using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an indicator parameter. *See* 40 C.F.R. § 122.44(d)(1)(vi)(A-C).

2.2.2 Anti-degradation

Federal regulations found at 40 C.F.R. § 131.12 require states to develop and adopt a statewide anti-degradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the anti-degradation policy ensures that high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and support recreation in and on the water, are maintained unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

The New Hampshire Anti-Degradation Policy, found at Env-Wq 1708, applies to any new or increased activity that would lower water quality or affect existing or designated uses, including increased loadings to a water body from an existing activity. The anti-degradation regulations focus on protecting high quality waters and maintaining water quality necessary to protect existing uses. Discharges that cause “significant degradation” are defined in NH WQS (Env-Wq 1708.09(a)) as those that use 20% or more of the remaining assimilative capacity for a water quality parameter in terms of either concentration or mass of pollutants or flow rate for water quantity. Where NHDES determined that a proposed increase would cause a significant increase, the applicant must provide documentation to demonstrate that the lowering of water quality is necessary, will provide net economic or social benefit in the area in which the water body is located, and that the benefits of the activity outweigh the environmental impact caused by the lower water quality. *See* Env-Wq 1708.10(b).

This permit is being reissued with effluent limitations sufficiently stringent to protect the existing uses of the receiving water.

2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation’s waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, the EPA released guidance on November 19, 2001, for the preparation of an integrated “List of Waters” that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) Unimpaired and not threatened for all designated uses; 2) Unimpaired waters for some uses and not assessed for others; 3) Insufficient information to make assessments for any uses; 4) Impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) Impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate

goal of attaining water quality standards. A TMDL is essentially a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from direct and indirect discharges, determines the maximum load of the pollutant that can be discharged to a specific water body while maintaining WQSs for designated uses, and allocates that load to the various pollutant sources, including point source discharges, subject to NPDES permits. *See* 40 C.F.R. § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation for a NPDES permitted discharge, the effluent limit in the permit may not exceed the waste load allocation. *See* 40 C.F.R. § 122.44(d)(1)(vii)(B).

2.2.4 Reasonable Potential

Pursuant to 40 C.F.R. § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs necessary to achieve water quality standards established under § 303 of the CWA. In addition, limitations “must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality”. *See* 40 C.F.R. § 122.44(d)(1)(i). There is reasonable potential to cause or contribute to an excursion if the projected or actual in-stream concentration exceeds the applicable criterion. If the permitting authority determines that a discharge causes, has the reasonable potential to cause, or contributes to such an excursion, the permit must contain QBELs for the pollutant. *See* 40 C.F.R. § 122.44(d)(1)(iii).

In determining reasonable potential, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent in the receiving water. EPA generally considers the quantitative and/or qualitative approach outlined in *Technical Support Document for Water Quality-based Toxics Control (TSD)*¹ to determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS.

The quantitative approach EPA generally considers is found in Chapters 3 and 4 and Appendix E of the TSD. Using this methodology, EPA first projects the upper bound of expected effluent concentrations from the observed monitoring data based on a selected probability basis. To account for the uncertainty associated with monitoring data, this methodology accounts for effluent variability based on whether the monitoring data includes 10 or more samples² or less

¹ March 1991, EPA/505/2-90-001.

² When $n \geq 10$, EPA’s methodology uses a lognormal distribution to model the observed data and derive mean and variance, assuming a lognormal distribution of the underlying data. EPA uses the upper bound effluent concentration at the 95th percentile projected by multiplying the maximum effluent value by the multiplying factor in Table 3-2 of the TSD selected based on the number of samples and the coefficient of variation calculated from the dataset.

than 10 samples,³ including when one or more samples do not detect a parameter above laboratory detection limits (i.e., non-detect).⁴

EPA then uses the calculated upper bound of expected effluent concentrations, the median value of the available ambient data, the effluent flow and the upstream flow to project the in-stream concentration downstream from the discharge using the following steady-state mixing equation:

$$C = \frac{C_s Q_s + C_e Q_e}{Q_s + Q_e}$$

Where:

- C = downstream concentration
- C_s = upstream concentration (median)
- C_e = effluent parameter concentration (95th percentile)
- Q_s = upstream flow (7Q10 flow upstream of the Facility)
- Q_e = effluent flow of the Facility

As required by Env-Wq 1705.01, 10% of the assimilative capacity of the receiving water is reserved by using a multiplying factor of 0.9 in this calculation. When both this resultant in-stream concentration (C) and the effluent concentration (C_e) exceed the applicable criterion multiplied by 0.9, there is reasonable potential for the discharge to cause, or contribute to an excursion above water quality standards. See 40 C.F.R. § 122.44(d).

2.2.5 State Certification

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs or it is deemed that the state has waived its right to certify. Regulations governing state certification are set forth in 40 C.F.R. § 124.53 and § 124.55. EPA has requested permit certification by the State pursuant to 40 C.F.R. § 124.53 and expects that the Draft Permit will be certified.

If the State believes that any conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either the CWA §§ 208(e), 301, 302, 303, 306 and 307 or the appropriate requirements of State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. The only exception to this is that the sludge conditions/requirements implementing § 405(d) of the CWA are not subject to the § 401 State Certification requirements. Reviews and appeals of limitations and conditions

³ When n<10, EPA's methodology is the same as when n≥10, except EPA uses a conservative coefficient of variation of 0.6 to select the multiplying factor in Table 3-2 of the TSD.

⁴ When the dataset includes non-detects, EPA's methodology is the same as when n≥10, except EPA uses a delta-lognormal distribution in which non-detect values are weighted in proportion to their occurrence in the data. The values above the detection limit are assumed to be lognormally distributed values.

attributable to State certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures of 40 C.F.R. § 124.

In addition, the State should provide a statement of the extent to which any condition of the Draft Permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." *See* 40 C.F.R. § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4(d) and 40 C.F.R. § 122.44(d).

2.3 Effluent Flow Requirements

Generally, EPA uses effluent flow both to determine the necessity for effluent limitations in a permit that comply with the CWA, and to calculate the effluent limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under § 301(b)(1)(C) of the CWA. Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would decrease and the calculated effluent limitations may not be protective (i.e., meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs at a lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying EPA's reasonable potential analyses and derivation of permit effluent limitations remain sound for the duration of the permit, EPA may ensure its "worst-case" effluent flow assumption through imposition of permit conditions for effluent flow.⁵ In this regard, the effluent flow limit is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit also is necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQSs.

The limitation on effluent flow is within EPA's authority to condition a permit in order to carry out the objectives of the CWA. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 C.F.R. §§ 122.4(a) and (d); 122.43 and 122.44(d). A condition on the discharge designed to protect EPA's WQBEL and reasonable potential calculations is encompassed by the references to "condition" and "limitations" in §§ 402 and 301 and implementing regulations, as they are designed to assure compliance with applicable water quality regulations, including anti-degradation. Regulating the

⁵ EPA's reasonable potential regulations require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," which is a function of both the effluent flow and receiving water flow. 40 C.F.R. § 122.44(d)(1)(ii). EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *In re Washington Aqueduct Water Supply Sys.*, 11 E.A.D. 565, 584 (EAB 2004).

quantity of pollutants in the discharge through a restriction on the quantity of effluent is consistent with the overall structure and purposes of the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 C.F.R. § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Operating the Facility's wastewater treatment systems as designed includes operating within the Facility's design effluent flow. Thus, the effluent flow limitation is necessary to ensure proper facility operation, which in turn is a requirement applicable to all NPDES permits. See 40 C.F.R. § 122.41.

2.4 Monitoring and Reporting Requirements

2.4.1 Monitoring Requirements

EPA has the authority in accordance with several statutory and regulatory requirements established pursuant to the CWA, 33 USC § 1251 *et seq.*, the NPDES program (*see* § 402 and the implementing regulations generally found at 40 C.F.R. §§ 122, 124, 125, and 136), CWA § 308(a), 33 USC § 1318(a), and applicable state regulations to include requirements such as monitoring and reporting in NPDES permits.

The monitoring requirements included in this permit have been established to yield data representative of the discharges under the authority of §§ 308(a) and 402(a)(2) of the CWA, and consistent with 40 C.F.R. §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The monitoring requirements included in this permit specify routine sampling and analysis, which will provide ongoing, representative information on the levels of regulated constituents in the wastewater discharge streams. The monitoring program is needed to assess effluent characteristics, evaluate permit compliance, and determine if additional permit conditions are necessary to ensure compliance with technology-based and water quality-based requirements, including QWSs. EPA and/or the state may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to § 304(a)(1) of the CWA, state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 C.F.R. § 122. Therefore, the monitoring requirements in this permit are included for specific regulatory use in carrying out the CWA.

NPDES permits require that the approved analytical procedures found in 40 C.F.R. § 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.⁶ This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under

⁶ Federal Register, Vol. 79, No. 160, Tuesday, August 19, 2014; FR Doc. 2014-19557.

the permit. The NPDES regulations at 40 C.F.R. § 122.21(e)(3) (completeness), 40 C.F.R. § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 C.F.R. § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level⁷ (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the analytical methods approved under 40 C.F.R. Part 136 or required under 40 C.F.R. Chapter I, Subchapter N or O for the measured pollutant or pollutant parameter.

2.4.2 Reporting Requirements

The Draft Permit requires the Permittee to electronically report monitoring results obtained during each calendar month as a Discharge Monitoring Report (DMR) to EPA and the State using NetDMR no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool for regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has allowed participants to discontinue mailing in hard copy forms to EPA under 40 C.F.R. §§ 122.41 and 403.12. NetDMR is accessed from the following website: <https://netdmr.zendesk.com/hc/en-us>. Further information about NetDMR can be found on the EPA Region 1 NetDMR website.⁸

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit such as for providing written notifications required under the Part II Standard Conditions.

2.5 Anti-backsliding

A permit may not be renewed, reissued or modified with less stringent limitations or conditions than those contained in a previous permit unless in compliance with the anti-backsliding

⁷ The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." See Federal Register, Vol. 79, No. 160, Tuesday, August 19, 2014; FR Doc. 2014-19557.

⁸ <https://netdmr.zendesk.com/hc/en-us/articles/209616266-EPA-Region-1-NetDMR-Information>.

requirements of the CWA. *See* §§ 402(o) and 303(d)(4) of the CWA and 40 C.F.R. § 122.44(l)(1 and 2). Anti-backsliding provisions apply to effluent limits based on technology, water quality, and/or state certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2012 Permit unless specific conditions exist to justify one of the exceptions listed in 40 C.F.R. § 122.44(l)(2)(i) and/or in accordance with § 303(d)(4). Discussion of any applicable exceptions are discussed in sections that follow. Therefore, the Draft Permit complies with the anti-backsliding requirements of the CWA.

3.0 Description of Facility and Discharge

3.1 Location and Type of Facility

The U.S. Army Corps of Engineers' (USACE) Engineer Research subordinate command, the Engineer Research and Development Center (ERDC), owns and operates the Cold Regions Research and Engineering Laboratory (CRREL). CRREL conducts research and engineering applicable to the world's cold regions for the USACE, U.S. Army and the Department of Defense.

Four of the five groundwater wells at CRREL's facility are contaminated with trichloroethylene (TCE) resulting from historical spills, explosions, and improper materials handling at the Facility. Presently, there is no TCE being used or stored on the CRREL property. The majority of TCE stored and used at the Facility was removed in 1987, when the refrigeration system was modified to use Freon. On January 27, 1991, EPA granted CRREL an emergency exclusion from the requirement for a NPDES permit, pursuant to 40 C.F.R. 122.3(d). The emergency exclusion authorized the discharge of untreated groundwater to the Connecticut River to prevent contaminated groundwater from damaging a nearby Hanover, NH public water supply. The exclusion also required the design and construction of the existing groundwater remediation system to remove TCE.

The remediation system for TCE at CRREL includes two green sand filters, two packed air stripper towers and two vapor granulated activated carbon units. Potassium permanganate is added to remove iron and carbon dioxide is injected to lower pH and control calcium carbonate-based scale during the treatment process. Treated groundwater, drawn from four on-site wells, is used as NCCW in CRREL's large capacity chilling equipment. NCCW is water employed to reduce or control the temperature of an industrial process. This cooling water does not come in direct contact with any raw material, intermediate product, waste product (other than heat) or finished product.

3.1.1 Effluent Limitation Guidelines

EPA has not promulgated technology-based effluent limitation guidelines (ELGs) for Testing Laboratories (SIC 8734). The industrial categories having ELGs are found at 40 C.F.R. Parts 405 through 471. In accordance with Section 402(a)(1)(B) of the CWA, EPA establishes technology-

based effluent limitations on a case-by-case basis using best professional judgment (BPJ) for direct discharging industries that are not specifically regulated by the ELGs.

3.2 Location and Type of Discharge

CRREL's Outfall 001 discharges treated groundwater used as non-contact cooling water and stormwater into an impoundment created by the Wilder Dam on the Connecticut River, known as Wilder Lake.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the Permittee by means of Discharge Monitoring Reports (DMRs), from February 2013 through February 2018, is provided in Appendix A of this Fact Sheet.

4.0 Description of Receiving Water and Dilution

4.1 Receiving Water

The Facility discharges through Outfall 001 to Wilder Lake, which consists of a 1760-acre impoundment on the Connecticut River in Hanover, New Hampshire.

The State classifies the Connecticut River in the vicinity of CRREL as a Class B waterbody. The river provides acceptable spawning and nursery habitat for fish species and has been identified as a warm water fishery by the New Hampshire Fish and Game Department (NHF&G). Pursuant to New Hampshire Law at Revised Statutes Annotated (RSA) 485-A:8, II,

Class B waters shall be of the second highest quality and shall have no objectionable physical characteristics, shall contain a dissolved oxygen content of at least 75 percent of saturation.... The pH range for said waters shall be 6.5 to 8.0 except when due to natural causes. Any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class. The waters of this classification shall be considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies....

RSA 485-A:8, VIII also states that

[i]n prescribing minimum treatment provisions for thermal wastes discharged to interstate waters, the department shall adhere to the water quality requirements and recommendations of the New Hampshire [F]ish and [G]ame [D]epartment, the New England Interstate Water Pollution Control Commission, or the United States Environmental Protection Agency, whichever requirements and recommendations provide the most effective level of thermal pollution control.

As previously indicated, the section of Connecticut River where the Facility discharges is a 1760-acre impoundment known as Wilder Lake (Assessment Unit NHLAK801040402-03). Wilder Lake was not listed on New Hampshire Department of Environment Services' (NHDES') Final 2016 Section 303(d) Surface Water Quality List.

The status of the designated uses in Wilder Lake as included in the 2016 305(b) report card⁹ are included in Table 1 below. Fish Consumption is rated "Poor" (Not Supported, Marginal) due to atmospheric deposition of mercury, a state-wide listing covered by the Northeast Regional Mercury Total Maximum Daily Load, developed in 2007. *See* <http://www.epa.gov/region1/eco/tmdl/pdfs/ne/Northeast-Regional-Mercury-TMDL.pdf>. Additionally, due to insufficient information, there is uncertainty as to whether turbidity negatively impacts the "aquatic life" use and *E. Coli* negatively impacts the "drinking water after adequate treatment" use for Wilder Lake.

Table 1: Summary of Designated Uses and Listing Status in 2016 305(b) Report

Designated Use	Status
Aquatic Life	Likely Good
Drinking Water After Adequate Treatment	Full Support, Good
Swimming	Full Support, Marginal
Boating	Full Support, Good
Fish Consumption	Poor

4.2 Available Dilution

To ensure that discharges do not cause or contribute to violations of WQSs under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water.¹⁰ The critical flow in rivers and streams is a certain measure of the low flow of that river or stream. State WQSs require that effluent dilution is calculated based on the receiving water lowest observed mean river flow for seven consecutive days, recorded over a 10-year recurrence interval, or 7-day, 10-year low flow (7Q10). Critical flows such as the harmonic mean flows may be used for deriving water quality-based effluent limitations based on human health criteria.

In accordance with New Hampshire's Water Quality Standards (RSA 485-A:8 VI, Env-Wq 1705.02), the available dilution for rivers and streams is based on a known or estimated value of 7Q10 flow. The receiving water 7Q10 is used for aquatic life and human health criteria for non-carcinogens, while the long-term harmonic mean flow is used for human health (for carcinogens only) (see Env-Wq 1702.44). Furthermore, ten percent of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations (Env-Wq 1705.01).

⁹ Water quality report card for watershed with HUC code 010801040402, Connecticut Mainstem-Ompompanoosuc River to White River, see http://www2.des.state.nh.us/onestoppub/SWQA/010801040402_2016.pdf

¹⁰ [EPA Permit Writer's Manual, Section 6.2.4](#)

CRREL's Outfall 001 is located in an ungauged area of the Connecticut River. 7Q10 and harmonic mean flows at USGS gauges upstream (2 gauges: White River at West Hartford, VT, gauge ID #01144000; and Connecticut River at Wells River, VT, gauge ID #01138500) and downstream (1 gauge: Connecticut River at West Lebanon, NH, gauge ID #01144500) of the CRREL were calculated using DFLOW 3.1b software. The West Lebanon gauge is approximately two miles below the CRREL outfall. The White River joins with the Connecticut River between the CRREL outfall and the West Lebanon gauge. These three 7Q10s and harmonic mean flows for each gauge were then used to estimate a single representative low flow statistic for CRREL in accordance with Scenario III in NHDES' "Interim Final Policy on 7Q10 and Withdrawals for Fresh Water Surface Waters" (June 24, 2002), with the exception that the drainage area (DA) ratio was used rather than the Dingman ratio to prorate the flow. The DA ratio was used because the Cotton stratified drift map information is not available for the Vermont portion of the Connecticut River watershed.

Table 2: Gauge Information Used in Calculating Low Flow Statistics

Gauge Name	Units	White River at West Hartford, VT	Connecticut River at Wells River, VT	Connecticut River at West Lebanon, NH
USGS Gauge Number		01144000	01138500	01144500
Drainage Area (DA)	sq mi	689	2644	4092
Gauge 7Q10	cfs	103	926	1090
Gauge Harmonic Mean Flow (HMQ)	cfs	562	3100	4160

The intervening area between the above three gauges in Table 2 is:

$$4092 - 2644 - 689 = 759 \text{ sq mi}$$

The intervening area downstream of CRREL is estimated at 76 sq mi.

Using Scenario III and assuming water withdrawals are accounted for in gauge flow data, the intervening low flow statistics and drainage area are calculated:

$$\text{Intervening 7Q10} = \text{downstream 7Q10} - \text{upstream 7Q10}$$

where the downstream 7Q10 is the 7Q10 at the Connecticut River/West Lebanon, NH gauge and the upstream 7Q10 is the sum of the 7Q10s at the Connecticut River at Wells River, VT gauge and the White River at West Hartford, VT gauge.

$$\text{Intervening 7Q10} = 1090 - (103 + 926) = 61 \text{ cfs}$$

Using the drainage ratio proration methodology, the following equation is used to calculate the representative 7Q10 for CRREL:

$$\begin{aligned}
 7Q_{10} \text{ for CRREL} &= (\text{Intervening } 7Q_{10} \times (\text{upstream DA in intervening area}/\text{total DA in} \\
 &\quad \text{intervening area})) + 7Q_{10} \text{ at upstream gauge)} \\
 &= 61 \times (759/(759 + 76)) + 926 \\
 &= 55 + 926 \\
 &= 981 \text{ cfs}
 \end{aligned}$$

Using the same methodology of using gauge flow data and a drainage area ratio to prorate flows, a harmonic mean flow (HMQ) for CRREL is calculated:

$$\begin{aligned}
 \text{Intervening HMQ} &= \text{Downstream HMQ} - \text{Upstream HMQ} \\
 &= 4160 - (562 + 3100) = 498 \text{ cfs}
 \end{aligned}$$

$$\begin{aligned}
 \text{HMQ for CRREL} &= 498 \times (759/(759 + 76)) + 3100 \\
 &= 3553 \text{ cfs}
 \end{aligned}$$

Therefore, for CRREL, the representative 7Q₁₀ is 981 cfs and the harmonic mean flow is 3553 cfs.

The following equation is to calculate dilution factors from the estimated critical flows, adjusted for assimilative capacity in accordance with NH WQS:

$$\text{Dilution Factor (DF)} = \frac{7Q_{10} \text{ or HMQ for CRREL} \times 0.9}{\text{Design Flow}}$$

The permitted design flow for CRREL is 1.9 millions of gallons per day (MGD). Therefore,

$$DF_{7Q_{10}} = \frac{0.646 \times 981 \times 0.9}{1.9} = 300 \quad \text{and} \quad DF_{\text{HMQ}} = \frac{0.646 \times 3553 \times 0.9}{1.9} = 1087$$

where 0.646 is the conversion factor from cfs to MGD, and DF_{7Q₁₀} is the resulting dilution factor for CRREL using the 7Q₁₀, and DF_{HMQ} is the dilution factor using harmonic mean flow (HMQ).

5.0 Proposed Effluent Limitations and Conditions

The proposed effluent limitations and conditions derived under the CWA and State WQSs are described below. These proposed effluent limitations and conditions, the basis of which is discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit. In accordance with 40 C.F.R. § 122.45(b)(2), EPA based the calculation of effluent limitations upon a reasonable measure of actual production by the Facility. EPA determined that the measure of production appropriate for this Facility is the maximum daily permitted flow limit, 1.9 MGD. The maximum effluent flow reflects the amount of NCCW needed for facility operations.

EPA notes that the State of New Hampshire adopted new criteria into their WQSs in December 2016 and submitted them to EPA for review and approval. Although the new criteria have not

yet been approved by EPA, the Draft Permit is being proposed with effluent limits derived to meet the new criteria in anticipation of a state certification to do so.

5.1 Effluent Limitations and Monitoring Requirements

The State and Federal regulations, data regarding discharge characteristics, and data regarding ambient characteristics described above, were used during the effluent limitations development process. Discharge data is included in Appendix A.¹¹

5.1.1 Effluent Flow

From February 2013 through February 2018, the daily maximum discharge flow ranged from 0.183 MGD to 1.169 MGD. The reported mean flow is 0.650 MGD. The Facility's 2012 Permit limits the discharge to a maximum flow of 1.9 MGD. Flow is regulated to control the impact of any pollutant, including heat, in the discharge. From February 2013 through February 2018 (Appendix A) there were no violations of the flow limit. The Draft Permit maintains a maximum daily flow limit of 1.9 MGD with a weekly reporting requirement in accordance with the anti-backsliding requirements found in 40 C.F.R. §122.44, measured using a continuous recording device.

5.1.2 pH

The hydrogen-ion (H-) concentration in an aqueous solution is represented by the pH using a logarithmic scale of 0 to 14 standard units (S.U.). Solutions with pH 7.0 S.U. are neutral, while those with pH less than 7.0 S.U. are acidic and those with pH greater than 7.0 S.U. are basic. The pH of a waterbody is influenced by geology and soils, organic acids (decaying leaves and other matter), and human-induced acids from wastewater discharges and acid rain (which typically has a pH of 3.5 to 5.5). The pH of a waterbody can affect the survival and reproduction of fish and other aquatic life. Discharges with pH values markedly different from the receiving water pH can also kill aquatic life. pH can also affect the toxicity or solubility of chemical compounds such as metals.

The existing pH limits, 6.5 to 9.0 Standard Units (S.U.), while outside the range of 6.3-8.0 S.U. for Class B waters in NH WQS, are based on a pH study that demonstrated that CRREL's effluent discharge does not cause a degradation of the in-stream NH Standards for pH. In a letter dated August 6, 2007, NHDES-WD validated CRREL's pH demonstration study and supported a pH adjustment for CRREL's permit. CRREL requested EPA modify the permit's pH limits to 6.5 to 9.0 S.U. from 6.5 to 8.0 S.U. by a letter dated August 10, 2007. EPA concurred with NHDES-WD's decision and granted the modification of CRREL's pH limit to 6.5 to 9.0 S.U. by a letter dated September 4, 2007. From February 2013 through February 2018 (Appendix A), recorded pH values ranged from 6.5 S.U. to 8.31 S.U.

¹¹ EPA has manually reviewed the DMR data through March 2019. There is nothing new in that data set that would warrant a substantially different discussion or conclusion in this Fact Sheet. Therefore, EPA is not updating Attachment A with the most recent data. The new data set is included as part of the draft permit administrative record.

Typically, when a New Hampshire NPDES permit is reissued, even if the permittee's preceding permit received a pH modification, the reissued permit contains the pH limits of 6.5 to 8.0 S.U. The permittee is required to conduct a new pH demonstration study to have their facility's pH limits modified. The reason for requiring a new pH demonstration study is to ensure the pH range of the effluent discharged from sewage or industrial treatment works has not shown an increase in variability; therefore, presenting a potential harm to the receiving water.

A statistical analysis of CRREL's monthly pH data shows low pH variability in CRREL's effluent. The standard deviation for the lower and upper pH readings recorded from February 2013 through February 2018 (Appendix A) are 0.27 and 0.17, respectively. These small standard deviations for both the lower and upper pH readings confirm the low pH variability of CRREL's effluent. Additionally, there have been no violations of the 6.5 to 9.0 S.U. pH limits since October 2007. Based on the low variability of the pH in CRREL's effluent discharge and high dilution, EPA has decided to retain the existing permits pH range of 6.5 to 9.0 S.U. and weekly monitoring, and not to require an additional pH demonstration study requirement in the Draft Permit.

5.1.3 Trichloroethylene

Trichloroethylene (TCE) is a halogenated volatile organic compound (VOC). A halogenated compound is one that has a halogen (e.g., fluorine, chlorine, bromine, or iodine) attached to its chemical structure. In general, halogenated VOCs rapidly volatilize to the atmosphere when released to surface water and soil surfaces or leach to groundwater. Generally, the more halogenated the compound (i.e., the more halogens attached to its chemical structure), the more resistant it is to degradation. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") indicates that acute toxicity to freshwater aquatic life occurs at concentrations as low as 45,000 µg/L.¹² TCE is also listed as a priority pollutant in Appendix A to 40 C.F.R. Part 423.

The maximum daily TCE limit in the 2012 Permit is 5 µg/L. This limit was developed using BPJ and based on the maximum contaminant level (MCL) of TCE in drinking water. Since this limit is a TBEL, allowance for dilution does not apply and the limit is met at the point of discharge or "end-of-pipe".

According to DMR data from February 2013 through February 2018 (see Appendix A), there was one reported exceedance of the TCE limit, which was linked to a power interruption that caused the TCE treatment system to fail. February 2017 monitoring results show that TCE was 6.8 µg/L. During the same review period, TCE was detected twice; results for March 2016 and June 2017 were 1.8 µg/L and 1.4 µg/L, respectively.

The NH Standards include the following fresh water criteria for TCE: aquatic life chronic at 21,900 µg/L, aquatic life acute at 45,000 µg/L, and human health (water and fish ingestion) 2.7 µg/L, and human health (fish consumption only) at 81 µg/L. The monitoring data shows that the discharge concentrations of TCE are well below the aquatic life criteria and the fish consumption

¹² See <https://nepis.epa.gov/Exe/ZyPDF.cgi/00001MGA.PDF?Dockey=00001MGA.PDF>, p. 306.

human health criteria. Given the high HMQ-based dilution factor of 1087, for protection of human health, EPA expects that the NH Standards for human health criteria will continue to be achieved near the discharge point. Therefore, in this case, the existing TBEL of 5 µg/L is more stringent than a calculated WQBEL.

The current treatment system, when operated appropriately, has enabled the Facility to consistently meet the existing 5 µg/L limit. The Draft Permit retains a maximum daily TCE limit of 5 µg/L, monitored monthly, in accordance with the anti-backsliding requirements found in 40 C.F.R. §122.44. In addition, a special condition for maintaining backup power for the treatment facility is included in the Draft Permit as a best management practice (BMP) to supplement the numeric limit (see Section 5.2.2).

5.1.4 Temperature

Ambient water temperature is an important factor for aquatic life and can influence other water quality aspects such as dissolved oxygen (the solubility of oxygen decreases as water temperature increases). Water temperature affects the metabolic and reproductive activities of aquatic organisms and can determine which fish and macroinvertebrate species can survive in a given waterbody. Freshwater fishes cannot regulate their body temperature through physiological means, so their body temperatures are very close to the temperatures of the water they inhabit (Moyle and Cech, Jr. 2004).

The Connecticut River in the Hanover, NH area is classified as a warm water fishery. The State's statutory and regulatory provisions do not specify numeric temperature criteria but do specify narrative criteria specific to thermal discharges to protect the existing and designated uses of the waterbody, to restore and maintain the chemical, biological, and physical integrity of the State's waters and to provide for the protection and propagation of fish, shellfish, and wildlife. See Env-Wq 1701.01 and 1703.01(b). New Hampshire's environmental statutes and water quality standards dictate that in Class B waters, "any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class." See RSA 485-A:8, II and Env-Wq 1703.13(b). Certain NPDES permits, including the Non-Contact Cooling Water General Permit (NHG250000), consider a daily maximum discharge temperature of 83°F to be protective for thermal discharges to warm water fisheries and 68°F to be protective of cold water species. However, cold water brook trout and brown trout have been generally noted in this reach of the Connecticut River (NH Fish and Game; <https://wildlife.state.nh.us/fishing/where-fish.html> [Great North Woods]). As such, this section of the Connecticut River likely provides habitat for one or more life history requirements of cold water trout species, even though the river in this location is designated as a warm water fishery and the ambient temperatures are naturally higher than protective temperatures for cold water fisheries during portions of the year.

The 2012 Permit included a daily maximum temperature limit of 75°F to protect existing and designated uses for both the warm water fishery classification and the cold water fishery resources in the river. Review of the DMR data reveals that the limit has consistently been met: from February 2013 through February 2018, the maximum daily effluent temperature reported was 74°F during May 2016. EPA believes that the high dilution factor at this outfall (300:1) will

also minimize any impact of the thermal discharge on aquatic life sensitive to ambient temperature changes. The maximum daily limit of 75°F has been reviewed by NH Fish and Wildlife and judged to be protective of aquatic life (including warm and cold water fish species) in the receiving water under these site specific conditions. See email from H. Franz, NHDES to U. Kipka, EPA, February 28, 2019. The Draft Permit carries forward the maximum daily temperature limit of 75°F and the reporting frequency of once per week in accordance with anti-backsliding requirements at 40 C.F.R. § 122.44(l). The conservative temperature limit will ensure that any temperature increase in the Connecticut River due to the discharge of NCCW will not interfere with the designated uses, including as a habitat for warm and cold water fish.

5.1.5 Whole Effluent Toxicity

Sections 402(a)(2) and 308(a) of the CWA provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. Whole effluent toxicity (WET) testing is conducted to ensure that the additivity, antagonism, synergism, and persistence of the pollutants in the discharge do not cause toxicity, even when the pollutants are present at low concentrations in the effluent. The inclusion of WET requirements in the Draft Permit will assure that the Facility does not discharge combinations of pollutants into the receiving water in amounts that would affect aquatic life or human health.

In addition, under § 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on WQSs. Under certain narrative State WQSs, and §§ 301, 303 and 402 of the CWA, EPA and the States may establish toxicity-based limitations to implement the narrative “no toxics in toxic amounts”. New Hampshire statute and regulations state that, “*all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life...*” (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Wq 1730.21(a)(1)).

Whole effluent chronic effects are regulated by limiting the highest tested concentration of an effluent at which no adverse effects are observed on the aquatic test organisms, known as the chronic no observed effect concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50% of the test organisms, known as the LC₅₀. The dilution factor (see Section 4.2) is considered when determining whether there is reasonable potential for the discharge to cause or contribute to a violation of water quality standards for Whole Effluent Toxicity.

The 2012 Permit required the Permittee to conduct and report a one-time chronic and acute WET test to ensure that the Facility’s NCCW was not potentially toxic to aquatic life. The Permittee performed WET testing in January 2013 and October 2013. Chronic fathead minnow (*Pimephales promelas*) testing conducted in January 2013 failed to meet the acceptability criteria for survival and statistical variability due to the failure of the receiving water. The C-NOEC for daphnid (*Ceriodaphnia dubia*) was 25%. WET testing was repeated in October 2013 and results showed no acute or chronic toxicity for either species. Setting aside test acceptability and the limited dataset, the initial unfavorable results do not demonstrate reasonable potential for the

discharge to cause or contribute to a violation of water quality standards for either species because the applicable dilution factor is 300. The C-NOEC or LC₅₀ would have had to have been reported as less than 1% to demonstrate reasonable potential, where a limit is established at the receiving water concentration, i.e. the inverse of the dilution factor).

Based on the testing results and the relatively high dilution factor, two sets of acute and chronic WET tests for both species will be required and no WET limits will be implemented in this Draft Permit. Toxicity testing must be performed in accordance with the EPA Region 1 test procedures and protocols specified in Attachment A, Freshwater Acute Toxicity Test Procedure and Protocol (February 2011), and Attachment B, Freshwater Chronic Toxicity Test Procedure and Protocol (March 2013) of the Draft Permit.

5.1.6 Priority Pollutant Scan

EPA typically expects industrial facilities to submit at least one priority pollutant scan per permit term. The priority pollutant scan data may be submitted with the permit application to satisfy this requirement. Review of the 2017 permit application for this facility reveals reporting of a narrower suite of chemicals than a priority pollutant scan. To develop a fuller characterization of the effluent quality from this facility, and to identify any degradation products of TCE or other legacy contaminants that may be present in the discharge, one priority pollutant scan will be required by this Draft Permit, and the data may be submitted with the permit application 180 days before the Final Permit expires.

5.2 Special Conditions

5.2.1 Backup Power for the TCE Treatment System

A special condition for maintaining backup power to the TCE treatment facility has been added to the Draft Permit, with the specific intent to prevent to loss of power to the two TCE air stripping towers at the Facility. (A failure in the power supply to the air stripping towers was linked to a TCE exceedance in February 2017, see Section 5.1.3).

5.2.2 Discharges of Chemicals and Additives

Chemicals and additives include, but are not limited to: algaecides/biocides, antifoams, coagulants, corrosion/scale inhibitors/coatings, disinfectants, flocculants, neutralizing agents, oxidants, oxygen scavengers, pH conditioners, and surfactants. The Draft Permit allows the discharge of only those chemicals and additives specifically disclosed by the Permittee to EPA and the State, provided that such discharge does not violate § 307 or 311 of the CWA or applicable State WQSs.

However, EPA recognizes that chemicals and additives in use at a Facility may change during the term of the permit. As a result, the Draft Permit includes a provision that requires the Permittee to notify EPA and the State in writing of the discharge a new chemical or additive; allows for EPA and State review of the change; and provides the factors for consideration of such changes. The Draft Permit specifies that the Permittee must submit the following

information for each chemical or additive, at a minimum, in writing to EPA and the State:

- Product name, chemical formula, and manufacturer of the chemical/additive.
- Purpose or use of the chemical/additive.
- Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive.
- The frequency (e.g., hourly, daily), magnitude (e.g., maximum and average), duration (e.g., hours, days), and method of application for the chemical/additive.
- If available, the vendor's reported aquatic toxicity (i.e., NOAEL and/or LC₅₀ in percent for aquatic organism(s)).

The Permittee must also provide an explanation which demonstrates that the discharge of such chemical or additive: 1) will not add any pollutants in concentrations which exceed permit effluent limitations; 2) will not exceed any applicable water quality standard; and 3) will not add any pollutants that would justify the application of permit conditions that are different from or absent in this permit.

Discharges of a new chemical or additive is authorized under the permit upon notification to EPA and the State unless otherwise notified by EPA or the State.

5.3 Standard Conditions

The standard conditions of the permit are based on 40 C.F.R. § 122, Subparts A and D and 40 C.F.R. § 124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

6.0 Federal Permitting Requirements

6.1 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and habitat of such species that have been designated as critical (a "critical habitat").

Section 7(a)(2) of the ESA requires every Federal agency, in consultation with and with the assurance of the Secretary of Interior, to ensure that any action it authorizes, funds or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine and anadromous species.

The Federal action being considered in this case is EPA's proposed NPDES permit for the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines potential impacts to federally listed species, and initiates consultation, when required under Section 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, or plants in the Connecticut River to determine if any such listed species might potentially be impacted by the issuance of this NPDES permit.¹³ One listed endangered species, the northern long-eared bat (*Myotis septentrionalis*), was identified as present in the vicinity of the Facility. According to the USFWS, the northern long-eared bat is found in "winter – mines and caves, summer – wide variety of forested habitats." This terrestrial species is not aquatic, so the discharge will have no direct effect on this mammal. Further, the permit action is also expected to have no indirect effect on the species because it is not expected to impact insects, the primary prey of the northern long-eared bat. Therefore, the proposed permit action is deemed to have no impact on this listed species.

The dwarf wedgemussel (*Alasmidonta heterodon*) is a federally listed species associated with the Connecticut River in New Hampshire. Dwarf wedgemussels (DWMs) were added to the endangered species list on March 4, 1990. Presently in New Hampshire, the DWMs' known population has been identified in a number of locations along the mainstem of the Connecticut River. Although the Facility discharges into the mainstem of the Connecticut River at Hanover, NH, the discharge is located approximately 4.5 miles downstream from a DWM designated area at Thetford, VT / Lyme, NH and approximately 5 miles upstream from the Hartford, VT / Lebanon, NH designated area. Based on the large dilution factor calculated for the discharge from CRREL, the discharge plume is judged to be fully mixed well before the downstream designated area is reached and is not thought to have any detectable influence in the Connecticut River segments with DWM designation.

EPA has made the preliminary determination that there are no species listed as federally threatened or endangered in the vicinity of CRREL that would be affected by the proposed action. Therefore, EPA has judged that a formal consultation pursuant to Section 7 of the ESA is not required. Supporting information included in this Fact Sheet and the Draft Permit will be made available to USFWS when the Draft Permit is published.

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Services if EPA's action or proposed action that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 16 U.S.C. §1802 (10).

¹³ See §7 resources for USFWS at <https://ecos.fws.gov/ipac/>

“Adversely impact” means any impact which reduces the quality and/or quantity of EFH, 50 C.F.R. §600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist. *See* 16 U.S.C. §1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

According to the National Marine Fisheries Service (NMFS), the Connecticut River and its tributaries is designated EFH for Atlantic salmon (*Salmo salar*).¹⁴ This section of the Connecticut River is classified as a Class B waterbody. Pursuant to New Hampshire Statutes RSA 485-A:8, Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other crucial functions, and for primary and secondary contact recreation.

Atlantic salmon are expected to be present during one or more life stages within the area which encompasses the discharge site. Although the last remnant stock of Atlantic salmon indigenous to the Connecticut River was believed to have been extirpated over 200 years ago, an effort had been underway throughout the Connecticut River system from 1967 to 2012 to restore this historic run. Remnants of this stocking effort may still be present in this general reach of the river.

Atlantic salmon juvenile or adult life stages may pass in the vicinity of the discharge on the mainstem of the Connecticut River in the Wilder Lake impoundment. The area of the discharge on the river mainstem in the impoundment is not judged to be suitable for spawning, which is likely to occur in tributaries where the appropriate gravel or cobble riffle substrate can be found.

EPA has determined that the limits and conditions contained in this Draft Permit minimize adverse effects to Atlantic Salmon EFH for the following reasons:

- This permit action is a reissuance of an existing NPDES permit (i.e., no new source of pollutants);
- The dilution factor is high (*See* Section 4.2 of this Fact Sheet);
- The Draft Permit’s 75°F maximum daily temperature limit is more stringent than NH Standards;
- The Connecticut River is approximately 375 feet wide in the vicinity of the CRREL discharge in Hanover, NH, providing a large zone of passage for migrating Atlantic salmon;
- Acute toxicity tests will be conducted twice on daphnids (*Ceriodaphnia dubia*) and fathead minnows (*Pimephales promelas*);
- DMR data show discharge concentrations of TCE are well below the aquatic life criteria and the fish consumption human health criteria;

¹⁴ See Final Omnibus Essential Fish Habitat Amendment 2 Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts; Atlantic salmon. December 8, 2016. Available at <https://www.greateratlantic.fisheries.noaa.gov/regs/2018/April/18oa2frmap.html>

- The facility withdraws no water from the Connecticut River, so no life stages of aquatic life, including Atlantic salmon are vulnerable to impingement or entrainment from the Facility;
- The Draft Permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts; and
- The Draft Permit is designed so that all discharges meet NH Standards.

EPA believes that the conditions and limitations contained within the Draft Permit adequately protects all aquatic life, including those with designated EFH in the receiving water, and that further mitigation is not warranted. Should adverse impacts to EFH be detected as a result of this permit action, or if new information is received that changes the basis for EPA's conclusions, NMFS will be contacted and an EFH consultation will be re-initiated.

As the federal agency charged with authorizing the discharge from this facility, EPA has submitted the Draft Permit and this Fact Sheet to NMFS Habitat Division for their review.

7.0 Public Comments, Hearing Requests, and Permit Appeals

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to Undine Kipka, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Branch, 5 Post Office Square, Suite 100, Boston, Massachusetts 02109-3912 or via email to kipka.undine@epa.gov.

Any person, prior to the close of the public comment period, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the Draft Permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

8.0 EPA Contact

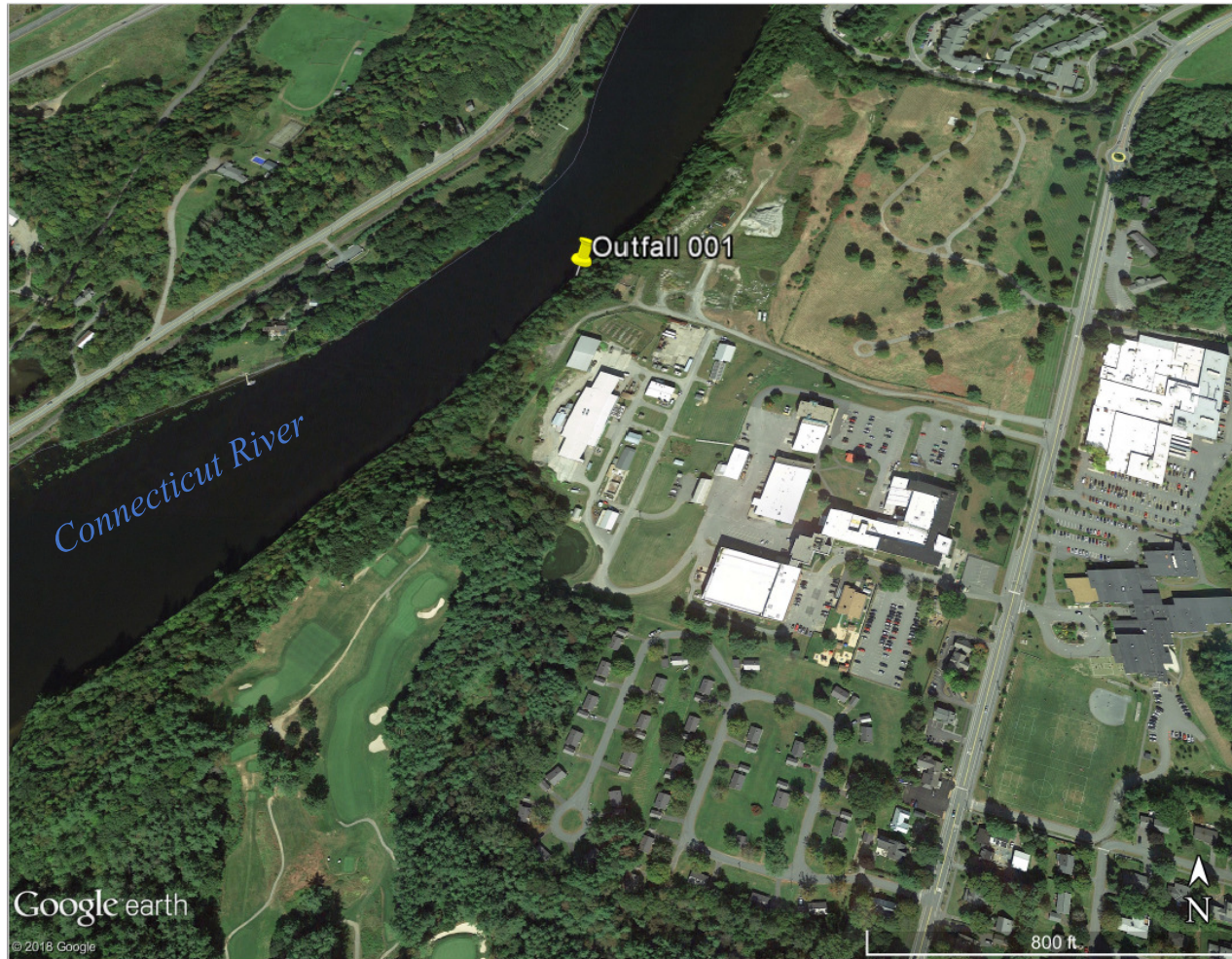
The administrative record on which this Draft Permit is based may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from the contact below:

Undine Kipka
EPA Region 1
5 Post Office Square, Suite 100 (OEP06-01)
Boston, MA 02109-3912
Telephone: (617) 918-1335
FAX: (617) 918-0000
Email: kipka.undine@epa.gov

Date April 25, 2019

Ken Moraff, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

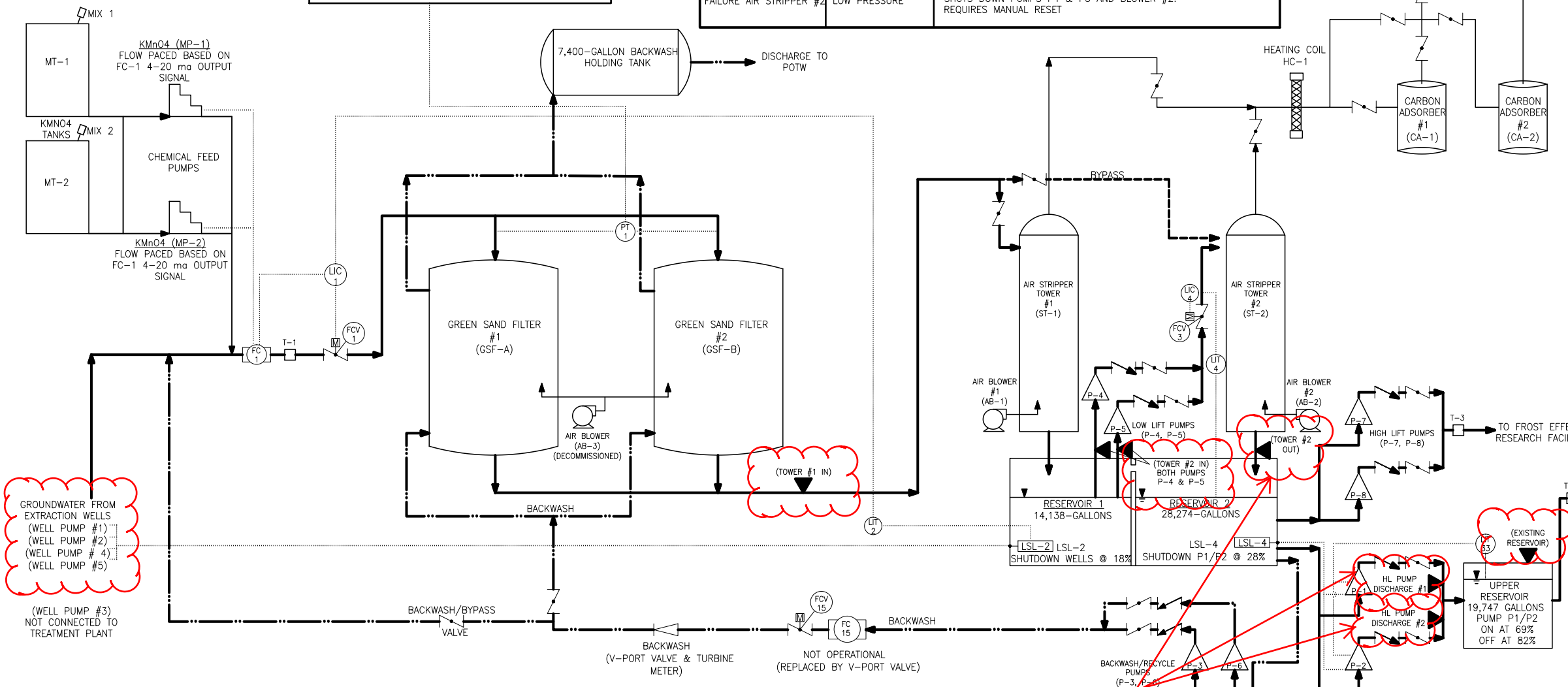
Figure 1 - Site Map
Cold Regions Research and Engineering Laboratory
Hanover, NH



MAIN CONTROL PANEL ALARM SETTINGS

ALARM	TRIGGER	ACTION
RESERVOIR 1 HIGH ALARM	LSH2 RESERVOIR 1	LEVEL ALARM ENERGIZES AND CALLS OUT TO THE AUTODIALER. STOPS THE WELL PUMPS AT 90%.
RESERVOIR 1 LOW LEVEL ALARM	LSH2 RESERVOIR 1	STOPS PUMPS P4 AND P5 ON A LOW LEVEL ALARM AT 18% AND ENERGIZES THE LOW LEVEL ALARM & AUTODIALER.
RESERVOIR 2 LOW LEVEL ALARM	LSL4 RESERVOIR 2	STOPS PUMPS P1 & P2 (UPPER RESERVOIR), P3 AND P6 (BACKWASH PUMPS), AND P7 & P8 (FERF PUMPS) AT 28% AND ENERGIZES THE LOW LEVEL ALARM & AUTODIALER.
RESERVOIR 2 HIGH LEVEL ALARM	LSL4 RESERVOIR 2	SHUTS DOWN PUMPS P4 & P5 AT 92.5% AND CALLS OUT THE AUTODIALER.
HIGH LEVEL ALARM MAIN RESERVOIR	LIT 33	SHUTS DOWN PUMPS P1 & P2 AT 86%.
STORM DRAIN OVERFLOW MAIN LAB RESERVOIR	LIT 33	DRAINS OFF MAIN LAB RESERVOIR TO CONNECTICUT RIVER AT 107.5% CAPACITY OR 1'-3" BELOW TOP OF RESERVOIR.
FAILURE AIR STRIPPER #1	LOW PRESSURE	SHUTS DOWN EXTRACTION WELLS AND BLOWER #1. REQUIRES MANUAL RESET
FAILURE AIR STRIPPER #2	LOW PRESSURE	SHUTS DOWN PUMPS P4 & P5 AND BLOWER #2. REQUIRES MANUAL RESET

AUTOMATED BACKWASH SET POINT OF 7 PSI IN GSF UNITS.
MINIMUM VOLUME IN RESERVOIR 2 = 80%
MINIMUM VOLUME IN UPPER RESERVOIR = 70%



LEGEND

- ELECTRICAL CONTROLS
- FORWARD PROCESS FLOW
- BACKWASH LINE
- FLOW METER
- ∠ BUTTERFLY VALVE
- V V-PORT VALVE
- ⊠ MOTOR OPERATED BUTTERFLY VALVE
- ∠ CHECK VALVE
- LIC LEVEL INDICATOR CONTROL
- LIT LEVEL INDICATING TRANSMITTER
- PT PRESSURE DIFFERENTIAL TRANSMITTER
- T-1 TOTALIZER
- LSL-4 LOW LEVEL SHUT OFF - P4/P5
- ▼ SAMPLE PORT (SAMPLE ID)

GROUNDWATER FROM EXTRACTION WELLS (WELL PUMP #1) (WELL PUMP #2) (WELL PUMP #4) (WELL PUMP #5) (WELL PUMP #3) NOT CONNECTED TO TREATMENT PLANT

RESERVOIR 1 SET POINTS

	%CAPACITY	VOLUME (GALLONS)	HEIGHT (FROM BOTTOM)
SETPOINT	67%	9,472	9'-4"
PUMPS TURN ON	72%	10,179	10'-1"
PUMPS TURN OFF	83%	11,734	11'-7"

RESERVOIR 2 SET POINTS

	%CAPACITY	VOLUME (GALLONS)	HEIGHT (FROM BOTTOM)
SETPOINT	77%	21,771	10'-9"
PUMPS TURN ON	67%	18,943	9'-4"
PUMPS TURN OFF	86%	24,316	12'-0"

UPPER RESERVOIR SET POINTS

	%CAPACITY	VOLUME (GALLONS)	HEIGHT (FROM BOTTOM)
SETPOINT	--	--	--
PUMPS TURN ON	69%	13,626	8'-3"
PUMPS TURN OFF	82%	16,193	9'-10"

EXTRACTION WELL VFD SETTINGS

	EXTRACTION WELL 1	EXTRACTION WELL 2	EXTRACTION WELL 4	EXTRACTION WELL 5
PROCESS FLOW SETTING (MAX. FLOW 750± GPM)	60 HZ	60 HZ	60 HZ	60 HZ
PROCESS FLOW SETTING (NORMAL FLOW 750± GPM)	55 HZ	55 HZ	60 HZ	60 HZ
BACKWASH FLOW SETTING (APPROX. 350± GPM)	0 HZ	0 HZ	60 HZ	60 HZ

Samples to be combined into Reservoir 2 Out

REVISION BOX		
DATE	REVISION	BY
1/17/2012	USACE O&M MANUAL DRAFT EDITS	NRS
7/12/2012	EXTRACTION WELL VFD SETTINGS	NRS

FIGURE 2
PROCESS & INSTRUMENTATION DIAGRAM
COLD REGION RESEARCH ENGINEERING LABORATORIES
 LOCATED AT
72 LYME ROAD
HANOVER, NH 03755
 PREPARED FOR
US ARMY CORPS OF ENGINEERS

NOT TO SCALE **REVISED FEBRUARY 2016; PREPARED BY NRS**

SOVEREIGN CONSULTING INC.
 905B SOUTH MAIN STREET, UNIT 202
 MANSFIELD, MA 02048
 TEL: (508) 339-3200
 FAX: (508) 339-3248
 www.sovcon.com

APPENDIX A

Monitoring Period Range: 2/01/2013 to 2/01/2018
 Facility ID: NH0001619

Outfall 001

Limitation	Flow, in conduit or thru treatment plant	Flow, in conduit or thru treatment plant	Temperature, water deg. fahrenheit	Temperature, water deg. fahrenheit	Trichloroethylene	pH	pH
Monitoring Period	1.9 MGD DAILY MX	Mon MGD MO AVG	75 deg F DAILY MX	Mon deg F MO AVG	5 ug/L DAILY MX	6.5 SU MINIMUM	9 SU MAXIMUM
02/28/2013	0.746	0.667	55.2	51.5	0	7.4	7.9
03/31/2013	0.675	0.577	57.7	53	0	7.4	7.9
04/30/2013	0.69	0.513	60.9	56.2	0	7.4	7.7
05/31/2013	0.968	0.813	63.5	57.1	0	7	7.8
06/30/2013	0.946	0.649	64.4	59.7	0	7.3	7.8
07/31/2013	0.658	0.501	65.1	62.4	0	7.3	7.7
08/31/2013	0.728	0.618	64	61.4	0	7.5	7.8
09/30/2013	0.74	0.614	60	57.5	0	7.1	7.7
10/31/2013	0.557	0.463	59.5	55.7	0	7.1	7.7
11/30/2013	0.645	0.463	55.9	52.7	0	7.4	7.8
12/31/2013	0.965	0.745	55.04	51.3	0	6.5	7.7
01/31/2014	0.819	0.737	54.3	50.2	0	7.2	7.6
02/28/2014	0.788	0.735	51.8	49.9	0	6.9	7.6
03/31/2014	0.835	0.721	51.2	48.9	0	6.9	7.9
04/30/2014	0.96	0.834	55.2	52.6	0	7	7.7
05/31/2014	0.921	0.74	57	55.4	0	7.4	7.7
06/30/2014	0.827	0.653	61.7	57.7	0	7.4	7.9
07/31/2014	1.169	0.9	61.5	58.4	0	7.3	7.7
08/31/2014	1.013	0.9	60	58.2	0	6.7	7.9
09/30/2014	0.708	0.561	62.4	57.8	0	7.2	7.8
10/31/2014	0.695	0.49	60.4	55.6	0	7.1	7.8
11/30/2014	0.578	0.449	61.7	56	0	6.7	7.8
12/31/2014	0.77	0.6	55.4	52.7	0	7.3	7.8
01/31/2015	0.601	0.562	53.6	50.2	0	7.3	7.8
02/28/2015	0.629	0.535	52.3	49.2	0	7.2	7.6
03/31/2015	0.578	0.503	52.16	50.2	0	7.25	7.8
04/30/2015	0.523	0.422	56.3	53.4	0	7.1	7.9
05/31/2015	0.732	0.538	65.3	60.7	0	7.64	8.02
06/30/2015	0.739	0.661	61.1	58.9	0	7.7	7.9
07/31/2015	0.652	0.577	65.3	62.1	0	7.5	7.9
08/31/2015	0.763	0.62	64.6	61	0	7.5	7.9
09/30/2015	0.816	0.518	63.1	60.9	0	7.3	7.7
10/31/2015	0.512	0.282	61.7	57.9	0	7.46	7.87
11/30/2015	0.243	0.222	59.72	54.5	0	7.44	7.9
12/31/2015	0.33	0.188	55.6	49.3	0	7.29	7.97
01/31/2016	0.183	0.138	55.94	50.86	0	6.58	7.98
02/29/2016	0.43	0.303	53.6	50.39	1.8	6.52	8.03

03/31/2016	0.42	0.39	59.18	53.46	0	7.41	7.93
04/30/2016	0.46	0.41	56.66	53.7	0	7.2	7.8
05/31/2016	0.612	0.458	73.94	59.22	0	7.33	7.88
06/30/2016	0.787	0.638	62.42	59.16	0	7.48	7.97
07/31/2016	0.824	0.767	63.86	61.13	0	7.26	7.9
08/31/2016	0.593	0.722	63.5	60.32	0	7.41	7.84
09/30/2016	0.757	0.669	62.42	58.78	0	7.66	7.91
10/31/2016	0.379	0.329	61	56.7	0	7.57	7.93
11/30/2016	0.39	0.37	54.14	53.66	0	7.34	8.31
12/31/2016	0.359	0.344	56.12	53.64	0	7.39	7.92
01/31/2017	0.4864	0.3513	54.86	52.99	0	7.32	7.84
02/28/2017	0.361	0.342	53.6	52.4	6.8	7.51	7.95
03/31/2017	0.356	0.346	55.58	52.34	0	7.13	7.92
04/30/2017	0.361	0.346	60.98	55.79	0	7.57	8.02
05/31/2017	0.569	0.433	62.78	57.46	0	7.79	8.25
06/30/2017	0.775	0.628	64.22	59.29	1.4	7.23	7.58
07/31/2017	0.797	0.745	63.86	60.14	0	7.29	7.57
08/31/2017	0.8	0.699	62.06	59.3	0	7.2	7.58
09/30/2017	0.7532	0.6817	62.6	58.78	0	7.17	7.48
10/31/2017	0.6676	0.4651	60.62	56.5	0	7.15	7.43
11/30/2017	0.5148	0.3576	60.08	53.46	0	6.92	7.95
12/31/2017	0.4869	0.4733	51.44	49.99	0	7.23	7.52
01/31/2018	0.5062	0.4789	52.52	49.63	0	7.12	7.54

NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES
WATER DIVISION
P.O. BOX 95
CONCORD, NEW HAMPSHIRE 03302-0095

U.S. ENVIRONMENTAL PROTECTION
AGENCY-REGION 1
OFFICE OF ECOSYSTEM PROTECTION
5 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02109

JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE
ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF
THE UNITED STATES UNDER SECTIONS 301 AND 402 OF THE CLEAN WATER ACT
(THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER
SECTION 401 OF THE ACT, AND ISSUANCE OF A STATE SURFACE WATER PERMIT
UNDER NH RSA 485-A:13, I(a).

PUBLIC NOTICE PERIOD: May 2, 2019 – May 31, 2019

PERMIT NUMBER: **NH0001619**

PUBLIC NOTICE NUMBER: NH-005-19

NAME AND MAILING ADDRESS OF APPLICANT:

U.S. Army Corps of Engineers
Engineer Research and Development Center
3909 Halls Ferry Road
Vicksburg, Mississippi 39180

NAME AND LOCATION OF FACILITY WHERE DISCHARGE OCCURS:

U.S. Army Corps of Engineers
Engineer Research and Development Center
Cold Regions Research and Engineering Laboratory
72 Lyme Road
Hanover, New Hampshire 03755

RECEIVING WATER: Wilder Lake Impoundment, Connecticut River (Class B)

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) have cooperated in the development of a draft permit for the Cold Regions Research and Engineering Laboratory, which discharges treated groundwater and non-contact cooling water and stormwater. The effluent limits and permit conditions imposed have been drafted to assure compliance with the Clean Water Act, 33 U.S.C. sections 1251 et seq., Chapter 485-A of the New Hampshire Statutes: Water Pollution and Waste Disposal, and the New Hampshire Surface Water Quality Regulations, Env-Wq 1700

et seq. EPA has formally requested that the State certify the draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

The draft permit and explanatory fact sheet may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_nh.html or by contacting:

Undine Kipka
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1335
kipka.undine@epa.gov

The administrative record containing all documents relating to this draft permit including all data submitted by the applicant may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of the draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **May 31, 2019**, to the address or email address listed above. Any person, prior to such date, may submit a request in writing to EPA and NHDES for a public hearing to consider this draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

THOMAS E. O'DONOVAN, P.E., DIRECTOR
WATER DIVISION
NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES

KEN MORAFF, DIRECTOR
OFFICE OF ECOSYSTEM PROTECTION
U.S. ENVIRONMENTAL PROTECTION
AGENCY - REGION I