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",

New Hampshire Fish and Game Department

is authorized to discharge from a facility located at

Powder Mill State Fish Hatchery
288 Merrymeeting Road
New Durham, NH 03855

to receiving water named

Merrymeeting River
Hydrologic Basin Code 01070002

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

This permit shall become effective on [DATE].[1]

This permit expires at midnight, on [DATE].

This permit supersedes the permit issued on December 22, 2011.

This permit consists of this **cover page**, **Part I** and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this day of

_____
Ken Moraff, Director
Water Division
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, the permit will become effective upon the date of signature. Procedures for appealing EPA's Final Permit decision may be found at 40 C.F.R. § 124.19.

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 culture water and treated hatchery effluent through Outfall Serial Number 001 to Merrymeeting River. The discharge shall be limited and 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]	2.0 MGD	Report	1/day	Meter or Estimate
Total Suspended Solids (TSS)	Report lbs/d Report mg/L	Report lbs/d Report mg/L[7]	1/week	Composite
Biochemical Oxygen Demand (BOD_5)	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
pH[8]	6.5 - 8.0 S.U.		1/week	Grab
Ambient pH[8]	Report S.U.			
Total Ammonia as N	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/month	Composite
Total Nitrogen	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
Effluent Total Phosphorus (October – May)[9]	Report lbs/d 25 µg/L	Report lbs/d Report µg/L	1/week	Composite
Effluent Total Phosphorus (June – September)[9]	Report lbs/d 14 µg/L	Report lbs/d Report µg/L	1/week	Composite

Effluent Characteristic	**Effluent Limitation**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Interim Total Phosphorus Requirement (first 60 months from the effective date of the permit)	Report lbs/d Report µg/L	Report lbs/d Report µg/L	1/week	Composite
Dissolved Oxygen[13]	Report Minimum mg/L		1/week	Grab
Dissolved Oxygen Saturation[13]	Report Minimum %		1/week	Grab
Effluent Temperature[13]	Report °F		1/week	Grab
Fish Biomass on Hand	Report lbs/d	---	1/month	Calculation
Fish Feed Used	Report lbs/d	Report lbs/d	1/month	Calculation
Feed Conversion Ratio	Report	---	1/month	Calculation
Total Residual Chlorine (when in use)[14]	11 µg/L	19 µg/L	1/day	Grab
Hydrogen Peroxide (when in use)	---	0.7 mg/L	1/day	Grab
Formaldehyde (Formalin in use)[15, 16]	1.6 mg/L	4.6 mg/L	1/day	Grab
Dissolved Oxygen (Formalin in use)[15]	Report Minimum mg/L		1/day	Grab

2. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge culture water and treated hatchery effluent through Outfall Serial Number 002 to Merrymeeting River. The discharge shall be limited and 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]	4.2 MGD	Report	1/day	Meter or Estimate
Total Suspended Solids (TSS)	Report lbs/d Report mg/L	Report lbs/d Report mg/L[7]	1/week	Composite
Biochemical Oxygen Demand (BOD_5)	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
pH[8]	6.5 - 8.0 S.U.		1/week	Grab
Total Ammonia as N	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/month	Composite
Total Nitrogen	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
Effluent Total Phosphorus[9]	Report lbs/d 25 µg/L	Report lbs/d Report µg/L	1/week	Composite
Effluent Total Phosphorus (June – September)[9]	Report lbs/d 14 µg/L	Report lbs/d Report µg/L	1/week	Composite
Interim Total Phosphorus Requirement (<u>first 60 months from the effective date of the permit</u>)	Report lbs/d Report µg/L	Report lbs/d Report µg/L	1/week	Composite
Dissolved Oxygen[13]	Report Minimum mg/L		1/week	Grab
Dissolved Oxygen Saturation[13]	Report %		1/week	Grab

Effluent Characteristic	Effluent Limitation		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Effluent Temperature[13]	Report °F		1/week	Grab
Fish Biomass on Hand	Report lbs/d	---	1/month	Calculation
Fish Feed Used	Report lbs/d	Report lbs/d	1/month	Calculation
Feed Conversion Ratio	Report	---	1/month	Calculation
Total Residual Chlorine (when in use)[14]	11 µg/L	19 µg/L	1/day	Grab
Hydrogen Peroxide (when in use)	---	0.7 mg/L	1/day	Grab
Formaldehyde (Formalin in use) [15,16]	1.6 mg/L	4.6 mg/L	1/day	Grab
Dissolved Oxygen (Formalin in use)[15]	Report Minimum mg/L		1/day	Grab

3. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge culture water and treated hatchery effluent through Outfall Serial Number SUM, which is the calculated cumulative load from Outfall Serial Numbers 001 and 002 to Merrymeeting River. The cumulative discharge from both outfalls combined shall be limited and monitored as specified below; Marsh Pond shall be monitored as specified below.

Effluent Characteristic	**Effluent Limitation**		**Monitoring Requirements[1,2,3]**	
	Annual Total	**Average Monthly**	**Measurement Frequency[4]**	**Sample Type[5]**
Annual Total Phosphorus Load[10]	395 lbs/year	Report lbs/month	1/month	Calculation
Seasonal Total Phosphorus Load (June – September)[11]	87 lbs/season	Report lbs/month	1/month	Calculation
Interim Total Phosphorus Requirement (first 60 months from the effective date of the permit)	Report lbs/year	Report lbs/month	1/week	Composite
Ambient Total Phosphorus[12]	---	Report µg/L	2/month	Grab
Ambient Chlorophyll-a[12]	---	Report µg/L	2/month	Grab
Ambient Secchi Disc Transparency[12]	---	Report m	2/month	Grab

Footnotes for Parts I.A.1, I.A.2, and I.A.3:

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the discharge point to the receiving water after treatment, prior to co-mingling with any other wastestream. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA) and the State. The Permittee shall report 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). When calculating and reporting the average monthly concentration when one or more values are not detected, assign a value of zero to all non-detects and report the average of all the results. The number of exceedances shall be enumerated for each parameter in the field provided on every Discharge Monitoring Report (DMR).

4. Measurement frequency of 1/day is defined as the recording of one measurement for each 24-hour period. Measurement frequency of 1/week is defined as the sampling of one discharge event in each seven-day calendar week. Within a monthly reporting period, at least one weekly sample shall be collected on a day when raceway and/or tank cleaning operations are occuring. Measurement frequency of 1/month is defined as the sampling of one discharge event in each calendar month. Sampling of a parameter identified as "when in use" means that sampling is required only when the additive associated with that parameter is in use. If no sample is collected during the measurement frequencies defined above, the Permittee must report an appropriate No Data Indicator Code.

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.

6. Effluent flow shall be continuously measured and recorded using a flow meter and totalizer. In lier of a flow meter, weir calculations or direct measurement may be used to report effluent flow. Effluent flow shall be reported in million gallons per day (MGD).

7. If TSS exceeds the maximum daily benchmark of 10 mg/L, the Permittee shall evaluate its best management practices (BMPs) and implement corrective actions necessary to reduce the effluent concentration below the applicable benchmark. The maximum daily total suspended solids (TSS) value is a benchmark, not an effluent limitation. See Part I.C.4 of this Permit.

8. The pH shall be within the specified range at all times except as provided in Parts I.C.1 and I.E.3 of this Permit. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.). When the pH range is less than the minimum of 6.5 S.U., the Permittee shall report the ambient, upstream pH in accordance with Part I.E.3 of this Permit.

9. For the purposes of this permit, total phosphorus analysis must be completed using a test method in 40 C.F.R. § 136 that achieves a minimum level of detection no greater than 10 µg/L.

10. The cumulative, 12-month rolling net phosphorus load from Outfall 001 and 002 shall not exceed 395 pounds per year. The total loading values shall be calculated as follows: Total Phosphorus (lbs/month) = [(average monthly total phosphorus concentration (mg/L) * total monthly effluent flow (millions of gallons)] * 8.34. The annual net phosphorus load from Outfalls 001 and 002 shall be calculated by adding the previous eleven (11) months load plus the current month load at each outfall, and then adding the 12-month rolling load at the two outfalls. The net average monthly phosphorus load shall be calculated as the sum of the average monthly load from each outfall.

11. The net phosphorus load from Outfall 001 and 002 from June 1 through September 30 shall not exceed 87 pounds. The seasonal net phosphorus load from Outfalls 001 and 002 shall be calculated by adding the average monthly load from June 1 to September 30 at each outfall, and then adding the load at the two outfalls.

12. The Permittee shall collect ambient total phosphorus and chlorophyll-a samples from the Deep Spot Marsh Pond sampling station twice per month between May 1 and October 31. Water quality sampling and analysis shall be in accordance with the methods described in the most recent NHDES Volunteer Lake Assessment Program Generic Quality Assurance Project Plan

available at www.des.nh.gov/organization/divisions/water/wmb/vlap/. The Permittee shall obtain secchi disk transparency depth readings without use of a viewscope concurrent with the twice monthly sampling events.

13. Dissolved oxygen samples shall be collected from a discharge without formalin present. Report the minimum daily concentration for the month and the percent saturation and effluent temperature that corresponds with the minimum daily value.

14. Monitoring for total residual chlorine (TRC) is only required for discharges when Chloramine-T is in use. For the purposes of this permit, TRC analysis must be completed using a test method in 40 C.F.R. § 136 that achieves a minimum level of detection no greater than 20 µg/L. The compliance level for TRC is 20 µg/L. The Permittee shall report TRC values less than the minimum level (<20 µg/L) as zero in the DMR.

15. In order to capture the maximum concentration of formaldehyde, sampling for formaldehyde shall occur as soon as possible after any application of Formalin to the hatchery's culture water, after accounting for its detention time through the raceways, tanks, and piping networks to the outfall. The detention time calculation shall take into account dosage, injection point, facility flow (both velocity and volume), etc. where possible. A sample for dissolved oxygen shall be collected concurrently with that for formaldehyde and reported under the appropriate DO column on the monthly DMR. Report the minimum daily DO concentration sampling result for the month.

16. Formaldehyde shall be tested using EPA Method 1667, Revision A or 8315A. The ML for formaldehyde is 50 µg/L.

Part I.A. continued.

4. The discharge shall not cause a violation of the water quality standards of the receiving water.

5. 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.

6. 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.

7. 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.

8. 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.

9. The discharge shall not result in an exceedance of the naturally occurring turbidity in the receiving water by more than 10 NTUs.

10. The Permittee shall notify EPA and the New Hampshire Department of Environmental Services (NHDES) within 24 hours upon the occurrence of any mortality greater than 25 percent in any aquatic species under culture at the facility (excluding larval fish and eggs) during a single mortality event in accordance with the reporting requirements in Part II.D.3 and 5.

11. The Permittee shall inform EPA and NHDES in writing at least 90 days in advance of any change in the fish species to be raised or development stage to be attained at this facility, and before any increase in annual fish biomass greater than 20 percent.

12. Any hypochlorite solution applied to the surface of any rearing equipment exposed to culture water must be neutralized prior to that equipment being exposed to culture water.

13. 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):

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 (µg/L);
(2) 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (mg/L) for antimony;
(3) Five 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.

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.

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).

2. The discharge of iodine and/or phosphoric acid solution(s) at the Facility to the receiving water is prohibited.

3. There shall be no direct discharge of "cleaning water." Cleaning water is defined as any water from the Facility's hatchery house, raceways, ponds, canals, circular tanks, etc. which contains settled solids that have accumulated on the bottom of such structures that is discharged, absent some form of solids removal, directly to the receiving water during periodic cleaning operations. The discharge of water from the hatchery house, or any raceway, pond, canal, circular tanks, etc. to a settling tank, empty raceway, and/or clarifier for the purposes of settling solids, including the temporary storage of those

solids, is allowed. The discharges of any decant water that accumulates above those solids and/or any water that flows slowly over those solids is allowed.

C. SPECIAL CONDITIONS

1. The Permittee may be considered in compliance with the pH limits of this Permit if the Permittee satisfies conditions set forth in Part I.E.3 below.

2. Best Management Practices (BMPs)

   a. Drug Use

   Except as noted below, the permittee must notify EPA and the NHDES-WD in accordance with the following procedures of any investigational new animal drug (INAD) or extra-label drug use which may lead to a discharge of the drug to waters of the United States as stipulated below. However, reporting is not required for any INAD or extra-label drug use that has been previously approved by the USFDA for a different species or disease if the INAD or extra-label use is at or below the approved dosage and involves similar conditions of use.

   (1) The permittee must provide to EPA and NHDES-WD a written report of impending INAD use within 7 days of agreeing or signing up to participate in an INAD study. The written report must identify the INAD to be used, method of use, the dosage, and the disease or condition the INAD is intended to treat.

   (2) For INADs and extra-label drug uses, the permittee must provide an oral report to EPA and NHDES-WD as soon as possible, preferably in advance of use, but no later than seven (7) days after initiating use of that drug. The oral report must identify the drugs used, method of application, and the reason for using that drug.

   (3) For INADs and extra-label drug uses, the permittee must provide a written report to EPA and NHDES-WD within thirty (30) days after initiating use of that drug. The written report must identify the drug used and include: the reason for treatment, date(s) and time(s) of the addition (including duration), method of application, and the amount added.

   b. Structural Failure and/or Damage to Culture Units

   The permittee must notify EPA and NHDES-WD in accordance with the following procedures when there is a "reportable failure" in, or damage to, the structure of an aquatic animal containment system (i.e., culture unit) or its wastewater treatment system that results in an unanticipated material discharge of pollutants to waters of the United States.

   (1) For this facility, a "reportable failure" applies only to active culture units (ones that contain fish and flowing water) and their ancillary components and refers to

the collapse or damage of a rearing unit or its wastewater treatment system; damage to pipes, valves, and other plumbing fixtures; and damage or malfunction to screens or physical barriers in the system, which would prevent the rearing unit from containing water, sediment (i.e., settled solids), and the aquatic animals being reared. Wastewater treatment systems include ponds or settling tanks to which cleaning water is directly discharged and culture units which are used for the temporary storage of settled solids removed from active culture units.

(2) The permittee must provide an oral report to EPA and NHDES-WD within twenty-four (24) hours of discovery of any reportable failure as defined in item 2.a., above, or damage that results in a material discharge of pollutants. The report shall describe the cause of the failure or damage in the containment system and identify materials that have been released to the environment as a result of that failure.

(3) The permittee must provide a written report to EPA and NHDES-WD within five (5) days of discovery of the failure or damage documenting the cause, an estimate of the material released as a result of the failure or damage, and steps being taken to prevent a recurrence.

c. Spills

In the event of a spill of drugs, pesticides or feed that results in a discharge to water of the United States, the permittee must provide an oral report of the spill to EPA and NHDES-WD within twenty-four (24) hours of its occurrence and a written report within five (5) days to the above Agencies. The report shall include the identity and quantity of the material spilled.

3. Best Management Practices Plan (BMPP)

The permittee must continue to implement and maintain a BMP Plan (BMPP) upon the permit's effective date that describes how the following requirements will be achieved. The permittee will make the current version of that BMPP available to EPA and/or the NHDES-WD upon request. Within ninety (90) days following the permit's effective date, the permittee shall certify in writing to EPA and NHDES-WD that a written BMPP has been developed in accordance with requirements listed in this part and must submit that certification with the appropriate DMR.

Further, the permittee shall amend the BMPP within thirty (30) days following any change in facility design, construction, operation, or maintenance which affects the potential for the discharge of pollutants into surface waters or after the EPA and/or NHDES-WD determine certain changes are required following an event that results in non-compliance, a facility inspection, or review of the BMPP. The permittee shall place in the BMPP a written documentation of each amended change along with a brief description stating the reason for the amendment, including the date the change triggering

the amendment occurred. The permittee shall also document the date the amended BMPP was implemented.

The BMPP must address, at a minimum, the following requirements:

a. Solids Control

(1) Employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges of uneaten feed and waste products to waters of the United States. Continue use of low phosphorus feed.

(2) In order to minimize the discharge of accumulated solids from settling tanks, basins and production systems, identify and implement procedures for routine cleaning of rearing units and settling tanks, and procedures to minimize any discharge of accumulated solids during the inventorying, grading and harvesting of aquatic animals in the production system. Part I.B.3. prohibits the direct discharge of cleaning water absent some form of solids removal prior to discharge.

(3) If any material is removed from the rearing units and/or settling tanks, describe where it is to be placed and the techniques used to prevent such material from re-entering the surface waters from any on-site storage. If the material is removed from the site, describe who received the material and its method of disposal and/or reuse.

(4) Remove and dispose of aquatic animal mortalities properly and on a regular basis to prevent discharge to waters of the United States, except in cases where EPA and NHDES-WD authorizes such discharges in order to benefit the aquatic environment.

b. Biological Control

(1) Describe in detail the precautions that will be exercised by the facility to prevent aquatic organisms that are neither indigenous nor naturalized to New Hampshire waters from becoming established in the local surface waters.

(2) Provide a description for the storage and treatment of discharges to prevent biological pollution (non-indigenous organisms including fish parasites and fish pathogens and dead or dying fish) from entering the receiving water when the cultured fish population or a portion thereof is showing signs of stress.

c. Materials Storage

(1) Ensure proper storage of drugs, pesticides, and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides or feed to waters of the United States.

(2) Implement procedures for properly containing, cleaning, and disposing of any spilled material.

d. Structural Maintenance

(1) Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.

(2) Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

e. Recordkeeping

(1) In order to show how representative feed conversion ratios were calculated, maintain records for aquatic animal rearing units documenting the feed amounts and estimates of the number and weight of aquatic animals.

(2) In order to show how the maximum concentration of Formaldehyde in the discharge was derived, maintain records by outfall of the approach/analyses used to determine the elapsed time from its application to its maximum (peak) effluent concentration.

(3) Keep records that document the frequency of cleaning, inspections, repairs and maintenance. In addition, records of all medicinal and chemical usage (i.e., for each occurrence) at the facility shall be recorded and filed in the BMPP to include the dosage concentration, frequency of application (hourly, daily, etc.), the duration (hours, days) of treatment, and the method of application.

f. Training

(1) In order to ensure the proper clean-up and disposal of material, adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill.

(2) Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

g. Aquaculture Drugs and Chemicals Used for Disease Control and/or Prevention

List in the BMPP all aquaculture drugs and chemicals including all INAD and extra-label drugs and for each, identify:

(1) Product name and manufacturer.

(2) Chemical formulation.

(3) Purpose/reason for its use.

(4) Dosage concentration, frequency of application (hourly, daily, etc.) and the duration (hours, days) of application.

(5) The method of application.

(6) Material Safety Data Sheets (MSDS) and Chemical Abstracts Service Registry number for each active therapeutic ingredient.

(7) The method or methods, if any, used to detoxify the wastewater prior to its discharge.

(8) The persistence and toxicity in the environment.

(9) Information on USFDA approval for the use of said medication or chemical on fish or fish related products used for human consumption.

(10) Available aquatic toxicity data (vendor data, literature data, etc.); Lethal Concentration to 50 percent of test organisms (LC_{50}) at 48 and/or 96 hours and No Effect Level (NOEL) concentrations for typical aquatic organisms (salmon, trout, daphnia, fathead minnow, etc.).

4. Benchmark Requirements for Total Suspended Solids (TSS)

A benchmark value of 10 mg/L applies to total suspended solids (TSS) to ensure that the BMPs described above are effectively controlling discharges of pollutants from Outfalls 001 and 002. The TSS benchmark is not an effluent limitation. Concentrations exceeding this benchmark represent a level of concern requiring further evaluation of the BMPP to determine if the non-numeric, technology-based limits are effectively minimizing TSS concentrations in the discharge. If TSS monitoring results required in Part I.A.1 and I.A.2 of this Permit exceed a maximum daily benchmark value of 10 mg/L, the Permittee shall:

a. Investigate the cause of the elevated concentration and implement corrective actions necessary to reduce the effluent concentration of TSS below the applicable benchmark. Corrective actions shall be implemented as soon as possible, but no later than 30 calendar days following the date of the exceedance of the benchmark value. If implementation of the corrective actions is unable to be completed within this timeframe, the Permittee shall document the reason and provide an alternative

schedule for implementing corrective actions to EPA and NHDES in writing within 30 calendar days following the date of the exceedance of the benchmark value.

b. Review the BMPP to determine if additional control measures or other changes are necessary to maintain TSS concentrations below the applicable benchmark. If additional control measures or other changes are necessary, the Permittee shall revise the BMPP and submit the revisions to EPA and NHDES, including any schedule to implement changes to control measures, within 30 days following the sampling date of the exceedance of the benchmark value.

5. Discharges of Chemicals and Additives

The Permittee shall only use aquaculture drugs and chemicals approved the U.S. Food and Drug Administration (USFDA) in accordance with labeling instructions or as allowed in Part I.C.2, above. EPA will defer to the USFDA regarding whether or not a particular drug, chemical, or additive is used in accordance with USFDA requirements. Each year as an attachment to the December DMR, the Permittee shall certify in writing that all aquaculture drugs and chemicals used during the calendar year were approved by the USFDA and were used in accordance with USFDA labeling or as allowed under Part C.2.a.

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, other than additives used in accordance with Part I.C.2, is prohibited. Upon the effective date of this permit, chemicals and/or additives which have been disclosed to EPA and the State or used in accordance with Part I.C.2 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. With the exception of additives used in accordance with Part I.C.2, 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. The written notification must include the following information, at a minimum:

a. The following information for each new 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 LC_{50} 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) will not add any pollutants in concentrations which exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

6. Compliance Schedule

The effluent limit for total phosphorus shall be subject to a schedule of compliance. The Permittee shall notify EPA and NHDES of compliance or noncompliance with each interim or final requirement within 14 days following the date assigned to the interim or final compliance requirement in items a, e, and g, below.

a. Within four (4) months of the effective date of the permit, the Permittee shall select and contract with a consultant to complete the engineering design.
b. Within sixteen (16) months of the effective date of the permit, the Permittee shall submit to EPA and NHDES a status report relative to the preliminary design of the improvements required to achieve compliance with the total phosphorus limits.
c. Within twenty-four (24) months of the effective date of the permit, the Permittee shall submit to EPA and NHDES a preliminary design of the improvements required to achieve compliance with the total phosphorus limits.
d. Within thirty (30) months of the effective date of the permit, the Permittee shall submit to EPA and NHDES a final design of the improvements required to achieve compliance with the total phosphorus limits.
e. Within thirty-six (36) months of the effective date of the permit, the Permittee shall initiate construction of the improvements required to achieve compliance with the total phosphorus limits.
f. Within forty-eight (48) months of the effective date of the permit, the Permittee shall submit to EPA and NHDES a status report relative to the construction of the improvements required to achieve compliance with the total phosphorus limits.
g. Within sixty (60) months of the effective date of the permit, the Permittee shall complete construction of the improvements and shall comply with the total phosphorus limits.

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 following the monitoring period 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 accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

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 Water Division (WD)

a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in the EPA WD:

(1) Transfer of Permit notice;
(2) Request for changes in sampling location;
(3) Notification of fish mortality;
(4) BMP reports and certifications, including reporting required by Part I.C.4;
(5) Request to discharge new chemicals or additives; and
(6) Request for pH Effluent Limitation Adjustment.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov or by hard copy mail to the following address:

U.S. Environmental Protection Agency
Water Division
NPDES Applications Coordinator
5 Post Office Square - Suite 100 (06-03)
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) Prior to December 21, 2020, written notifications required under Part II. Starting on December 21, 2020, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA

system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

b. This information shall be submitted to EPA ECAD at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-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 through I.D.6 shall also be submitted to the New Hampshire Department of Environmental Services, Water Division (NHDES–WD) electronically to the Permittee's assigned NPDES inspector at NHDES-WD or as a hardcopy to the following address:

New Hampshire Department of Environmental Services
Water Division
Wastewater Engineering Bureau
29 Hazen Drive, 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 Enforcement and Compliance Assurance Division at:

617-918-1510

c. Verbal reports and verbal notifications shall also be made to the State's Regional NPDES inspector at:

603-271-1494

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 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 ambient upstream pH in the receiving water is outside of this range, and is not altered by the discharge or activities. If the discharge pH is lower than 6.5 S.U., the Permittee may demonstrate compliance by showing that the discharge pH is either higher than, or no more than 0.5 S.U. lower than, the ambient upstream river water pH. For this demonstration, the upstream river water sample must be collected on the same day that the discharge pH is measured. The location where the upstream ambient pH sample is collected must be representative of the upstream conditions unaffected by the Facility's discharge(s) or activities. Results of the ambient upstream river water pH sampling that are obtained to determine compliance with this limit shall be submitted as an attachment to the DMR.

4. Compliance Schedule

   If the Permittee elects to install a wastewater treatment system to achieve compliance with the Total Phosphorus effluent limitations in Part I.A.1, I.A.2, and I.A.3 of this Permit, the Permittee shall:

   a. Within four (4) months of the effective date of the permit, select and contract with an engineering design consultant through the qualifications-based selection (QBS) process in accordance with Env-Wq 509.
   b. Within fourteen (14) months of the effective date of the permit, submit a Draft Wastewater Treatment Plant (WWTP) Basis of Design Report to NHDES for review and approval in accordance with Env-Wq 707. The Permittee and consultant shall address all NHDES review comments prior to approval in accordance with Env-Wq 707.01(c).
   c. Within sixteen (16) months of the effective date of the permit, obtain NHDES approval of the Basis of Design Report.
   d. Within twenty-two (22) months of the effective date of the permit, submit a Draft WWTP Preliminary Design Report (including 30% design plans and specifications) to NHDES for review and approval. Engineering plans and specifications shall meet

applicable requirements Env-Wq 703. The Permittee and consultant shall address all NHDES review comments prior to approval in accordance with Env-Wq 703.01(a) and (c) and Env-Wq 703.08.

e. Within twenty-four (24) months of the effective date of the permit, obtain NHDES approval of the Preliminary Design Report.
f. Within thirty (30) months of the effective date of the permit, submit 90% WWTP design plans and specifications to NHDES for review and approval. The Permittee and consultant shall address all NHDES review comments prior to approval in accordance with Env-Wq 703.01(a) and (c) and Env-Wq 703.08.
g. Within thirty-two (32) months of the effective date of the permit, obtain NHDES approval of the WWTP design plans and specifications and NHDES authorization to solicit construction bids. If the project receives state and/or federal funding, solicitation of bids and award of construction contract shall be conducted in accordance with Env-Wq 510.

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

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[1] Updated July 17, 2018 to fix typographical errors.

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

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

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

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

(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

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

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.

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

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

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

"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 96-483and 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

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

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.

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 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

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).

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

(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

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

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.

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

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: NH0000710

PUBLIC NOTICE START AND END DATES: December 31, 2019 – February 14, 2020

NAME AND MAILING ADDRESS OF APPLICANT:

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

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Powder Mill State Fish Hatchery
288 Merrymeeting Road
New Durham, NH 03855

RECEIVING WATER AND CLASSIFICATION:

Merrymeeting River (Basin ID 01070002)
Watershed
Class B

SIC CODE: 0921 (Fish Hatcheries and Preserves)

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Appendices

1.0 Proposed Action

New Hampshire Fish and Game (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 from the Powder Mill State Fish Hatchery ("PMSFH" or the "Facility") into the Merrymeeting River.

The permit currently in effect was issued on December 22, 2011 with an effective date of December 22, 2011 and expired on December 22, 2016 (the "2011 Permit"). The Permittee filed an application for permit reissuance with EPA dated October 20, 2015, 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 November 9, 2015, the Facility's 2011 Permit has been administratively continued pursuant to 40 C.F.R. § 122.6 and § 122.21(d). EPA conducted site visits on May 24, 2017, August 30, 2018 and October 9, 2019.

This NPDES Permit is issued by EPA under federal law. New Hampshire construes Title L, Water Management and Protection, Chapters 485-A, Water Pollution and Waste Disposal, to authorize the New Hampshire Department of Environmental Services (NHDES) to adopt a federal NPDES permit as a State surface water discharge permit. As such, all the terms and conditions of the permit may, therefore, be incorporated into and constitute a discharge permit issued by NHDES.

2.0 Statutory and Regulatory Authority

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. § 1251 – 1387 and commonly known as the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 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 §§ 301(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. 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.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma,* 503 U.S. 91, 105 (1992). *See also* 40 C.F.R. §§ 122.4(d), 122.44(d)(1), 122.44(d)(5). CWA §§ 301 and 306 provide 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 CWA §§ 301(b) and 402 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. Part 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 CWA § 402(a)(1). EPA promulgates NSPS under CWA § 306 and 40 C.F.R. § 401.12. *See also* 40 C.F.R. §§ 122.2 (definition of "new source") and 122.29.

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 CWA § 402(a)(1)(B) 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* CWA § 301(b)(1)(C) and 40 C.F.R. §§ 122.44(d)(1),122.44(d)(5), 125.84(e) and 125.94(i).

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) antidegradation 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*. *See also generally*, N.H. Rev. Stat. Title L, Water Management and Protection, Chapter 485-A, Water Pollution and Waste Disposal.

As a matter of state law, state WQSs specify different water body classifications, each of which is associated with certain designated uses and numeric and narrative water quality criteria. When using chemical-specific numeric criteria to develop permit limitations, 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, therefore, are typically applicable to monthly average limits.

When permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) 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," 2) based on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 C.F.R. § 122.44(d)(1)(vi)(A-C).

2.2.2 Antidegradation

Federal regulations found at 40 C.F.R. § 131.12 require states to develop and adopt a statewide antidegradation 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 antidegradation policy ensures maintenance of high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water, 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 Antidegradation 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 antidegradation 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. When NHDES determines that a proposed increase would cause a significant impact to existing water quality , the applicant must provide documentation to demonstrate that the lowering of water quality is necessary, that it 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 reduction in water quality. *See* Env-Wq 1708.10(b).

This permit is being reissued with effluent limitations sufficiently stringent to satisfy the State's antidegradation requirements, including the protection of the exiting 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, 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 essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQSs for the designated uses, and allocates that load among the various 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 (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 C.F.R. § 122.44(d)(1)(vii)(B).

2.2.4 Reasonable Potential

Pursuant to CWA § 301(b)(1)(C) and 40 C.F.R. § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. *See also* 33 U.S.C. § 1311(b)(1)(C). In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority 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." 40 C.F.R. § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, 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 by the receiving water. *See* 40 C.F.R. § 122.44(d)(1)(ii).

If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQSs, the permit must contain WQBELs for that pollutant. *See* 40 C.F.R. § 122.44(d)(1)(i).

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, the State waives, or is deemed to have waived, its right to certify. *See* 33 U.S.C. § 1341(a)(1). 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 conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307, or applicable requirements of State law, the State should include such conditions in its certification and, in each case, cite the CWA or State law provisions upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. EPA includes properly supported State certification conditions in the NPDES permit. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and implementing CWA § 405(d) are not subject to the State certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through the EPA permit appeal procedures of 40 C.F.R. Part 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 final 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." 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 limitations based upon WQSs and State requirements are contained in 40 C.F.R. §§ 122.4(d) and 122.44(d).

2.3 Effluent Flow Requirements

Generally, EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations 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 CWA § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced and the calculated effluent limitations might not be sufficiently protective (i.e., might not 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 permit effluent limitation derivations remain sound for the duration of the permit, EPA may

ensure the validity of its "worst-case" effluent flow assumptions through imposition of permit conditions for effluent flow.[1] In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also 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 to carry out the objectives and satisfy the requirements 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 ensure the validity of EPA's WQBELs and reasonable potential calculations that account for "worst case" conditions is encompassed by the references to "condition" and "limitations" in CWA §§402 and 301 and the implementing regulations, as WQBELs are designed to assure compliance with applicable water quality regulations, including antidegradation requirements. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of effluent is also consistent with 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. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Consequently, the effluent flow limit is a permit condition that relates to the Permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 C.F.R. §§ 122.41(d), (e).

2.4 Monitoring and Reporting Requirements

2.4.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 C.F.R. Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in this permit have been establish1ed to yield data representative of the Facility's discharges in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 C.F.R. §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the wastewater discharges. The monitoring program is needed to enable EPA and the State to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits, and whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based standards under the CWA. EPA and/or the State may use the results of

[1] EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id.* 40 C.F.R. §122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 599 (EAB 2010). EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *See In re Washington Aqueduct Water Supply Sys., 11 E.A.D. 565, 584 (EAB 2004)*.

the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), 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. Part 122.

NPDES permits require that the approved analytical procedures found in 40 C.F.R. Part 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*.[2] 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 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 level[3] (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 report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to

[2] Fed. Reg. 49,001 (Aug. 19, 2014).
[3] 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* Fed. Reg. 49,001 (Aug. 19, 2014).

EPA under 40 C.F.R. §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. Further information about NetDMR can be found on the EPA NetDMR support portal webpage.[4]

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 Standard Conditions

The standard conditions, included as Part II of the Draft Permit, are based on applicable regulations found in the Code of Federal Regulations. *See generally* 40 C.F.R. Part 122.

2.6 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued or modified to include less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 C.F.R. § 122.44(l). 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 2011 Permit unless specific conditions exist to justify relaxation in accordance with CWA § 402(o) or § 303(d)(4). Discussion of any less stringent limitations and corresponding exceptions to anti-backsliding provisions is provided in the sections that follow.

3.0 Description of Facility and Discharge

3.1 Location and Type of Facility

The Facility is located at the headwaters of the Merrymeeting River at the Merrymeeting Lake Dam on Merrymeeting Road in New Durham, NH. A location map is provided in Figure 1. Water flows from Merrymeeting Lake at a rate of 3,700 to 4,500 gallons per minute (gpm). Influent can be sterilized with ultraviolet radiation prior to use at the hatchery, although ultraviolet system is not currently in use. The hatchery complex consists of a Hatchery House, multiple raceway units, three Show Ponds, four Woods Ponds) and four Bass Ponds (two of the former Bass Ponds, which had been used for settling, are currently drained and not being used) and 24 Circular Tanks. A site plan is provided in Figure 2.

PMSFH produces Eastern brook trout, rainbow trout, and brown trout for fisheries management of selected water bodies located primarily in the central part of the state (referred to as Regions 2 & 3, or Conservation District # 3 #2, #5 & #6). According to the most recent Best Management

[4] https://netdmr.zendesk.com/hc/en-us

Practices Plan (updated in September 2019), the total annual production levels at the Facility are about 65,000 pounds (lbs) of eastern brook trout, 97,000 lbs of rainbow trout, and 33,000 lbs of brown trout. The combined annual production target results in a potential cumulative harvestable weight of about 141,000 pounds for stocking. In 2019, the production target was 90,863 pounds. They met this target using 101,615 pounds of feed, which results in a pounds of feed conversion ratio of 1.12.

In the past, the facility provided landlocked Atlantic salmon; however, salmon production was moved to Nashua National Fish Hatchery to provide interim reductions in pollutant loads from the hatchery prior to issuance of a new Final NPDES Permit.

3.1.1 Effluent Limitation Guidelines

EPA has promulgated technology-based ELGs for BPT in 40 C.F.R. § 451.11 for flow-through and recirculating systems in the Concentrated Aquatic Animal Production Point Source Category. The technology-based ELGs for BAT in 40 C.F.R. § 451.12 and for BCT in 40 C.F.R. § 451.13 are the same as the corresponding limitations specified in 40 C.F.R. § 451.11.

3.2 Location and Type of Discharge

The Permittee has requested authorization to discharge fish culture water and treated hatchery effluent from the Facility through Outfalls 001 and 002 into the Merrymeeting River. The primary pollutants in fish culture water are total suspended solids, biochemical oxygen demand, nutrients, and ammonia. The Facility pumps water from Merrymeeting Lake at 3,700 to 4,500 gallons per minute (gpm) and discharges to the Merrymeeting River via two outfalls. Outfall 001 is located at 43.47418 North, -71.18017 West. Outfall 002 is located at 43.47112 North, -71.18030 West. The intake from Merrymeeting Lake is located at 43.47947 North, -71.17592 West. Merrymeeting Lake also supplies domestic water for use in the hatchery office, which is discharged to a septic system. All floor drains in the hatchery offices have been plugged.

Culture water is withdrawn from Merrymeeting Lake to a centralized distribution box where it flows to either the hatchery house and Raceways E, F, and G (west of the river) and discharges from Outfall 001; or to Raceways A, B, C, or D (east of the river) and through the woods ponds or to the circular rearing tanks, and discharges from Outfall 002. A schematic of water flow is provided in Figure 3. In response to concerns about the discharge from the former settling ponds to the river, the Facility recently drained two bass ponds (closest to the river), dredged the solids, and transported them offsite.

According to the Permittee, the hatchery employs various solids management practices. The first step is managing the amount of feed. The hatchery hand feeds fish and adjusts feeding rates based on reference guidelines, specific conditions at the hatchery, and daily inspections of fish rearing containers after feeding.

In addition to feed management, the hatchery follows specific solids collection and cleaning procedures to reduce the discharge of solids. When in use, raceways are cleaned weekly, which decreases to once every two weeks during winter; the 24 circular ponds are cleaned once every

two weeks. Cleaning involves brushing fish retaining screens/plates and removing solids from the settling area at the end of each raceway or outlet of the circular tanks ("quiescent zone") with a vacuum pump. The Draft Permit prohibits the direct discharge of cleaning water from the vacuum pump operation without treatment. Solids are transported to the 3 new wastewater storage ponds. Solids from the wastewater storage ponds are typically disposed of on land for agricultural purposes. The ten rearing tanks (5-foot diameter) and the 48 vertical egg incubation trays in the hatchery building are cleaned daily when in use.

Since the permit renewal application was submitted, the hatchery implemented changes in its solids management program in response to concerns about discharges of phosphorus to the Merrymeeting River. A schematic of a new treatment system is provided in Figure 4. A series of three circular tanks are dedicated for use as settling tanks. Each tank has a volume of about 800 ft^3. Two tanks are used as primary clarifiers, providing preliminary nutrient treatment. The third tank is used as secondary nutrient treatment and clarifier. Wastewater and vacuumed solids from the rearing units and quiescent zones is discharged via vacuum truck tank into Tank 1 or 3. A 3-inch pipe connects the overflow to Tank 2. Tanks 1 and 3 are seeded with bacterial cultures to promote preliminary nutrient removal and an upwelling flow to promote solids settling towards the center of the tank. Tanks 1 and 3 also contain duckweed at the surface, which minimizes sunlight, promotes bacterial growth while deterring algae growth, and provides additional nutrient removal. Settled solids in Tanks 1 and 3 are vacuumed and used in land application.[5]

Overflow from Tanks 1 and 3 flows into Tank 2. A microalgal culture suspended by silt screen is located in the upper 20 cm of Tank 2 to provide additional nutrient removal and solids collection, although the Facility recognizes that there have been challenges with keeping the screen in proper working condition. Overflow from Tank 2 flows through an upwelling sand filter in the center of Tank 2 before being discharged through a 3-inch pipe to several bag filters laid on the top of 8-10 inches of wood chips. The dirt bags filter particulates and the wood chips assist in additional nitrogen removal. The water flows through the wood chips and into the ground.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the Permittee, including Discharge Monitoring Reports (DMRs), from September 2014 through November 2019 is provided in Appendix A of this Fact Sheet. EPA typically uses five years of monitoring data to characterize effluent at industrial facilities. In this case, EPA evaluated data going back to January 2012, which is the first monitoring period under the current outfall configuration. However, the range and average pollutant values for this longer period were not substantially different, and in most cases average values were higher based on the more recent 5-year data period. EPA chose to evaluate a 5-year period for developing the Draft Permit.

4.0 Description of Receiving Water and Dilution

4.1 Receiving Water

[5] According to the 2019 BMP Plan, the current method of solids disposal is at the sand pit owned by the Town of New Durham. Additional options include land application for agricultural purposes on local farms.

The Facility discharges through Outfalls 001 and 002 to the Merrymeeting River in New Durham, New Hampshire. The Merrymeeting River is part of the Lake Winnipesaukee Watershed. The Merrymeeting River has a history of industrial uses dating back to the early 1700s, including sawmill operations, hydropower, and gunpowder manufacturing. The River begins at the outlet of the Merrymeeting Lake dam, which was constructed in 1923. From the dam, the Merrymeeting River flows south through the hatchery and into Marsh Pond, Jones Pond, Downing Pond, the Merrymeeting State Wildlife Management Area, and Wentworth Pond before reaching the outlet at Alton Bay on Lake Winnipesaukee.

The State classifies the Merrymeeting River as Class B water. NHFGD classifies Merrymeeting Lake as supporting both cold and warm water fisheries. Class B waters are described in the New Hampshire Water Quality Standards (RSA 485-A:8, II) as follows: *"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."* In addition, NH Water Quality Standards at Env-Wq 1703.01(c) specifies that "*All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters*."

The Merrymeeting River is not listed as impaired in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List"). This waterbody segment has not been assessed for attaining designated uses for aquatic life, wildlife, primary contact, and secondary contact recreation. The Drinking Water After Adequate Treatment designated use is listed as fully supported. The Fish Consumption Use is listed as not supporting (marginal), consistent with the statewide fish consumption advisory for freshwater fish for mercury.[6] The status of each designated use is presented in Table 1.

Table 1: Summary of Designated Uses and Listing Status

Designated Use	**Status**
Aquatic Life	No Data
Drinking Water After Adequate Treatment	Full Support
Fish Consumption	Not Supporting
Primary Contact Recreation	No Data
Secondary Contact Recreation	No Data
Wildlife	No Data

Downstream of the Merrymeeting River, Jones Dam Pond and Downing Pond are listed in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List") as a Category 5 "Waters Requiring a TMDL" for the Primary Contact Recreation designated use.[7] The Primary Contact Recreation designated use is also listed as impaired for Marsh Pond in the Draft 2018 303d List. In all cases, the pollutant requiring a TMDL is cyanobacteria hepatotoxic microcystins. In addition, the Aquatic Life designated use for Jones Pond is listed in the 2016

[6] Technical Background for the 2008 Update to the New Hampshire Statewide Mercury Fish Consumption Advisory. New Hampshire Department of Environmental Services Environmental Health Program; April 2008.
[7] *New Hampshire 2016 Section 303(d) List of Threatened or Impaired Waters that Require a TMDL*. New Hampshire Department of Environmental Services, Concord, NH; November 2017.

Final 303(d) List as impaired due to non-native aquatic plants. To date no TMDL has been developed for this segment for any of the listed impairments. The status of designated uses in the downstream ponds is presented in Table 2. The discharge of pollutants in fish culture water and treated hatchery effluent from Outfalls 001 and 002 to the Merrymeeting River could potentially affect the listed impairments for cyanobacteria in the downstream ponds.

Table 2: Summary of Downstream Designated Uses and Listing Status

Designated Use	Status		
	Marsh Pond	**Jones Pond**	**Downing Pond**
Aquatic Life	No Data	Not Supporting	No Data
Drinking Water After Adequate Treatment	Full Support	Full Support	Full Support
Primary Contact Recreation	*Not Supporting**	Not Supporting	Not Supporting
Secondary Contact Recreation	No Data	No Data	No Data
Fish Consumption	Not Supporting	Not Supporting	Not Supporting

*Draft *New Hampshire Year 2018 Surface Water Quality List*

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.[8]
The critical flow in rivers and streams is some measure of the low flow of that river or stream. In New Hampshire, permit limits for aquatic life and human health criteria in non-tidal rivers and streams must be 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). *See* Env-Wq 1705.2. New Hampshire also requires that 10 % of the Assimilative Capacity of the receiving water is reserved for future needs. *See* Env-Wq 1705.01.

The Powder Mill State Fish Hatchery is located just below the dam at the outlet of Merrymeeting Lake. Little to no flow discharges to the overflow channel from the lake's outlet during the summer months. Periods of no discharge on a recurring annual basis usually result in a finding of essentially no flow for seven consecutive days at the 10-year return period (7Q10). Given that there are days during summer where there is no flow over the dam, and because discharge of hatchery water from the 2 outfalls located within a short distance of each other is continuous, there is no dilution available for discharges from either of the hatchery's outfalls to the Merrymeeting River for the purposes of calculating water quality-based effluent limitations.

5.0 Proposed Effluent Limitations and Conditions

The proposed effluent limitations and conditions derived under the CWA and State water quality standards (WQSs) are described below. These proposed effluent limitations and conditions, the

[8] EPA Permit Writer's Manual, Section 6.2.4

basis of which is discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit.

EPA calculated this measure of production as the average of the daily maximum flow values reported by the Permittee from September 2014 through September 2019 (Appendix A). At Outfall 001, the average daily effluent flow is 2 million gallons per day (MGD). At Outfall 002, the average daily flow is 4.1 MGD.

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 and ambient data are included in Appendix A and B. EPA's Reasonable Potential Analysis is included in Appendix C and results are discussed in the sections below.

5.1.1 Effluent Flow

The 2011 Permit required the Permittee to report average monthly flow for Outfalls 001 and 002. From September 2014 through September 2019 (Appendix A), average monthly effluent flow at Outfall 001 has ranged from 1.1 MGD to 2.6 MGD with an average of 2.0 MGD. Average monthly effluent flow at Outfall 002 has ranged from 3.1 MGD to 6.0 MGD with an average of 4.2 MGD. In accordance with 40 CFR § 122.45(b)(2), EPA based the calculation of effluent limitations upon a reasonable measure of actual production of the Facility, or in this case, flow. EPA determined that the measure appropriate for this Facility is the average effluent flow. The Draft Permit establishes an average monthly flow limit of 2.0 MGD at Outfall 001 and 4.1 MGD at Outfall 002 based on average monthly flows during the previous five years. These limits are consistent with hatchery flows used to establish the annual phosphorus load limit. Monitoring via flow meter, direct measurement, or weir calculation is acceptable. The Facility currently measures flow using the sharp crested weir method or direct measurement. Direct measurement is performed by calculating total flow (in gallons per minute) based on the time it takes to fill a container of known volume.

5.1.2 Total Suspended Solids

Solids, which come from feces and uneaten feed, are the largest pollutant loading generated at CAAP facilities. Solids could include inorganic (e.g., silt, sand, clay, and insoluble hydrated metal oxides) and organic matter (e.g., flocculated colloids and compounds that contribute to color). Solids can clog fish gills, resulting in an increase in susceptibility to infection or asphyxiation. Suspended solids can increase turbidity in receiving waters and reduce light penetration through the water column or settle to form bottom deposits in the receiving water. Suspended solids also provide a medium for the transport of other adsorbed pollutants, such as

metals, which may accumulate in settled deposits that can have a long-term impact on the water column through cycles of re-suspension.

The 2011 Permit required quarterly monitoring for total suspended solids (TSS) at Outfalls 001 and 002. Reported TSS values from September 2014 through November 2019 are presented in Appendix A and summarized below.

	lbs/day		mg/L	
	Range	Mean	Range	Mean
Outfall 001	0 - 183.5	26.7	0 - 11.0	1.6
Outfall 002	0 - 120.0	36.3	0 - 4.0	1.1

As explained above, PMFH is subject to the effluent limitations guidelines (ELGs) for CAAP facilities (40 C.F.R. Part 451) based on the level of fish production. The narrative effluent limitations established as the technology-based ELGs were incorporated into 2011 Permit and have been included in the Draft Permit. The ELGs require implementation of effective operational measures to achieve reduced discharges of solids and other materials. The continuation of these limitations in the Draft Permit is in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1).

In the preamble to the Final Rule (see 69 Federal Register 51892, August 23, 2004), EPA explained that it established narrative requirements based on the use of best management practices (BMPs) as the basis of the regulations and continues to view BMPs as effective tools to control the discharge of pollutants from CAAP facilities. *See* 69 Fed. Reg. at 51901. In developing these ELGs, EPA concluded that "the key element in achieving effective pollution control at CAAP facilities is a well-operated program to manage feeding, in addition to good solids management. Feed is the primary source of TSS (and associated pollutants) in CAAP systems, and feed management plans are the principal tool for minimizing accumulation of uneaten feed in CAAP wastewater." 69 Fed. Reg. at 51907. A combination of settling technology and feed management control practices reflect a technology demonstrated to achieve low levels of TSS.[9]

The Draft Permit requires the Permittee to employ efficient feed management and feeding strategies to optimize the amount of feed used and minimize waste, including a site-specific feeding regimen that considers production goals, species, and rearing unit water quality, as well as careful observation of actual feeding behavior, good record keeping, and on-going reassessment. PMFH's Best Management Practices (BMP) Plan describes optimizing feed efficiency and minimizing waste. Fish are hand fed according to size and sample counts taken

[9] EPA believes that these narrative standards will consistently achieve BPT treatment levels of solids removal; however, these operational measures are not technologies that reflect the same degree of predictability as can be expected from wastewater treatment technology based on chemical or physical treatment. Therefore, and for additional reasons as stated in the preamble to the Final Rule, EPA did not establish specific numeric TSS effluent limitations based on model technology on a national basis in the ELGs. The narrative effluent limitations reflect a technology demonstrated to achieve solids removal while still giving facilities flexibility in determining how to meet them. *See* 69 Fed. Reg. 51908-9.

weekly or monthly (depending on stage) to track fish growth, adjust feeding rate, calculate estimated food conversion, and track density and loading factors. Feeding rates are based on reference rates developed for salmonids in combination with specific conditions at the hatchery as determined by the Superintendent. Hatchery staff checks pools after each feeding to observe if fish have consumed all feed provided and, if not, feeding rates are adjusted accordingly. The Draft Permit also requires the Permittee to use a low phosphorus feed. In July 2019, PMFH switched to a 0.9% phosphorus feed, which is a 10% reduction from the feed formerly used at the Facility. The Draft Permit requires the Permittee to report the feed conversion ratio (FCR) for each Outfall. FCR is a measure of how much feed is used to grow fish; the lower the FCR, the more efficient the feed management at the hatchery. Reporting of the FCR also ensures the hatchery is in compliance with the recordkeeping requirements established in Part I.C.3 of the Draft Permit.

The Draft Permit requires the Permittee to minimize the discharge of accumulated solids from settling tanks, basins, and production systems. The hatchery follows specific solids collection and cleaning procedures to reduce the discharge of solids to the river. In each raceway, fish movement encourages solids to move downstream, where they collect in "quiescent" zones at the downstream end of each raceway. When in use, quiescent zones are cleaned weekly; cleaning frequency decreases to once every two weeks during winter. Cleaning involves brushing fish retaining screens/plates and removing solids from the quiescent zones with a vacuum pump.

The Draft Permit prohibits the direct discharge of cleaning water absent some form of solids removal prior to discharge. Cleaning water refers to water from the Facility's hatchery house, raceways, ponds, canals, circular tanks, etc. which contains settled solids that have accumulated on the bottom of such structures. As described in Section 3.2 of this Fact Sheet, PMFH designed and installed a new solids treatment system in July 2019. In the past, the hatchery had used two bass ponds as settling ponds. Solids removed from the raceways and ponds via vacuum pump were deposited into the ponds after cleaning. A portion of the water overflowed to Outfall 002 to make room for additional deposits and discharged to Outfall 002. Since July 2019, the hatchery uses three of the circular tanks for treating solids from raceway and pond cleaning. Solids are deposited into one of two settling tanks. Each tank drains to a third, center tank via a pipe located at the surface of the settling tank. The third tank has a central drain surrounded by a sand filter, which discharges to two fabric bags set on a bed of wood chips on the ground. The treated effluent filters through the wood chips and infiltrates into the ground.

Together, focusing on solids control through implementation of feed management and proper operation of solids control structures is expected to achieve reductions in the TSS concentrations and reduce the TSS load being discharged. Quarterly TSS monitoring at PMFH over the past five years confirms that the BMPs maintain TSS concentrations at the hatchery are less than 10 mg/L and typically less than 5 mg/L (Appendix A). Although EPA ultimately determined to set non-numeric limitations for TSS in its final rule, it is informative that the Facility's TSS levels are consistent with the proposed numeric best practicable control technology current available (BPT) and best available technology (BAT) limits in the Proposed Rule for flow-through systems at CAAP facilities producing 475,000 or more pounds of fish per year. 67 Fed. Reg. at 57,926. For the Final Rule, EPA used a model to estimate pollutant loadings for different combinations of the technologies and practices included in the regulatory options considered. EPA found that feed

inputs to aquatic animal culture systems are the drivers of effluent quality discharged from CAAP facilities.[10] Thus, EPA's analysis linked feed inputs, unit pollutant load reductions of the technologies or practices representing each regulatory option, and facility attributes to derive load reduction estimates for TSS, BOD, total nitrogen, total phosphorus, and other pollutants. EPA elected not to establish numeric limits at CAAP facilities in the Final Rule. *See* 69 Fed. Reg. at 51,892. Consistent with the ELGs, the BMPs required in the 2011 Permit and continued in the Draft Permit (described in Section 5.2.1, below) are expected to adequately control the discharge of TSS from the hatchery.

The BMP requirements described in Part I.C of the Draft Permit establish a benchmark of 10 mg/L for TSS as a daily maximum concentration. As explained above, this value is consistent with levels maintains at the hatchery over the past 5 years and with the numeric limits EPA initially considered for the CAAP point source category in the Proposed Rule. *See* 67 Fed. Reg. at 57,926. Concentrations above this benchmark represent a level of concern requiring further evaluation of the BMPs and may require implementation of corrective actions to ensure that the non-numeric, technology-based limits are effectively minimizing the discharge of TSS. The Draft Permit requires weekly monitoring and reporting of TSS at Outfalls 001 and 002 in lbs/day and mg/L. If the maximum daily or average monthly TSS concentration in a reporting period exceed the TSS benchmark, the Draft Permit requires the Permittee to review its BMPs, investigate the cause of the exceedance, implement corrective actions, update the BMP Plan, and report the outcome of the investigation and resulting corrective actions to EPA and NHDES.

5.1.3 Biochemical Oxygen Demand

Biochemical oxygen demand (BOD), measures the amount of oxygen consumed by microorganisms in decomposing organic matter in water. BOD also measures the chemical oxidation of inorganic matter (i.e., the extraction of oxygen from water via chemical reaction). The rate of oxygen consumption in a waterbody is affected by several variables: temperature, pH, the presence of microorganisms, and the type of organic and inorganic material. BOD directly affects the amount of dissolved oxygen in rivers and streams. The greater the BOD, the more rapidly oxygen is depleted in the stream. Depletion of the in-stream oxygen levels cause aquatic organisms to become stressed, suffocate, and die.

The 2011 Permit required quarterly monitoring for 5-day biochemical oxygen demand (BOD) at Outfalls 001 and 002. Reported BOD values from September 2014 through November 2019 are presented in Appendix A and summarized below.

	lbs/day		mg/L	
	Range	Mean	Range	Mean
Outfall 001	0 – 168.1	11.2	0 – 8.0	0.6
Outfall 002	0 – 133.8	12.4	0 – 4.3	0.4

[10] Technical Development Document for the Final Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (Revised August 2004) (EPA-821-R-04-012).

As with TSS, the narrative standards and reporting requirements in the technology-based effluent limitations guidelines (ELGs) for CAAP facilities (40 C.F.R. Part 451) are the most effective way to limit the discharge of pollutants, including BOD, in CAAP wastewater. Excess feed in the production system increases the oxygen demand of the culture water. Achieving the optimal feed input will ensure that exceed feed and feces do not accumulate in the production system to be discharged with the flow through the system. Therefore, controlling solids through best management practices, including feed management and settling ponds, is the best technology to limit discharges of BOD to the receiving water. The Draft Permit requires weekly monitoring and reporting of BOD in lbs/day and mg/L.

5.1.4 pH

The hydrogen-ion 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. Discharges with pH values markedly different from the receiving water pH can have a detrimental effect on the environment. Sudden pH changes can kill aquatic life. pH can also have an indirect effect on the toxicity of other pollutants in the water.

The 2011 Permit established pH limitations in the range of 6.5 to 8.0 S.U. based on New Hampshire WQSs at RSA 485-A:8 II, which require that "The pH for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes." From September 2014 through September 2019 (Appendix A), pH ranged from 4.7 to 7.2 S.U. at Outfall 001 and from 4.7 to 7.3 S.U. at Outfall 002. The minimum pH at both outfalls is frequently lower than the minimum range of 6.5 S.U. However, the pH of the source water from the Merrymeeting Lake is also low. The *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List") lists Merrymeeting Lake as impaired for pH due to atmospheric deposition. EPA evaluated weekly pH data from November 2018 through October 2019 and identified the number of events in which the minimum effluent temperature and intake pH was less than 6.5 S.U. and the number of events in which the minimum effluent pH was less than 6.5 S.U. and the difference between the effluent and background pH exceeded 0.5 S.U. The weekly pH data is included in Appendix A and summarized below.

	Minimum pH < 6.5 S.U.		Minimum pH < 6.5 S.U. *and*
	Intake	Effluent	Delta > 0.5
Outfall 001	21	27	3
Outfall 002	21	23	4

The data indicates that the pH of the Merrymeeting lake is often below the minimum water quality standard of 6.5 S.U. At both outfalls, the effluent pH is typically within 0.5 S.U. of the background pH when the effluent minimum pH is less than 6.5 S.U.

The Draft Permit requires a pH range of 6.5 to 8.0 S.U. monitored weekly by grab samples. The Draft Permit also establishes that if the discharge is lower than 6.5 S.U., the permittee may demonstrate compliance by showing that the discharge pH is either higher than, or no more than

0.5 S.U. lower than, the ambient upstream river water pH. These limitations are based on CWA § 301(b)(1)(C) and 40 CFR § 122.44(d).

5.1.5 Temperature

Section 502(6) of the Clean Water Act defines "heat" as a "pollutant." *See* 33 U.S.C. § 1362(6). Water temperature affects the metabolic and reproductive activities of aquatic organisms and can determine which fish and macroinvertebrate species can survive in a given water body. Certain cold-blooded species cannot regulate their body temperature through physiological means, so their body temperatures reflect the temperatures of the water they inhabit. Rapid increases or decreases in ambient water temperature can directly affect aquatic life, particularly fish. Ambient water temperature can indirectly affect aquatic life by influencing water quality parameters such as dissolved oxygen, by which the solubility of oxygen decreases as water temperature increases.

The Merrymeeting River 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 in order to protect the existing and designated uses of the waterbody and 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).

The 2011 Permit required the Permittee to monitor and report the maximum daily temperature monthly concurrent with sampling for dissolved oxygen when formalin is absent. From September 2014 through November 2019 (Appendix A) the maximum daily temperature at Outfall 001 ranged from 33.8°F to 69.6°F with an average of 51.1°F. The maximum daily temperature at Outfall 002 ranged from 33.8°F to 67.8°F with an average of 49.4°F. The Draft Permit continues to require monthly temperature monitoring at Outfalls 001 and 002 concurrent with dissolved oxygen sampling when formalin is absent.

5.1.6 Dissolved Oxygen

The NH Standards require that the instream dissolved oxygen content be at least 75 % of saturation, based on a daily average, and that the instantaneous minimum dissolved oxygen concentration be at least 5 mg/l for Class B waters. *See* Env-Wq 1703.07(b).

There are several factors which make effluent dissolved oxygen a special concern in this case. These are: (1) water supply for the hatchery is drawn from a point in Merrymeeting Lake about 40 feet below the lake's surface and as a result is likely to have dissolved-oxygen levels below saturation; (2) need to aerate the raceways in the upper hatchery adjacent to the parking lot; (3) effluent flows from the hatchery make up the majority of the receiving stream's flow during low flow periods, meaning that low effluent dissolved-oxygen concentrations could depress in-stream concentrations; and (4) lack of reaeration potential in the stretch of receiving water downstream

of the hatchery, meaning that dissolved-oxygen concentrations in Merrymeeting River could be affected by the discharges from the hatchery, particularly if oxygen demand from effluent BOD_5 is significant.

The 2011 Permit required reporting the minimum daily DO concentration and percent DO saturation when formalin was absent, and the minimum daily DO concentration when formalin was present. From September 2014 through November 2019 (Appendix A), the daily minimum dissolved oxygen at Outfall 001 with formalin absent ranged from 5.4 to 14.1 mg/l with an average of 9.7 mg/L. During the single reporting period in which formalin was present at Outfall 001 (November 2017), the Permittee reported a minimum DO concentration of 8.5 mg/L. The daily minimum dissolved oxygen saturation at Outfall 001 ranged from 58% to 105% with an average of 86%. Dissolved oxygen levels never exceeded a minimum of 5 mg/L; however, dissolved oxygen saturation at Outfall 001 was below 75% saturation during 5 reporting periods.

Minimum dissolved oxygen values at Outfall 002 ranged from 6.5 to 15.4 mg/l with an average of 10.0 mg/L. When formalin was present at Outfall 002, the Permittee reported a minimum DO concentration ranging from 8.0 to 14.0 mg/L with an average concentration of 10.9 mg/L. The daily minimum dissolved oxygen saturation at Outfall 002 ranged from 65% to 117% with an average of 87%. Dissolved oxygen levels never exceeded the minimum of 5 mg/L; however, dissolved oxygen saturation at Outfall 002 was below 75% saturation during 3 reporting periods.

The Draft Permit continues to require weekly monitoring of the effluent for dissolved oxygen concentration and calculation of dissolved oxygen percent saturation. In addition, the Draft Permit requires monitoring once per day when formalin is being used.

5.1.7 Total Residual Chlorine

Chlorine and chlorine compounds are toxic to aquatic life. Free chlorine is directly toxic to aquatic organisms and can react with naturally occurring organic compounds in receiving waters to form toxic compounds such as trihalomethane. The facility may use hypochlorite solutions to clean/disinfect rearing units and hatchery equipment. However, hypochlorite solutions are not discharged directly into the culture water and any hypochlorite solution remaining on the equipment is neutralized with sodium thiosulfate prior to its exposure to that culture water.

The facility is authorized to use Chloramine-T, an investigational new animal drug (INAD), to treat bacterial gill disease caused by *Flavobacterium branchiophilium* (FDA INAD #9321 Objective B). Its use must follow the INAD study protocol, and the facility is required to notify EPA as described in Part I.C.4 of the Draft Permit.

Treatment of diseased fish consists of three consecutive daily static bath treatments of one-hour duration with 20 mg/L of Chloramine-T. Following each one-hour treatment, the facility neutralizes the treatment solution using sodium thiosulfate, and measures the chlorine residual in the rearing unit to ensure that the chlorine has been neutralized before restarting flow through the system.

The 2011 Permit established an average monthly and maximum daily TRC limit of 11 ug/l and 19 µg/l, respectively. Sampling for TRC is only conducted when Chloramine-T is in use. The Permittee has not reported use of Chloramine-T during the period beginning September 2014. As such, TRC monitoring has not been conducted on the effluent. The Draft Permit carries forward the water-quality based maximum daily and average monthly TRC limit from the 2011 Permit limits in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1). The limits are based on the freshwater acute and chronic aquatic life criteria in the New Hampshire Water Quality Criteria for Toxic Substances. *See* Env-Wq 1703.21(b). The chlorine effluent limits and daily monitoring requirement apply whenever Chloramine-T is in use at the facility.

5.1.8 Nutrients (Nitrogen and Phosphorus)

Two major nutrients found in CAAP discharges are nitrogen (in the form of nitrate, nitrite, ammonia, and organic nitrogen) and phosphorus (both solid and dissolved). Elevated concentrations of nutrients can result in eutrophication, where nutrient concentrations lead to excessive plant and algal growth, including cyanobacteria. Respiration and decomposition of plants and algae under eutrophic conditions reduce dissolved oxygen in the water and can create poor habitat for aquatic organisms.[11]

Best available technology (BAT) represents the best economically achievable performance of facilities in the CAAP industrial subcategory or category. For flow-through and recirculating systems that produce more than 100,000 pounds or more per year of aquatic animals, EPA established BMP requirements for the control of conventional, toxic, and non-conventional pollutants, including total nitrogen and total phosphorus. 40 C.F.R. § 451.12. See also 69 Fed. Reg. at 51895. The Draft Permit includes these technology-based, non-numeric BMP requirements.

New Hampshire water quality standards require that "[a]ll surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters. All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters." Env-Wq 1703.01(b) & (c). Class B waters, such as the Merrymeeting River, shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring, and existing discharges containing phosphorus or nitrogen, or both, which encourage cultural eutrophication shall be treated to remove the nutrient(s) to ensure attainment and maintenance of water quality standards. Env-Wq 1703.01(b) & (c). "Cultural eutrophication" is defined in the NHWQS as "the human-induced addition of wastes that contain nutrients to surface waters, resulting in excessive plant growth or a decrease in dissolved oxygen, or both." Env-Wq 1702.15. New Hampshire has not prescribed specific methodologies for deriving numeric nutrient limitations that correspond to its narrative criteria.

[11] Technical Development Document for the Final Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (Revised August 2004). EPA Office of Water. EPA-821-R-04-012.

As discussed in Section 4.1 above, the Merrymeeting River is not currently listed for any water quality impairments, however, two downstream impoundments, Jones Dam Pond and Downing Pond, are listed in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List") a Category 5 "Waters Requiring a TMDL" and Marsh Pond, the first pond downstream of the hatchery, is listed in the draft 2018 303(d) List as a Category 5 . In all cases, the Primary Contact designated use is listed as impaired and the pollutant requiring a TMDL is cyanobacteria hepatotoxic microcystins. Excessive amounts of nitrogen and phosphorus can stimulate growth of cyanobacteria and contribute to harmful algal blooms such as the blooms that have been documented in ponds downstream from the hatchery in recent years.

Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: 1) increasing oxygen demand within the water body to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter; 2) causing an unpleasant appearance and odor; 3) interfering with navigation and recreation; 4) reducing water clarity; 5) reducing the quality and availability of suitable habitat for aquatic life; 6) producing toxic cyanobacteria during certain algal blooms. Cultural (or accelerated) eutrophication is the term used to describe dense and excessive plant growth in a water body that results from nutrients entering the system as a result of human activities. Discharges from municipal wastewater treatment plants, certain industrial facilities, agriculture runoff, and stormwater are examples of human-derived (i.e. anthropogenic) sources of nutrients in surface waters.

The 2011 Permit required quarterly monitoring of total phosphorus (TP). Reported TP values from September 2014 through September 2019 are presented in Appendix A and summarized below.

	lbs/day		mg/L	
	Range	Mean	Range	Mean
Outfall 001	0 – 14.1	1.2	0 – 0.78	0.068
Outfall 002	0.8 – 3.1	1.6	0.02 – 0.09	0.05

In December 2018, PMFH reported a maximum daily, 24-hour composite TP concentration of 0.78 mg/L. This value is nearly 7 times higher than the second-highest reported concentration (0.108 mg/L in January 2012). Because this TP concentration was unusually high, the Permittee took a second TP composite during the month and reported a maximum concentration of 0.013 mg/L. Using the mean of the two values (0.04 mg/L) for that month results in a mean TP concentration of 0.05 mg/L at Outfall 001 from September 2014 through September 2019. In addition, EPA requested that the Permittee increase monitoring frequency for TP to twice monthly from December 2016 through April 2017, once per month from May 2017 through September 2017, and twice per month from October 2017 through November 2017. During months in which two samples were collected, at least one of the monthly samples was taken during a cleaning event. The Permittee reported TP concentration for each sampling date, which

is presented in Appendix B. From December 2016 through November 2017, the TP concentration at Outfall 001 ranged from 0.02 to 0.09 mg/L with an average of 0.04 mg/L. The TP concentration at Outfall 002 ranged from 0.03 to 0.09 mg/L with an average of 0.05 mg/L. Finally, the community, NHDES, and EPA obtained downstream ambient data for TP and chlorophyll-a (Appendix C). This data was used in the Lake Loading Response Model (described below and in Appendix D) to predict phosphorus concentrations in the Merrymeeting River.

Env-Wq 1703.03 requires that surface waters be free of substances which float as foam, debris, or scum; produce odor, taste, or turbidity making the water unsuitable for the designated use; result in nuisance species; or interfere with recreational activities. The Primary Contact Recreation Use[12] in the downstream waters (Marsh, Jones, and Downing Ponds) are listed as impaired based on the presence of cyanobacteria (an indicator for primary contact recreation). Excessive algal growth can also be indicated by elevated chlorophyll-a values. For freshwater assessment purposes, NHDES considers that chlorophyll-a concentrations in excess of 15 ug/L may result in excessive algal growth that interferes with recreational activities.[13] Elevated chlorophyll-a levels are caused by excessive algal growth, which is a response to elevated nutrients in the waterbody. Phosphorus is widely considered the limiting nutrient for plant growth in freshwater lakes and rivers.

Limitations more stringent than promulgated technology-based effluent limitations guidelines are required where necessary to achieve water quality standards. 40 C.F.R. § 122.44(d)(1). In this case, the non-numeric, technology-based BMPs from the effluent limitation guidelines for CAAP facilities are not sufficiently controlling phosphorus to meet water quality standards in the downstream receiving waters. The cold, high-quality source water from the Merrymeeting Lake is low in TP (0.006 mg/L or less) and the effluent discharged from the hatchery outfalls is, on average, about 0.05 mg/L (Appendix A), which is a substantial increase from the intake concentration. In addition, the flow from Merrymeeting Lake forms the headwaters of the Merrymeeting River. Much of this flow is routed through the hatchery (with the exception of spring and fall lake drawdown) and during summer all of the flow to the Merrymeeting River is from the hatchery. See 2019 Merrymeeting River & Lake Watershed Plan Figure 3-8 (at 33). The hatchery is the largest contributor of phosphorus to the system, which is experiencing severe water quality impairments related to excessive phosphorus loading. For these reasons, EPA has determined that the addition of phosphorus from the hatchery to the impaired waterbody has the reasonable potential to cause or contribute to an in-stream excursion above the narrative criteria discussed above. *See* 40 C.F.R. § 122.44(d)(1)(ii). A target value for total phosphrous is used as a surrogate to address impairments related to the presence of cyanobacteria. Establishing limitations for total phosphorus in the Draft Permit will address the discharge of nutrients and, therefore, the impairment to the Primary Contact Recreation designated use in Marsh, Jones, and Downing Ponds.

New Hampshire has not established a numeric water quality standard for total phosphorus. In

[12] NHDES defines Primary Contact Recreation Designated Use as waters that are suitable for recreational uses that require or are likely to result in full body contact and/or incidental ingestion of water. *See* NHDES 2016 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology.
https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2016/documents/r-wd-17-08.pdf
[13] *Id*.

accordance with 40 C.F.R. § 122.44(d), "Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits using one or more of the following options…" The regulations provide that EPA may establish effluent limitations on an indicator parameter for the pollutant of concern provided that:

> (1) The permit identifies which pollutant(s) are intended to be controlled by the use of the effluent limitation;
> (2) The fact sheet required by § 124.56 sets forth the basis for the limit, including a finding that compliance with the effluent limit on the indicator parameter will result in controls on the pollutant of concern which are sufficient to attain and maintain applicable water quality standards;
> (3) The permit requires all effluent and ambient monitoring necessary to show that during the term of the permit the limit on the indicator parameter continues to attain and maintain applicable water quality standards; and
> (4) The permit contains a reopener clause allowing the permitting authority to modify or revoke and reissue the permit if the limits on the indicator parameter no longer attain and maintain applicable water quality standards.

40 C.F.R. § 122.44(d)(1)(vi)(C).

New Hamshire has established a series of use-specific assessment criteria used to identify and list waters for impairment of designated uses under Sections 305(b) and 303(d) of the CWA. In this case, the source of the impairment in Marsh Pond is cyanobacteria. As explained above, NHDES considers that the presence of cyanobacteria and elevated chlorophyll-a values (in excess of 15 ug/L for freshwater assessment purposes) interferes with recreational activities. Elevated chlorophyll-a and algal growth result from excessive nutrients; phosphorus is the limiting nutrient for plant growth in freshwater lakes and rivers. Therefore, EPA is deriving a numeric phosphorus limit as an indicator parameter for cyanobacteria (and chlorophyll-a) in order to address the impairment for primary contact recreation designated uses and meet the narrative water quality standards at Env-Wq 1703.03. In addition, limiting phosphorus is also consistent with the narrative water quality standards for nutrients at Env-Wq 1703.14.

In the absence of numeric criteria for phosphorus, EPA typically uses nationally recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus. EPA has published national guidance documents that contain recommended total phosphorus levels and other indicators of eutrophication. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") recommends that in-stream phosphorus concentrations not exceed 50 µg/L in any stream entering a lake or reservoir, 100 µg/L for any stream not discharging directly to lakes or impoundments, and 25 µg/L within a lake or reservoir. EPA has applied the effects-based Gold Book threshold as an in-stream target and developed water quality-based effluent limitations to meet this goal in NPDES permits in for wastewater treatment plants in New Hampshire. See, for example, NH0100111, NH0100544, NH0100447. In addition to the Gold Book criteria for phosphorus, EPA established Ecoregional Nutrient Criteria as part of an effort

to reduce problems associated with excess nutrients in water bodies in specific areas of the country. These criteria represent conditions in waters within ecoregions that are minimally impacted by human activities, and thus free from the effects of cultural eutrophication. The recommended total phosphorus criteria in Ecoregion VIII (Nutrient Poor, Largely Glaciated Upper Midwest and Northeast), where the hatchery is located, is 10 µg/L.[14] The Gold Book criteria were developed from an effects-based approach versus the more stringent ecoregional criteria, which were developed on the basis of reference conditions. The effects-based approach is directly associated with an impairment to a designated use (i.e., fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e., water quality impairments) are likely to occur. As explained in the Gold Book, another method to control the inflow of nutrients, particularly phosphorus, into a lake is to establish an annual load to the receiving water.

In this case, EPA also looked to methodology used by NHDES in its Total Maximum Daily Load (TMDL) Program. TMDLs address impaired waters by establishing the maximum amount of a pollutant that a waterbody can receive and still support designated uses. There is no TMDL for the impairments of the primary contact recreation designated use related to cyanobacteria in Marsh Pond or the impoundments downstream from the hatchery. NHDES has, however, completed a number of TMDLs for New Hampshire lakes with impairments similar to those in the Merrymeeting River watershed, including phosphorus, chlorophyll-a, and cyanobacteria. See, for example, approved TMDLs for Phillips Pond, Webster Lake, and Captain Pond. NHDES uses water quality modeling to evaluate the nutrient loading capacity of lakes on an annual basis. The model NHDES uses is a land use export coefficent model (the ENSR-LRM methodology). Inputs to the model can be manipulated to determine the effects of various nutrient sources on the predicted ambient phosphorus concentration and associated response variables (e.g., chlorophyll-a and probability of algal blooms).

Additionally, the Merrymeeting Cyanobacteria Steering Committee (MCSC), in coordination with its contractor, developed a watershed model based on the ENSR-LRM methodology for the Merrymeeting River for the purposes of developing its Watershed Management Plan. *See* September 2019 Merrymeeting River and Lake Watershed Management Plan (2019 WMP) and April 2019 Merrymeeting River and Lake -Lake Loading Response Model Report (2019 LLRM Report). The mass-based effluent limits for phosphorus in the Draft Permit were informed by the LLRM for the Merrymeeting River and Lake Watershed developed for the MCSC and NHDES TMDL methodology. Documentation for the ENSR-LRM is included as Appendix B to NHDES Lake Phosphorus TMDLs, including the TMDL for Phillips Pond. An explanation of how the Merrymeeting River LLRM was used to inform numeric effluent limits in the Draft Permit is included as Appendix D to this Fact Sheet.

In Lake TMDLs for waterbodies with nutrient-related impairments, such as Marsh, Jones, and Downing Ponds, NHDES sets a total phosphorus in-lake concentration target of 12 ug/L. This in-lake target concentration is the predicted TP concentration for mesotrophic lakes and will result

[14] Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII (EPA December 2000)

in attainment of surface water quality criteria for chlorophyll-a, dissolved oxygen, and cyanobacteria.[15] According to the 2019 WMP, NHDES assessed Marsh Pond as eutrophic in 1986, Jones Pond as mesotrophic in 1986, and Downing Pond as eutrophic in 2003. *See* 2019 WMP at 25. The 2019 WMP also demonstrates that, based on current conditions, TP and chlorophyll-a in Marsh, Jones, and Downing Ponds occasionally exceed NHDES thresholds for eutrophic lakes (11 µg/L chl-a and 28 µg/L TP). *See* 2019 WMP Figure 3-1 at 19. The 2019 WMP used the model to predict pre-development phosphorus loads in Marsh Pond and the downstream impoundments and determined that pre-development conditions would be, at a minimum, consistent with mesotrophic lakes.

As EPA explains in Appendix D, the Draft Permit includes an annual TP load limit of 395 lbs/year with an average monthly phosphorus limit of 25 ug/L (0.025 mg/L) at Outfalls 001 and 002 from October 1 through May 31. This represents a 53% reduction in the current estimated annual load from the hatchery based on the LLRM. In addition, the Draft Permit includes a seasonal (June – September) average monthly phosphorus limit of 14 ug/L (0.018 mg/L) at Outfalls 001 and 002 and a seasonal TP load limit of 87 lbs. This more stringent monthly average effluent limitation and seasonal load limit is designed to be protective of designated uses in Marsh Pond during the summer growing season, when TP loads from the hatchery can be high (e.g., in July 2017, the maximum daily TP concentration at Outfall 001 was 90 ug/L, Appendix B) and all of the flow from the Merrymeeting Lake flows through the hatchery's outfalls without dilution. The Draft Permit limits are predicted to achieve an annual average target concentration of 12 ug/L in Marsh Pond and an algal bloom probability of 0.2% at chlorophyll-a greater than 15 µg/L, which is NHDES's impairment threshold for the primary contact recreation designated use (Appendix D). The Draft Permit limits are established to meet the predicted in-stream target TP and response variable (chl-a) in order to achieve water quality conditions to address the impairments for cyanobacteria in Marsh Pond and the downstream impoundments.

The TP limitations in the Draft Permit are crucial to advancing towards the goal of attaining water quality standards for designated uses in Marsh Pond, because the hatchery is the primary source of phosphorus loading to the system. However, there are other phosphorus sources that will also need to be addressed. The 2019 WMP demonstrates that Marsh and Jones Ponds demonstrate evidence of significant internal loading, which will continue to impact the watershed even as the hatchery implements improvements to meet the new Draft Permit limits. *See* 2019 WMP at 21. The Draft Permit requires weekly monitoring for TP at each outfall and establishes ambient monitoring requirements for Marsh Pond to ensure that the permit limits are sufficient to attain and maintain applicable water quality standards. See 40 C.F.R. § 122.44(d)(1)(vi)(C)(3). The hatchery may choose to coordinate the ambient monitoring required by the Draft Permit with annual water quality monitoring program proposed by the MCSC in the 2019 WMP. See 2019 WMP at 48-9.

[15] See NHDES 2018 Final TMDL for Phosphorus for Phillips Pond, Sandown, NH: Appendix A Methodology for Determining Target Criteria. https://www.des.nh.gov/organization/commissioner/pip/publications/documents/r-wd-18-11.pdf
See also NHDES 2016 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2016/documents/r-wd-17-08.pdf

Nitrogen

The 2011 Permit required quarterly monitoring for total nitrogen (TN). Total Nitrogen is the sum of Total Kjeldahl Nitrogen (TKN) (ammonium, organic and reduced nitrogen) and nitrate-nitrite. It is derived by individually monitoring for organic nitrogen compounds, ammonia, nitrate, and nitrite and adding the components together. Reported TN values from September 2014 through September 2019 are presented in Appendix A and summarized below.

	lbs/day		mg/L	
	Range	Mean	Range	Mean
Outfall 001	0 – 16.5	6.4	0 – 1.03	0.39
Outfall 002	0 - 88	24.9	0 – 2.3	0.73

As explained above, PMFH is subject to the effluent limitations guidelines (ELGs) for CAAP facilities (40 C.F.R. Part 451) based on the level of fish production. The narrative effluent limitations established as the technology-based ELGs were incorporated into the 2011 Permit and have been included in the Draft Permit. The ELGs require implementation of effective operational measures to achieve reduced discharges of solids and other materials. The continuation of these limitations in the Draft Permit is in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1).

The Draft Permit includes weekly monitoring and reporting for total nitrogen. The monitoring data will continue to provide additional information on the discharge of nitrogen and the effectiveness of the BMPs to minimize the discharge of nutrients to the Merrymeeting River. In addition, the anticipated improvements that will be necessary to meet the water quality-based effluent limits for total phosphorus described above will also reduce the total nitrogen load to the Merrymeeting River.

5.1.9 Ammonia

Ammonia (NH_3) is the unionized form of ammonia nitrogen. Elevated levels of ammonia can be toxic to aquatic life. Temperature and pH affect the toxicity of ammonia to aquatic life. The toxicity of ammonia increases as temperature increases and ammonia concentration and toxicity increase as pH increases. Ammonia can affect fish growth, gill condition, organ weights and hematocrit, and can result in excessive plant and algal growth, which can cause eutrophication. Ammonia can also affect dissolved oxygen through nitrification, in which oxygen is consumed as ammonia is oxidized. Low oxygen levels can then, in turn, increase ammonia by inhibiting nitrification. Total ammonia-nitrogen concentrations in surface waters tends to be lower during summer than during winter due to uptake by plants and decreased ammonia solubility at higher temperatures.

The 2011 Permit required quarterly monitoring for ammonia. From September 2014 through September 2019 (Appendix A), daily maximum total ammonia at Outfall 001 ranged from 0 to

0.33 mg/L with an average of 0.11 mg/L. The maximum daily total ammonia values at Outfall 002 ranged from 0.08 to 0.39 mg/l with an average of 0.2 mg/L.

The New Hampshire Water Quality Standards for ammonia are found at Env-Wq 1703.25 and 26. Based on pH data reported in the DMRs under cold water conditions (October 1 through April 30), the acute ammonia criterion is 27.86 mg/L and the chronic ammonia criterion is 3.65 mg/L. Under warm water conditions (May 1 through September 30), the acute ammonia criterion is 21.98 mg/L and the chronic ammonia criterion is 2.33 mg/L. Based on discussions with NH Fish & Game, NHDES calculated the criterion on values where salmonids in the genus *Oncorhynchus* are present. 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. This results in a cold water freshwater criteria of 25.1 mg/L (acute) and 3.3 mg/L (chronic) and warm water freshwater criteria of 19.8 mg/L (acute) and 2.1 mg/L (chronic).

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentration that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of the *Technical Support Document for Water Quality-based Toxics Control* (TSD)[i] to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory detection limits). For datasets of 10 or more samples, EPA used the upper bound effluent concentration at the 95th percentile of the dataset. At Outfall 002, which includes no non-detect results, EPA used a lognormal distribution to calculate the 95th percentile; for Outfall 001, which includes one non-detect result, EPA used a delta-lognormal distribution to calculate the 95th percentile. At Outfall 001, the estimated 95th percentile daily maximum concentration is 0.17 mg/L. In cases of low flow, where there is little to no flow over the dam at Merrymeeting Lake, the discharge from Outfall 001 is essentially the headwater of the Merrymeeting River. The estimated 95th percentile ammonia concentration for Outfall 001 is less than the acute and chronic criteria (times 0.9). Based on this analysis, there is no reasonable potential for the hatchery effluent from Outfall 001 with no dilution to cause or contribute to an excursion of the calculated water quality standards for ammonia. At Outfall 002, the estimated 95th percentile daily maximum concentration is 0.38 mg/L.

At the hatchery, the discharge from Outfall 001 represents the upstream flow for Outfall 002 because, at times of low flow, all of the water from the Merrymeeting Lake flows through the hatchery. The effluent discharged from Outfall 001 becomes the receiving water for Outfall 002. EPA used the calculated 95th percentile of Outfall 001 effluent data at the minimum observed flow to represent critical low flow (1.26 MGD) and the calculated 95th percentile of Outfall 002 effluent data at the permitted maximum flow (4 MGD) to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$Q_s C_s + Q_e C_e = Q_d C_d$$

Where:

C_d = downstream concentration
C_s = upstream concentration (95th percentile of Outfall 001 effluent concentration)
C_e = effluent concentration (95th percentile of Outfall 002 effluent concentrations)
Q_s = upstream flow (Minimum Outfall 001 effluent flow)
Q_e = Maximum Outfall 002 daily effluent flow
Q_d = downstream flow ($Q_s + Q_e$)

Solving for the receiving water concentration downstream of the discharge (C_d) yields:

$$C_d = \frac{C_s Q_s + C_e Q_e}{Q_d}$$

$$C_d = \frac{(1.26\ \text{MGD} * 0.17\ \text{mg/L}) + (6.0\ \text{MGD} * 0.38\ \text{mg/L})}{(1.26\ \text{MGD} + 6.0\ \text{MGD})}$$

Assuming an in-stream ammonia concentration of 0.17 mg/L (from Outfall 001), EPA calculated a combined, downstream ammonia concentration at Outfall 002 of 0.34 mg/L. This value is less than the acute and chronic criteria (times 0.9).

EPA also evaluated reasonable potential by calculating the combined ammonia concentration as if the two outfalls combined prior to discharge, rather than using the Outfall 001 flow as the receiving water for Outfall 002. Using the mass-balance equation from above with the estimated 95th percentile ammonia concentrations and maximum observed flow at each outfall over the previous 5 years, the resulting ammonia concentration in the discharge is:

$$C_d = \frac{(2.6\ \text{MGD} * 0.17\ \text{mg/L}) + (6.0\ \text{MGD} * 0.38\ \text{mg/L})}{(2.6\ \text{MGD} + 6.0\ \text{MGD})}$$

$$C_d = 0.32\ \text{mg/L}$$

Based on the analysis, there is no reasonable potential for the hatchery effluent to cause or contribute to an excursion of the calculated water quality standards for ammonia. The Draft Permit requires monthly monitoring for ammonia at Outfalls 001 and 002.

5.1.10 Hydrogen Peroxide

The facility is authorized to use a hydrogen peroxide solution (35% PEROX-AID®) as an external microbiocide for the control of mortality in freshwater-reared finfish eggs due to saprolegniasis, in freshwater-reared salmonoids due to bacterial gill disease (*Flavobacterium branchiophilum*), and in freshwater-reared cool water finfish due to external columnaris disease (*Flavobacterium columnae*). 35% PEROX-AID® is an FDA-approved drug for freshwater-reared finfish, and its use must adhere to FDA label instructions. The facility has indicated that the use of 35% PEROX-AID® will allow it to reduce its use of formalin.

The facility uses three consecutive daily static bath or continuous flow treatments of 30 to 60 minutes each with 100 mg/l of 35% PEROX-AID® according to the manufacturer's instructions. Treatments are done one rearing unit at a time, and the tank water level is lowered to minimize the amount of chemical needed to achieve the desired dosage, and to minimize peroxide levels in the hatchery effluent.

The NH Water Quality Standards do not include aquatic toxicity criteria for hydrogen peroxide, but the FDA has derived hydrogen peroxide water quality benchmarks for use by NPDES permitting authorities (*See "Environmental Assessment for the Use of Hydrogen Peroxide in Aquaculture for Treating External Fungal and Bacterial Diseases of Culture Fish and Fish Eggs", United State Geological Survey, 2006, p.72*). For freshwater aquatic life, the acute benchmark (criteria maximum concentration) is 0.7 mg/l. This acute water quality "benchmark" was determined using EPA guidance for deriving water quality criteria. The FDA determined that a corresponding chronic benchmark was unnecessary.

The 2011 Permit established a maximum daily hydrogen peroxide limit of 0.7 mg/l. Sampling for hydrogen peroxide is only conducted when in use (i.e., when PEROX-AID® is in use). The Permittee has not reported use of PEROX-AID® since prior to January 2012. As such, hydrogen peroxide monitoring has not been conducted on the effluent. The Draft Permit carries forward the water-quality based maximum daily hydrogen peroxide limit from the 2011 Permit limits in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1). The facility monitors residual peroxide using Hach test kit HYP-T #2291700, which has a minimum detection limit of 0.2 mg/l.

5.1.11 Formalin

CAAP facilities commonly use biocides, the most common of which are formalin products such as Paracide-F, Formalin-F or Parasite-S, which contain approximately 37% by weight of formaldehyde gas. Formalin is used for the therapeutic treatment of fungal infections on the eggs of finfish and to control active external protozoa and monogenetic trematodes on all finfish species. Because it is formulated to selectively kill or remove certain attached organisms, but not the finfish themselves when properly applied, formalin is more toxic to invertebrate species than to vertebrates. When setting the necessary permit limits to protect the receiving water's aquatic environment from the effects of formalin in a discharge, it is more important to develop limits to protect invertebrate species because they are more sensitive to the effects of formaldehyde. In the receiving waters, these invertebrates are an integral part of the food chain for finfish.

Formalin use must be consistent with U.S. Food and Drug Administration (FDA) labeling instructions as per 21 C.F.R. § 529.1030. While the prophylactic use of formalin (i.e., drugs and chemicals used to prevent specific disease(s) in the absence of their symptoms) is not mentioned in those FDA regulations, EPA will only allow its use under the extra-label provisions of the Federal Food, Drug and Cosmetic Act as a Best Management Practice (BMP) to control the excessive use of drugs.

Existing toxicity data indicates that formalin is toxic to aquatic organisms at concentrations below FDA labeling guidelines. Currently there are no acute and chronic aquatic-life criteria for either formalin or formaldehyde in the NH Standards. However, New Hampshire law states 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 Env-Wq 1703.21(a)(1)). EPA, therefore, will continue to apply the acute, 4.6 mg/l, and chronic, 1.6 mg/l, aquatic-life criteria taken from the Derivation of Ambient Water Quality Criteria for Formaldehyde, Hohreiter, David W. and Rigg, David K., *Journal of Science for Environmental Technology in Chemosphere*, Vol. 45, Issues 4-5, November 2001, pgs. 471-486. EPA believes that because these criteria were developed in accordance with EPA's *Guidance for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, they are appropriate for the purpose of setting effluent limitations.

The 2011 Permit established a maximum daily formaldehyde limit of 4.6 mg/l and average monthly limit of 1.6 mg/l. Sampling for formaldehyde is only conducted when formalin is in use. The Permittee reported discharges associated with the use of formalin in one reporting period at Outfall 001 and four reporting periods at Outfall 002. The Permittee reported a maximum daily formaldehyde concentration of 75 mg/L at Outfall 002 in September 2016. On September 27, 2016 the Permittee reported that the exceedance of the maximum daily formaldehyde limit was due to operator error and that steps would be taken to ensure that the Facility met the limit consistently.[16] *See* Letter from E. Malone of New Hampshire Fish and Game to J. Hilton on EPA. Formalin was used three additional times at Outfall 002. Maximum daily formaldehyde concentrations ranged from 0 to 0.2 mg/L. At Outfall 001, the Permittee reported a maximum daily formaldehyde concentration of 8.8 mg/L in November 2017. Again, the Permittee identified the non-compliance by letter to EPA dated November 16, 2017 and explained the need for formalin use to reduce mortality associated with an outbreak of parasitic infection. See Letter from E. Malone of New Hampshire Fish and Game to J. Hilton on EPA. The Draft Permit carries forward the water-quality based formaldehyde limits from the 2011 Permit limits in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1).

5.2 Special Conditions

5.2.1 Best Management Practices

Best management practices (BMPs) may be expressly incorporated into a permit on a case-by-case basis where it is determined that they are necessary to achieve effluent limitations and standards or to carry out the purpose and intent of the CWA under § 402(a)(1). BMPs may be necessary to control or abate the discharge of pollutants when: 1) authorized under section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) authorized under section 402(p) of the CWA for the control of storm water discharges; 3) numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of

[16] Further discussions with the hatchery operator demonstrated that the effluent sample for the September 2016 event was conducted at a location that was not representative of the final effluent. The sampling event is best represented with an appropriate No Data Indicator Code rather than as a numerical entry. An edit to the September 2016 Net DRM entry is pending.

the CWA. *See* 40 C.F.R. 122.44(k). Pollutants may be present because they are generated during Facility operations, which could result in significant amounts of these pollutants reaching waters of the United States via discharges of wastewater.

In this case, the Draft Permit requires the selection, design, installation, and implementation of control measures for wastewater associated with the Facility operations to comply with the non-numeric technology-based effluent limits in the Draft Permit. These non-numeric limitations are consistent with the limitations specified in 40 C.F.R. Part 451 Subpart A for flow-through and recirculating systems in the Concentrated Aquatic Animal Production Point Source Category. Requirements include:

- *Solids control* including feed management and feeding strategies to minimize potential discharges of uneaten feed, accumulated solids, and disposal of animal mortalities;
- *Materials storage* including proper storage of drugs, pesticides, and feed, and procedures for spill prevention and disposal;
- *Structural maintenance* including route inspections and maintenance;
- *Recordkeeping* including documenting feed amounts, numbers/weight of aquatic animals, and frequency of inspections and repairs;
- *Training* including proper spill clean-up and disposal and operation and cleaning of wastewater treatment systems, feeding procedures, and use of equipment.

These non-numeric effluent limitations support, and are equally enforceable as, the numeric effluent limitations included in the Draft Permit. The purpose of these requirements is to reduce or eliminate the discharge of pollutants to waters of the United States. These requirements, together with the numeric limits, will also ensure that discharges from the Facility will meet State WQSs pursuant to CWA § 301(b)(1)(C) and 40 C.F.R. 122.44(d)(1). Unless otherwise stated, the Permittee may select, design, install, implement and maintain BMPs as the Permittee deems appropriate to meet the permit requirements. The selection, design, installation, implementation and maintenance of control measures must be in accordance with good engineering practices and manufacturer's specifications.

In addition to the BMP Plan requirement, the Draft Aquaculture General Permit establishes a benchmark requirement TSS. The benchmark is not an effluent limitation. The benchmark is the pollutant concentrations above which EPA Region 1 has determined represent a level that requires further evaluation of the BMP Plan to determine whether BMPs are effectively reducing solids concentrations in the discharge. See Section 5.1.2 of this Fact Sheet for additional information on the benchmark monitoring requirements.

5.2.2 Discharges of Chemicals and Additives

Chemicals and additives include approved and conditionally approved aquaculture drugs and indications used to maintain fish health. Only drugs and chemicals approved by the U.S. Food and Drug Administration (FDA) for use in aquaculture or considered low regulatory priority by the FDA are used at the hatchery. The Draft Permit allows the discharge of only those chemicals and additives specifically disclosed by the Permittee to EPA and the State. The following chemicals and additives were disclosed to EPA:

- Ovadine® (disinfectant for fish eggs)
- Florfenicol to control fish mortality related to parasites (Aquaflor®)
- Hydrogen peroxide to control bacterial gill disease (35% Perox-Aid®)
- Chorionic gondadotropin to improve spawning (Chorulon®)
- Chloramine-T to control bacterial gill disease (Halamid®)
- Formalin to control parasites (Parasite-S, Formalin-F, Formacide-B, Paracide-F)
- Romet® 30 and Romet® TC to control furunculosis
- Oxytetracycline hydrochloride to mark skeletal tissues (Pennox® 343)
- Oxytetracycline dihydrate to control disease (Terramycin® 200)
- Tricaine methanesulfonate to immobilize fish (Tricaine-S®)

Low Regulatory Priority Chemicals

- Acetic Acid to control parasites
- Calcium chloride for egg hardening
- Carbon dioxide gas as anesthetic
- Fullers Earth
- Garlic (whole form)
- Magnesium sulfate
- Onion (whole form)
- Papain
- Potassium chloride
- Povidone iodine
- Sodium bicarbonate
- Sodium chloride
- Sodium sulfite
- Thiamine hydrochloride
- Urea and tannic acid

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 for each chemical or additive, the Permittee must submit the following information, 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 LC_{50} 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 any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

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, as described above, other than additives used in accordance with the BMPs in Part I.C.2 of the Draft Permit. 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.

5.3 Compliance Schedule

A NPDES Permit may, when appropriate, specify a schedule of compliance leading to compliance with CWA and regulations. 40 C.F.R. § 122.47(a). The permitting authority must require compliance as soon as possible but not later than the applicable statutory deadline under the CWA. 40 C.F.R. § 122.47(a)(1). *See also* CWA § 301(b)(1)(C). New Hampshire surface water quality regulations allow for schedules of compliance in NPDES Permits when the permittee cannot comply with the permit limits or other requirements immediately upon issuance of the permit and when the compliance schedule is provided to afford the permittee adequate time to comply with permit requirements or limitations that are based on new, newly interpreted, or revised water quality standards that became effective after issuance of the original discharge permit and after July 1, 1977. *See* Env-Wq 1701.03.

The Draft Permit establishes a new, water-quality based effluent limitation for total phosphorus as an indicator parameter for the pollutant of concern, cyanobacteria, which NHDES has indicated is the source of impairment of the primary contact designated use in Marsh Pond and the downstream impoundments. For the issuance of this Draft Permit, EPA has interpreted the narrative water quality criteria at Env-Wq 1703.03(c) and 1703.14 to establish numeric effluent limitations at the hatchery's outfalls. *See* 40 C.F.R. § 122.44(d)(1)(vi). PMFH will likely have to design and implement major modifications at the Facility to achieve the effluent limits, which may include best management practices, operational changes, and/or treatment technology. In other words, the hatchery will likely not be able to comply with the total phosphorus limits immediately upon issuance of the permit. The Draft Permit establishes a compliance schedule for the hatchery to comply with the total phosphorus effluent limitations within 60 months of the effective date of the permit. This schedule allows time for completing a study and engineering design of the technological improvements, construction of the technology, and securing funding for the improvements considering the New Hampshire Legislature budget cycle. The schedule establishes interim requirements and reporting milestones between the effective date of the permit and the final compliance deadline. *See* 40 C.F.R. § 122.47(a)(3) and (4).

Finally, New Hampshire water quality standards at Env-Wq 700 establish standards for the design and construction for sewerage and wastewater treatment facilities. A wastewater

treatment system is one possible option for the hatchery to reduce phosphorus concentrations consistent with the Draft Permit limits. In the event that the hatchery elects to design and install a wastewater treatment system, the Draft Permit establishes a compliance schedule in Part I.E (State Conditions) that requires the Permittee to meet certain requirements in accordance with standards at Env-Wq 700.

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 to and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and any habitat of such species that has been designated as critical under the ESA (i.e., "critical habitat").

Section 7(a)(2) of the ESA requires every Federal agency, in consultation with and with the assistance 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 Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) 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's discharges of pollutants. The Draft Permit is intended to replace the 2011 Permit in governing 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 with the Services, when required under § 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in the action area to determine if EPA's proposed NPDES permit could potentially impact any such listed species. Two federally listed threatened or endangered species have been identified for the action area: the northern long-eared bat (*Myotis septentrionalis*) and the small whorled pogonia (*Isotria medeoloides*).[17] According to the USFWS, the northern long-eared bat is found in "winter – mines and caves, summer – wide variety of forested habitats" and the small whorled pogonia is found in forested habitat. Neither of the federally listed species in the action area are aquatic and aquatic organisms are not prey for the northern long-eared bat. The proposed permit action will have no direct or indirect effect on either listed species.

Therefore, EPA finds that adoption of the proposed permit will have no effect on any federally-listed threatened or endangered species or its critical habitat, and consultation with NOAA Fisheries or USFWS under Section 7 of the ESA is not required.

[17] See https://ecos.fws.gov/ipac/

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 *et seq*., 1998), EPA is required to consult with the NOAA Fisheries if EPA's action or proposed actions 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). "Adverse impact" means any impact that 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), or site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

EFH is only designated for fish species for which federal Fisheries Management Plans exist.[16] *See* 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.

EPA has determined that the Merrymeeting River is not covered by any EFH designation as determined by the NOAA EFH Mapper or the Omnibus Amendment for Atlantic salmon designated EFH.[18] EPA's review of available EFH information indicated that this water body is not designated EFH for any federally managed species. Therefore, consultation with NOAA Fisheries under the Magnuson-Stevens Fishery Conservation and Management Act is not required.

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:

Danielle Gaito
EPA Region 1
5 Post Office Square, Suite 100 (06-4)
Boston, MA 02109-3912
Telephone: (617) 918-1297
Email: gaito.danielle@epa.gov

Prior to the close of the public comment period, any person may submit a written request to EPA and the State Agency for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing 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 in a Response to Comments document

[18] NOAA EFH Mapper available at http://www.habitat.noaa.gov/protection/efh/efhmapper/. Omnibus Essential Fish Habitat Amendment 2 is available at https://www.nefmc.org/library/omnibus-habitat-amendment-2.

attached to the Final Permit and make these responses available to the public at EPA's Boston office and on EPA's website.

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 submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA's Environmental Appeals Board in accordance with the procedures at 40 C.F.R. § 124.19.

8.0 Administrative Record

The administrative record on which this Draft Permit is based may be accessed at EPA's Boston office between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from Danielle Gaito, EPA Region 1, Water Division**,** Industrial Permits Section, 5 Post Office Square, Suite 100, Boston, Massachusetts 02109-3912 or via email to gaito.danielle@epa.gov.

Date December, 2019

Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

Figures

Figure 1: Location Map

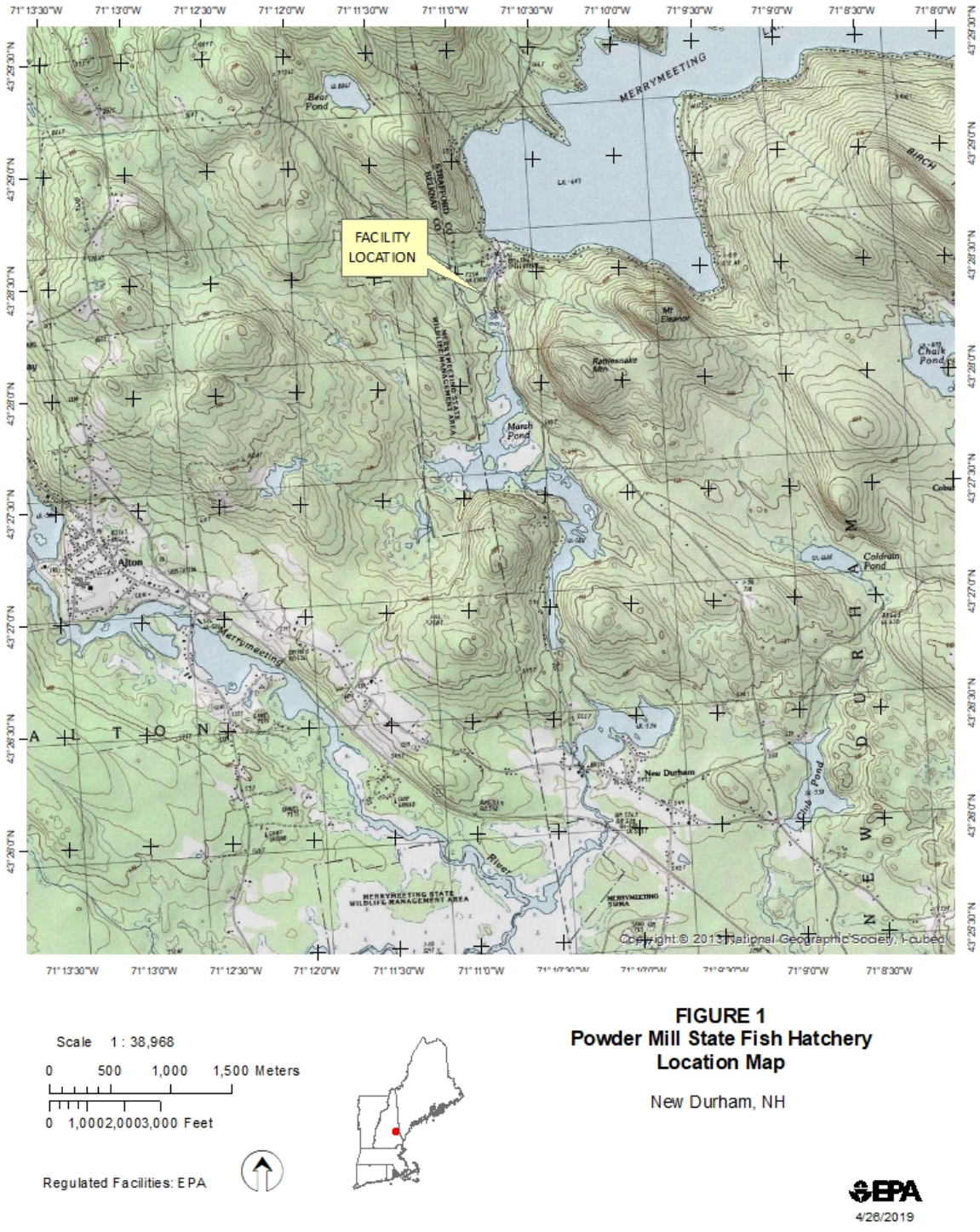


Figure 2: Site Plan

Figure 3: Schematic of Water Flow

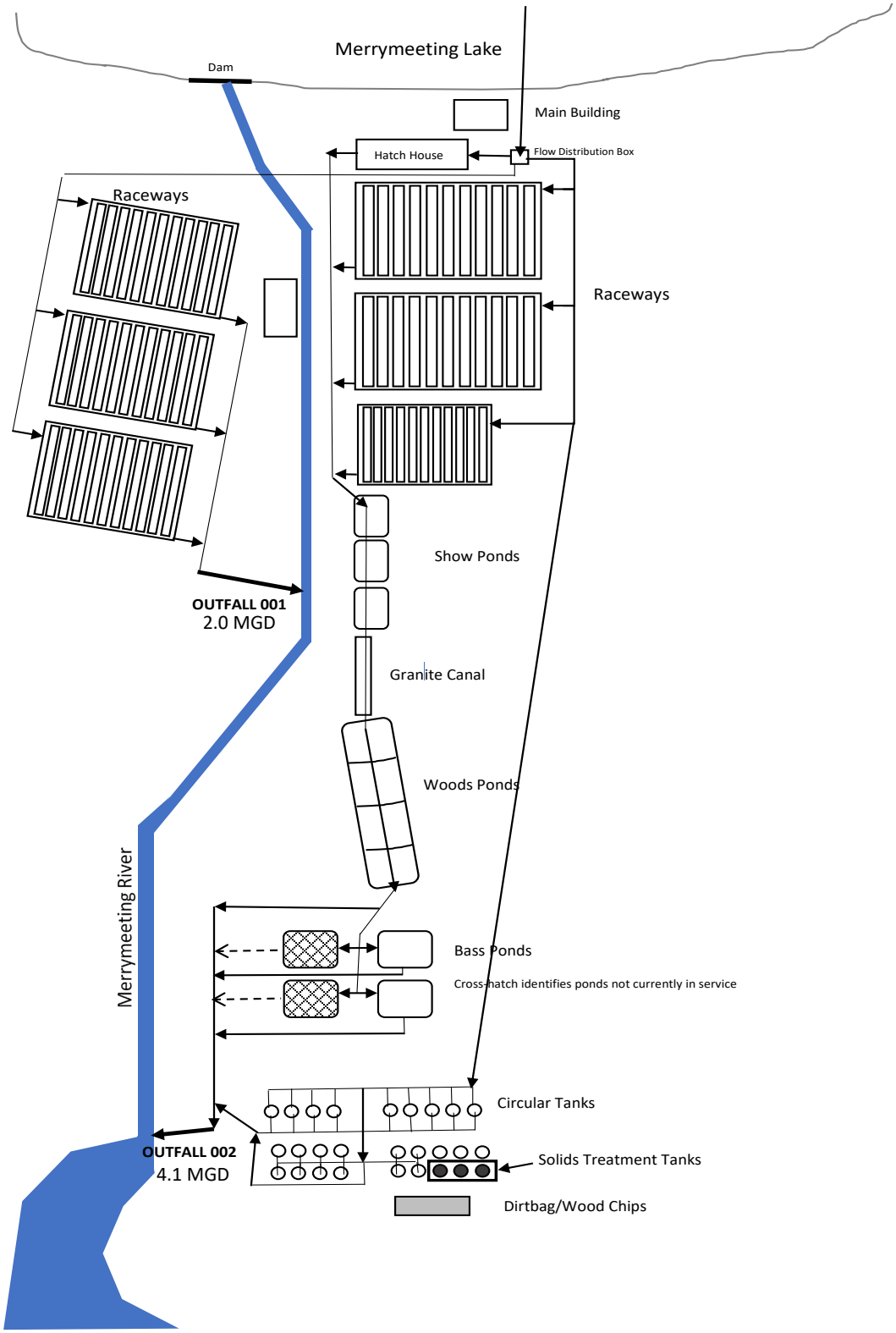
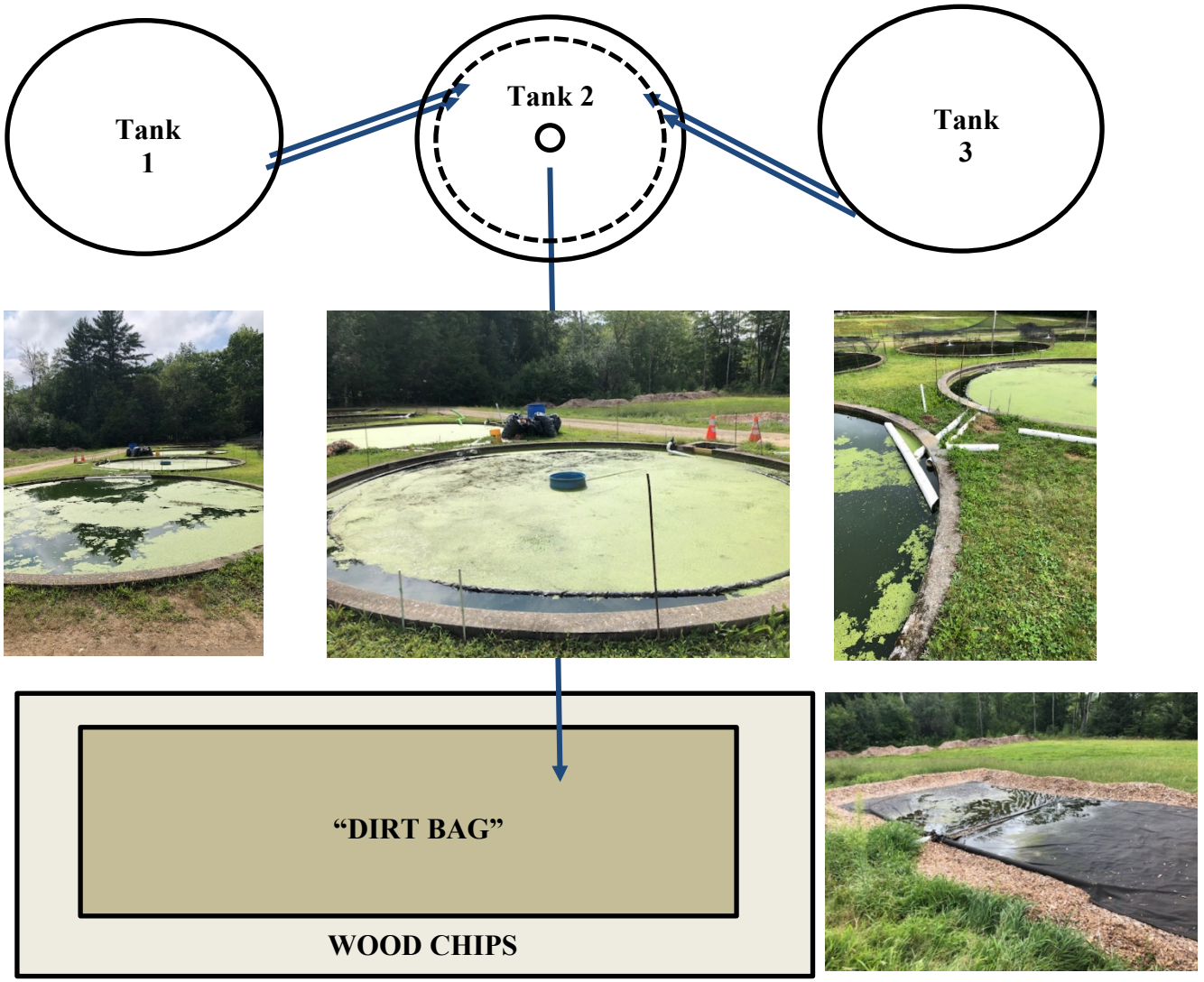


Figure 4. Schematic of Solids Treatment System



Appendices

Appendix A: Discharge Monitoring Data

Powder Mill Fish Hatchery NH0000710 Outfall Serial Number 001 Monthly Effluent Monitoring						
Parameter	**Flow rate**	**Fish on Hand**	**Fish Food Fed**	**Temperature**	**pH**	**pH**
Units	**MGD**	**lb/d**	**lb/d**	**mg/L**	**S.U.**	**S.U.**
	Mo Avg	**Mo Avg**	**Mo Avg**	**Daily Max**	**Minimum**	**Maximum**
Effluent Limitation	Report	Report	Report	Report	6.5	8.0
Minimum	1.12	20.67	13.30	33.80	4.71	5.11
Maximum	2.59	960.29	281.00	69.62	6.84	7.16
Average	1.97	480.0	83.0	51.1	5.96	6.48
No. of Violations	N/A	N/A	N/A	N/A	55	0
Monitoring Period End Date						
09/30/2014	2.17	196.0	82.7	62.6	6.5	6.7
10/31/2014	2.05	350.5	98.9	58.3	5.9	6.5
11/30/2014	1.98	469.8	95.4	53.1	6.0	6.2
12/31/2014	1.95	485.3	67.1	42.4	6.0	6.6
01/31/2015	2.12	499.7	53.5	36.7	6.3	6.4
02/28/2015	2.03	545.3	43.9	37.9	6.1	6.8
03/31/2015	2.07	496.4	36.7	39.2	5.9	6.5
04/30/2015	2.00	496.4	48.3	49.3	6.2	6.5
05/31/2015	1.88	208.5	40.3	53.1	6.1	6.5
06/30/2015	1.48	20.7	13.3	57.6	5.9	6.5
07/31/2015	1.83	71.8	42.8	61.5	5.6	6.4
08/31/2015	2.24	188.1	86.4	64.6	6.3	6.5

09/30/2015	2.20	331.1	117.7	59.9	6.3	7.2
10/31/2015	2.17	466.7	138.5	56.1	5.2	6.7
11/30/2015	2.10	620.1	124.2	51.6	6.1	6.4
12/31/2015	2.14	678.4	84.6	45.7	6.3	6.6
01/31/2016	2.10	724.5	62.1	39.6	5.8	6.5
02/29/2016	2.22	805.2	31.6	41.5	6.2	6.3
03/31/2016	1.96	781.9	48.8	41.2	5.8	6.5
04/30/2016	2.19	824.0	58.7	50.0	5.8	6.5
05/31/2016	2.19	355.6	63.1	50.7	6.0	6.4
06/30/2016	2.19	139.5	53.8	61.5	6.0	6.8
07/31/2016	1.17	107.0	281.0	65.3	5.8	6.7
08/31/2016	1.12	234.0	75.0	69.6	5.8	6.2
09/30/2016	1.49	424.0	124.0	63.5	5.4	6.0
10/31/2016	1.99	502.9	164.2	60.3	5.4	5.6
11/30/2016	1.97	762.0	154.8	53.8	5.3	5.9
12/31/2016	2.03	723.7	85.7	46.8	5.2	5.4
01/31/2017	2.02	820.0	45.5	40.5	5.2	5.5
02/28/2017	1.66	928.9	44.8	39.2	4.7	5.1
03/31/2017	1.62	913.4	45.3	41.7	4.8	5.7
04/30/2017	1.75	514.2	67.2	45.3	5.0	6.0
05/31/2017	1.84	212.8	54.0	57.0	5.3	6.3
06/30/2017	1.78	230.2	85.6	62.6	5.7	6.4
07/31/2017	1.65	180.1	123.4	68.0	5.6	5.9
08/31/2017	1.93	363.4	174.1	64.9	6.6	6.7
09/30/2017	2.00	467.8	171.1	65.1	6.5	6.6
10/31/2017	2.39	621.6	185.0	57.0	6.4	6.7
11/30/2017	2.37	750.0	151.7	53.4	6.3	6.8

12/31/2017	2.29	755.8	75.8	41.7	6.7	7.0
01/31/2018	2.25	796.5	47.9	37.4	6.3	6.9
02/28/2018	2.32	960.3	53.2	40.8	6.8	7.0
03/31/2018	2.27	885.6	55.4	43.2	5.9	6.7
04/30/2018	2.30	798.0	71.1	41.0	6.2	6.6
05/31/2018	2.08	406.0	80.1	50.5	6.0	7.1
06/30/2018	1.78	38.1	35.4	55.0	5.9	6.9
07/31/2018	1.89	136.0	45.8	60.2	5.8	6.8
08/31/2018	2.30	248.7	81.4	58.5	6.0	6.7
09/30/2018	2.59	287.0	102.4	56.5	6.5	7.1
10/31/2018	2.56	420.7	97.7	53.6	6.1	6.1
11/30/2018	2.41	459.9	64.4	43.0	6.1	6.5
12/31/2018	2.17	457.7	42.7	39.9	6.2	6.8
01/31/2019	2.03	474.4	25.3	33.8	6.6	6.9
02/28/2019	2.00	551.0	30.5	36.0	6.2	6.9
03/31/2019	1.91	521.9	37.9	35.8	6.0	6.3
04/30/2019	1.98	401.5	58.4	44.2	6.0	6.7
05/31/2019	1.94	280.7	74.9	48.0	5.8	6.8
06/30/2019	1.23	92.0	29.8	52.9	6.2	7.0
07/31/2019	1.34	171.9	51.6	58.1	6.0	6.3
8/31/2019	1.46	336.1	120.2	62.8	5.9	6.6
9/30/2019	1.75	499.5	137.1	59.7	6.2	6.6
10/31/19	1.4	810.9	147.97	55.8	6.5	6.6
11/30/19	1.62	928.07	140.13	44.6	6.3	6.6

Notes: 0 = parameter not detected; NA = not applicable

Powder Mill Fish Hatchery NH0000710
Outfall Serial Number 001
Monthly Effluent Monitoring (continued)

Parameter	Dissolved Oxygen	Dissolved Oxygen	TRC	TRC	Formaldehyde	Formaldehyde	Hydrogen Peroxide
Units	**Mg/L**	**% Saturation**	**lb/d**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
	Daily Max	**Daily Max**	**Daily Max**	**Daily Max**	**Mo Avg**	**Daily Max**	**Daily Max**
Effluent Limitation	Report	Report	0.011	0.019	1.6	4.6	0.7
Minimum	5.42	58.10	---	---	---	---	---
Maximum	14.09	104.90	---	---	3.26	8.8	---
Average	9.67	85.5	---	---	---	---	---
No. of Violations	N/A	N/A	0	0	1	1	0
Monitoring Period End Date							
09/30/2014	8.9	93.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2014	8.5	82.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2014	9.4	85.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2014	11.7	92.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2015	11.4	84.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2015	12.4	91.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2015	12.0	89.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2015	10.0	86.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2015	9.9	92.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2015	8.9	91.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2015	9.1	93.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9

08/31/2015	8.8	94.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2015	8.1	82.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2015	8.3	78.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2015	9.3	82.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2015	9.1	79.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2016	10.5	83.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/29/2016	11.3	88.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2016	11.3	89.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2016	10.3	84.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2016	9.6	84.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2016	7.6	79.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2016	9.3	93.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2016	7.2	80.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2016	6.0	60.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2016	6.7	75.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2016	8.0	76.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2016	7.8	76.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2017	12.0	90.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2017	11.8	91.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2017	11.1	90.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2017	12.0	98.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2017	7.3	70.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2017	5.4	58.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2017	7.0	77.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2017	8.0	85.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2017	6.7	66.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2017	7.5	74.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9

11/30/2017	8.5	78.3	NODI: 9	NODI: 9	3.26	8.8	NODI: 9
12/31/2017	9.7	78.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2018	14.1	104.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2018	10.5	81.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2018	10.1	81.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2018	10.1	81.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2018	10.2	81.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2018	10.3	95.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2018	8.1	82.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2018	9.3	91.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2018	8.8	84.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2018	8.5	79.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2018	9.8	79.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2018	12.9	100.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2019	14.0	98.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2019	13.7	99.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2019	13.7	99.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2019	9.3	85.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2019	11.2	96.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2019	10.7	98.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2019	9.8	96.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
8/31/2019	9.2	95.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
9/30/2019	8.4	83.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2019	8.0	76.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2019	10.1	83.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9

Powder Mill Fish Hatchery NH0000710
Outfall Serial Number 001
Quarterly Effluent Monitoring

Parameter	BOD	BOD	TSS	TSS	Total Ammonia	Total Ammonia
Units	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Effluent Limitation	Report	Report	Report	Report	Report	Report
Minimum	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	168.1	8.00	183.5	11.00	4.82	0.33
Average	11.2	0.62	26.7	1.57	1.72	0.11
Monitoring Period End Date						
09/30/2014	0.00	0.00	54.29	3.00	2.71	0.15
12/31/2014	168.13	8.00	48.79	3.00	1.30	0.08
03/31/2015	0.00	0.00	0.00	0.00	1.04	0.06
06/30/2015	0.00	0.00	24.69	2.00	0.00	0.00
09/30/2015	0.00	0.00	0.00	0.00	2.93	0.16
12/31/2015	0.00	0.00	0.00	0.00	1.25	0.07
03/31/2016	0.00	0.00	0.00	0.00	0.82	0.05
06/30/2016	0.00	0.00	0.00	0.00	1.46	0.08
09/30/2016	0.00	0.00	0.00	0.00	2.11	0.17
12/31/2016	0.00	0.00	67.70	4.00	1.86	0.11
03/31/2017	0.00	0.00	94.57	7.00	1.35	0.10
06/30/2017	0.00	0.00	29.52	2.00	1.18	0.08
09/30/2017	66.72	4.00	183.48	11.00	3.34	0.20
12/31/2017	0.00	0.00	37.70	2.00	1.88	0.10
03/31/2018	0.00	0.00	0.00	0.00	1.42	0.08
06/30/2018	0.00	0.00	0.00	0.00	1.46	0.10
09/30/2018	0.00	0.00	0.00	0.00	2.16	0.10
12/31/2018	0.00	0.00	0.00	0.00	1.23	0.07
03/31/2019	0.00	0.00	0.00	0.00	0.98	0.06
06/30/2019	0.00	0.00	20.50	2.00	0.76	0.07
9/30/2019	0.00	0.00	0.00	0.00	4.82	0.33

Powder Mill Fish Hatchery NH0000710 Outfall Serial Number 001 Quarterly Effluent Monitoring (continued)				
Parameter	Total Nitrogen	Total Nitrogen	Total Phosphorus	Total Phosphorus
Units	lb/d	mg/L	lb/d	mg/L
	Daily Max	Daily Max	Daily Max	Daily Max
Effluent Limitation	Report	Report	Report	Report
Minimum	0.00	0.00	0.00	0.00
Maximum	16.48	1.03	14.11	0.78
Average	6.41	0.39	1.20	0.051
Monitoring Period End Date				
09/30/2014	14.41	0.80	1.05	0.050
12/31/2014	9.76	0.60	1.26	0.060
03/31/2015	0.00	0.00	0.00	0.000
06/30/2015	0.00	0.00	0.42	0.020
09/30/2015	16.48	0.90	0.63	0.030
12/31/2015	10.71	0.60	0.42	0.020
03/31/2016	0.00	0.00	0.21	0.010
06/30/2016	0.00	0.00	0.18	0.010
09/30/2016	7.46	0.60	0.37	0.030
12/31/2016	11.80	0.70	0.51	0.030
03/31/2017	6.76	0.50	0.27	0.020
06/30/2017	7.40	0.50	0.59	0.040
09/30/2017	13.34	0.80	1.50	0.090
12/31/2017	11.30	0.60	0.94	0.050
03/31/2018	10.22	0.54	0.30	0.016
06/30/2018	0.00	0.00	0.40	0.027
09/30/2018	0.00	0.00	0.91	0.042
12/31/2018	0.00	0.00	14.11	0.78
03/31/2019	0.00	0.00	0.21	0.013
06/30/2019	0.00	0.00	0.23	0.022
9/30/2019	14.96	1.03	0.58	0.040

Powder Mill Fish Hatchery NH0000710 Outfall Serial Number 002 Monthly Effluent Monitoring						
Parameter	**Flow rate**	**Fish on Hand**	**Fish Food Fed**	**Temperature**	**pH**	**pH**
Units	**MGD**	**lb/d**	**lb/d**	**mg/L**	**S.U.**	**S.U.**
	Mo Avg	**Mo Avg**	**Mo Avg**	**Daily Max**	**Minimum**	**Maximum**
Effluent Limitation	Report	Report	Report	Report	6.5	8.0
Minimum	3.1	387.2	66.3	33.8	4.7	5.2
Maximum	6.0	4047.4	578.8	67.8	6.8	7.3
Average	4.2	1960	268	49.4	6.0	6.6
No. of Violations	N/A	N/A	N/A	N/A	56	0
Monitoring Period End Date						
09/30/2014	4.48	1981.6	578.8	57.7	6.2	6.9
10/31/2014	4.42	2452.7	525.0	62.1	6.1	6.4
11/30/2014	4.6	2863.5	460.1	50.2	6.1	6.4
12/31/2014	4.78	3315.7	282.5	43.2	6.1	6.8
01/31/2015	4.68	3477.5	215.6	36.9	6.3	6.5
02/28/2015	4.33	4047.4	196.5	36.3	6.2	6.5
03/31/2015	4.52	3831.1	214.8	37.6	6.0	6.3
04/30/2015	3.6	2932.9	208.9	45.5	5.9	6.4
05/31/2015	3.583	743.0	66.3	47.7	6.0	6.4
06/30/2015	3.1	387.2	150.9	64.4	6.3	6.5
07/31/2015	3.571	774.8	247.8	60.1	6.1	6.4
08/31/2015	4.97	1386.7	370.0	61.5	6.2	6.5
09/30/2015	4.84	1992.6	482.6	56.7	6.2	7.2
10/31/2015	4.53	2169.5	428.0	53.6	5.5	6.5

11/30/2015	4.317	2815.2	387.4	50.7	6.5	6.6
12/31/2015	4.37	2850.3	294.7	44.1	6.0	6.5
01/31/2016	4.196	3140.7	221.0	44.4	5.5	6.4
02/29/2016	3.457	3617.0	161.2	40.5	5.5	6.5
03/31/2016	3.61	2745.1	186.1	40.5	5.7	6.3
04/30/2016	6	1230.0	186.8	45.7	5.8	6.4
05/31/2016	5.99	561.9	94.2	47.1	6.1	6.3
06/30/2016	5.99	406.0	119.3	52.7	5.9	7.1
07/31/2016	3.144	863.0	252.0	53.6	5.6	6.7
08/31/2016	3.912	1353.4	400.0	59.7	5.4	6.1
09/30/2016	4.99	3316.0	459.0	54.0	5.4	6.2
10/31/2016	5.99	2304.0	567.8	55.6	5.3	5.8
11/30/2016	3.656	3014.3	495.0	53.0	5.4	5.9
12/31/2016	3.588	3209.0	289.9	45.0	5.2	5.6
01/31/2017	4.16	3374.0	181.7	40.5	5.4	5.6
02/28/2017	4.17	3807.6	183.4	40.3	5.0	5.2
03/31/2017	4.34	3492.0	213.0	40.5	4.7	6.6
04/30/2017	3.995	2678.0	258.1	47.7	5.2	5.9
05/31/2017	3.88	1221.0	258.4	59.0	5.4	6.2
06/30/2017	3.67	492.2	151.3	56.1	5.9	6.6
07/31/2017	3.417	466.3	111.1	57.7	5.3	5.9
08/31/2017	4.72	836.3	243.0	67.8	6.8	7.0
09/30/2017	4.596	1514.1	439.4	65.7	6.5	6.7
10/31/2017	4.41	1787.0	446.5	53.0	6.2	6.8
11/30/2017	3.89	2393.9	384.1	51.8	6.4	6.8
12/31/2017	4.07	2461.8	218.6	39.2	6.6	6.7
01/31/2018	3.88	2599.7	155.8	37.6	6.3	6.9

02/28/2018	3.75	3057.8	173.3	40.8	6.2	6.8
03/31/2018	3.85	2654.0	176.0	43.5	6.1	6.2
04/30/2018	3.92	1779.8	163.4	41.2	6.1	6.2
05/31/2018	3.22	507.0	304.6	48.7	6.6	7.3
06/30/2018	3.6	409.2	137.8	49.7	6.0	7.0
07/31/2018	4.12	571.1	197.8	61.0	6.1	6.8
08/31/2018	4.986	962.2	298.1	64.4	6.2	6.7
09/30/2018	3.73	1577.5	438.9	59.9	6.5	7.0
10/31/2018	3.43	1645.0	371.7	52.0	6.4	6.6
11/30/2018	4.24	1829.9	248.5	41.9	6.3	6.9
12/31/2018	4.48	1914.0	149.0	38.8	6.0	6.6
01/31/2019	4.52	1984.8	98.9	33.8	6.0	7.1
02/28/2019	4.45	2249.6	121.4	35.6	6.1	6.8
03/31/2019	4.48	2381.3	176.3	35.2	6.1	6.8
04/30/2019	4.41	1942.3	236.5	46.0	5.6	6.8
05/31/2019	4.208	1028.0	242.3	47.1	6.3	6.8
06/30/2019	4.02	541.3	185.0	50.4	6.2	7.0
07/31/2019	3.92	475.0	181.4	54.3	6.4	7.0
8/31/2019	4.49	679.0	257.1	58.6	6.3	6.9
9/30/2019	4.05	1064.5	274.1	56.8	6.5	6.8
10/31/19	3.5	1418.5	347.4	54.9	6.5	6.8
11/30/19	4.3	1981	293	43.5	6.6	7.0

Notes: 0 = parameter not detected; NA = not applicable

Powder Mill Fish Hatchery NH0000710
Outfall Serial Number 002
Monthly Effluent Monitoring (continued)

Parameter	Dissolved Oxygen	Dissolved Oxygen	TRC	TRC	Formaldehyde	Formaldehyde	Hydrogen Peroxide
Units	**Mg/L**	**% Saturation**	**lb/d**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
	Daily Max	**Daily Max**	**Daily Max**	**Daily Max**	**Mo Avg**	**Daily Max**	**Daily Max**
Effluent Limitation	Report	Report	0.011	0.019	1.6	4.6	0.7
Minimum	6.5	64.9	---	---	0.00	0.00	0.00
Maximum	15.4	116.9	---	---	1.52	0.16	0.00
Average	10.0	87.4	---	---	0.43	0.06	0.00
No. of Violations	N/A	N/A	0	0	0	1	0
Monitoring Period End Date							
09/30/2014	8.0	77.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2014	7.9	80.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2014	9.1	80.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2014	11.5	91.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2015	11.7	86.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2015	12.2	89.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2015	11.4	84.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2015	10.9	91.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2015	9.8	85.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2015	8.2	87.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2015	8.7	87.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2015	8.4	86.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2015	8.7	85.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9

10/31/2015	8.7	81.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2015	8.8	78.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2015	9.9	82.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2016	10.6	85.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/29/2016	11.2	87.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2016	11.2	87.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2016	9.4	78.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2016	9.4	79.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2016	8.5	85.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2016	9.7	98.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2016	6.5	64.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2016	8.0	75.4	NODI: 9	NODI: 9	1.52	*	NODI: 9
10/31/2016	7.3	70.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	0.0
11/30/2016	8.6	79.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	0.0
12/31/2016	8.5	78.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2017	10.2	87.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2017	11.6	87.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2017	10.9	83.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2017	10.0	85.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2017	7.2	71.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2017	10.0	96.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2017	10.2	97.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2017	8.3	90.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2017	8.4	91.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2017	8.6	78.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2017	9.1	81.6	NODI: 9	NODI: 9	0.0	0.0	NODI: 9
12/31/2017	12.3	85.6	NODI: 9	NODI: 9	0.028	0.028	NODI: 9

01/31/2018	15.4	116.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2018	10.8	85.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2018	10.0	80.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2018	9.9	82.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2018	9.9	82.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2018	9.8	92.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2018	8.9	85.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2018	8.4	89.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2018	8.1	81.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2018	8.5	77.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2018	11.2	89.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2018	13.3	101.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2019	14.5	100.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2019	14.0	100.5	NODI: 9	NODI: 9	0.16	0.16	NODI: 9
03/31/2019	14.0	101.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2019	11.2	94.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2019	11.1	94.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2019	11.3	100.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2019	10.4	96.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
8/31/2019	10.1	99.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
9/30/2019	10.3	99.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/19	10.1	93.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/19	11.8	95.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
* DMR reported value not representative of effluent; pending NetDMR correction will report appropriate NODI code.							

Powder Mill Fish Hatchery NH0000710
Outfall Serial Number 002
Quarterly Effluent Monitoring

Parameter	BOD	BOD	TSS	TSS	Total Ammonia	Total Ammonia
Units	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Effluent Limitation	Report	Report	Report	Report	Report	Report
Minimum	0.00	0.00	0.00	0.00	2.84	0.08
Maximum	133.77	4.30	120.00	4.00	14.93	0.39
Average	12.4	0.40	30.8	1.1	6.9	0.20
Monitoring Period End Date						
09/30/2014	63.05	3.00	0.00	0.00	14.57	0.39
12/31/2014	63.05	3.00	0.00	0.00	4.83	0.23
03/31/2015	0.00	0.00	75.39	2.00	9.80	0.26
06/30/2015	0.00	0.00	0.00	0.00	2.84	0.11
09/30/2015	0.00	0.00	0.00	0.00	14.93	0.36
12/31/2015	0.00	0.00	0.00	0.00	9.48	0.26
03/31/2016	0.00	0.00	0.00	0.00	5.72	0.19
06/30/2016	0.00	0.00	100.00	2.00	4.00	0.08
09/30/2016	0.00	0.00	90.24	2.00	8.57	0.19
12/31/2016	0.00	0.00	0.00	0.00	6.58	0.22
03/31/2017	0.00	0.00	72.39	2.00	5.06	0.14
06/30/2017	0.00	0.00	91.82	3.00	3.06	0.10
09/30/2017	0.00	0.00	76.66	2.00	10.73	0.28
12/31/2017	0.00	0.00	69.72	2.00	5.58	0.16
03/31/2018	0.00	0.00	0.00	0.00	4.17	0.13
06/30/2018	0.00	0.00	120.00	4.00	3.60	0.12
09/30/2018	133.77	4.30	0.00	0.00	9.64	0.31
12/31/2018	0.00	0.00	0.00	0.00	5.97	0.16
03/31/2019	0.00	0.00	0.00	0.00	4.10	0.11
06/30/2019	0.00	0.00	67.05	2.00	4.69	0.14
9/30/2019	0.00	0.00	0.00	0.00	6.76	0.20

Powder Mill Fish Hatchery NH0000710 Outfall Serial Number 002 Quarterly Effluent Monitoring (continued)				
Parameter	Total Nitrogen	Total Nitrogen	Total Phosphorus	Total Phosphorus
Units	lb/d	mg/L	lb/d	mg/L
	Daily Max	Daily Max	Daily Max	Daily Max
Effluent Limitation	Report	Report	Report	Report
Minimum	0.00	0.00	0.84	0.02
Maximum	88.16	2.30	3.13	0.09
Average	24.9	0.73	1.56	0.05
Monitoring Period End Date				
09/30/2014	41.10	1.10	1.89	0.090
12/31/2014	31.89	0.80	1.26	0.060
03/31/2015	0.00	0.00	0.84	0.040
06/30/2015	15.51	0.60	0.84	0.040
09/30/2015	33.19	0.80	1.68	0.080
12/31/2015	36.45	1.00	1.05	0.050
03/31/2016	30.11	1.00	0.84	0.040
06/30/2016	0.00	0.00	1.50	0.030
09/30/2016	76.70	1.70	2.26	0.050
12/31/2016	26.90	0.90	1.79	0.060
03/31/2017	21.72	0.60	1.81	0.050
06/30/2017	0.00	0.00	1.84	0.060
09/30/2017	88.16	2.30	2.68	0.070
12/31/2017	24.40	0.70	3.13	0.090
03/31/2018	28.26	0.88	1.12	0.035
06/30/2018	0.00	0.00	1.29	0.043
09/30/2018	40.44	1.30	2.12	0.068
12/31/2018	0.00	0.00	1.46	0.039
03/31/2019	0.00	0.00	0.86	0.023
06/30/2019	0.00	0.00	1.24	0.037
9/30/2019	0.00	0.00	1.32	0.039

Powder Mill Fish Hatchery NH0000710
Weekly pH Effluent and Intake
Monitoring Period November 2018 – October 2019

Monitoring Location	Outfall 001	001 Intake	Outfall 002	002 Intake
Parameter	pH	pH	pH	pH
Units				
Monitoring Period End Date				
11/7/2018	6.52	6.61	6.91	6.26
11/16/2018	6.52	6.61	6.91	6.26
11/21/2018	6.28	6.62	6.63	6.73
11/28/2018	6.51	6.42	6.30	6.62
12/5/2018	6.18	6.29	6.48	6.96
12/12/2018	6.58	6.57	6.60	7.01
12/19/2018	6.52	6.53	6.4	6.46
12/26/2018	6.76	6.71	5.97	6.4
1/3/2019	6.65	6.6	7.05	6.54
1/9/2019	6.81	6.93	5.98	6.48
1/17/2019	6.62	7.18	**6.35**	**7.04**
1/23/2019	6.74	7.02	6.35	6.61
1/31/2019	6.89	7.01	6.52	7.09
2/9/2019	6.94	6.86	6.23	6.52
2/12/2019	6.59	6.93	**6.08**	**6.81**
2/20/2019	6.44	6.4	6.07	6.17
2/27/2019	6.18	6.62	6.78	6.97
3/6/2019	**6.03**	**6.58**	6.37	6.49
3/13/2019	6.01	6.47	6.05	6.45
3/20/2019	6.28	6.14	**6.22**	**6.83**
3/27/2019	6.06	6.17	6.81	6.85
4/3/2019	6.52	6.56	5.62	5.4
4/10/2019	**6.01**	**6.77**	6.76	6.7
4/18/2019	6.66	6.67	6.1	6.4
4/25/2019	6.05	6.07	6.37	6.64
5/2/2019	6.36	6.22	6.75	6.18
5/9/2019	5.80	5.79	6.80	6.85
5/15/2019	6.03	6.08	6.45	6.53
5/22/2019	6.32	6.37	6.74	6.77
5/29/2019	6.81	6.59	6.27	6.05
6/5/2019	6.44	6.47	6.39	6.59
6/12/2019	6.96	6.93	**6.21**	**6.86**

6/19/2019	6.64	6.79	6.54	6.46
6/26/2019	6.18	6.16	7.04	7.03
7/3/2019	6.28	6.31	7.04	6.61
7/10/2019	6.18	6.22	6.38	6.09
7/18/2019	5.96	6.15	6.84	6.13
7/25/2019	6.01	6.1	6.79	6.19
7/31/2019	5.98	6.23	6.71	6.39
8/8/2019	6.17	6.27	6.26	6.19
8/14/2019	6.25	6.27	6.32	6.2
8/21/2019	**5.90**	**6.9**	6.90	6.34
8/28/2019	6.56	6.72	6.81	6.4
9/4/2019	6.24	6.64	6.56	6.67
9/11/2019	6.46	6.55	6.80	6.77
9/18/2019	6.52	6.62	6.53	6.65
9/25/2019	6.57	6.38	6.59	6.74
10/2/2019	6.52	6.77	6.54	6.7
10/10/2019	6.55	6.6	6.51	6.5
10/16/2019	6.58	6.82	6.75	6.71
10/23/2019	6.5	6.88	6.74	6.87
10/31/2019	6.45	6.89	6.69	6.91

Appendix B: Additional Total Phosphorus Effluent Data

Powder Mill Fish Hatchery NH0000710
Response to 308 Information Request
Monthly Total Phosphorus Sampling
Monitoring Period December 2016 – November 2017

		001	001	002	002	Sampled during cleaning?
		Flow	Total P	Flow	Total P	
Date Start	Date End	MGD	mg/L	MGD	mg/L	
12/5/2016	12/6/2016	2.028	0.03	3.588	0.06	Yes
12/19/2016	12/20/2016	2.028	0.03	3.588	0.05	No
1/9/2017	1/10/2017	2.028	0.02	3.77	0.05	No
1/23/2017	1/24/2017	2.028	0.02	3.82	0.05	Yes
2/8/2017	2/9/2017	1.65	0.02	4.05	0.05	No
2/21/2017	2/22/2017	1.57	0.02	4.34	0.03	Yes
3/8/2017	3/9/2017	1.66	0.02	4.18	0.04	Yes
3/20/2017	3/21/2017	1.66	0.02	4.11	0.04	Yes
4/5/2017	4/6/2017	1.66	0.02	4.25	0.06	Yes
4/19/2017	4/20/2017	1.84	0.02	3.92	0.04	No
5/17/2017	5/18/2017	1.93	0.03	3.78	0.05	Yes
6/14/2017	6/15/2017	1.175	0.04	3.67	0.05	Yes
7/12/2017	7/13/2017	1.42	0.09	2.85	0.03	No
8/9/2017	8/10/2017	1.93	0.06	4.72	0.04	No
8/31/2017	9/1/2017	1.84	NS	4.55	0.05	No
9/6/2017	9/7/2017	1.75	0.08	4.55	0.04	Yes
9/20/2017	9/21/2017	1.93	0.05	4.67	0.07	Yes
10/11/2017	10/12/2017	2.4	0.03	4.47	0.09	Yes
10/25/2017	10/26/2017	2.32	0.05	4.42	0.07	No
11/8/2017	11/9/2017	2.32	0.04	4.44	0.07	No
11/29/2017	11/30/2017	2.41	0.03	3.8	0.06	Yes

NS = Not Sampled

Appendix C: Ambient Data

Marsh Pond Ambient Data **Merrymeeting Lake and River: Lake Loading Response Model**			
DATE	DEPTH ZONE	TP (µg/L)	CHL-A (µg/L)
9/4/2016	Surface Grab	35.5	7.06
11/5/2016	Surface Grab	35.5	
5/7/2017	Surface Grab	18.7	
6/4/2017	Surface Grab	19.1	
7/7/2017	Surface Grab	27.1	9.31
7/21/2017	Epilimnion	48.3	7.79
8/4/2017	Surface Grab	37.9	
8/18/2017	Epilimnion	40.5	7.26
9/2/2017	Epilimnion	65.1	30.49
9/3/2017	Surface Grab	50.1	
10/14/2017	Surface Grab	32.3	
10/22/2017	Surface Grab	26.9	
11/3/2017	Surface Grab	22.7	
11/12/2017	Surface Grab	19.4	
4/9/2018	Epilimnion	14.2	2.05
4/9/2018	Surface Grab	18.5	
5/3/2018	Surface Grab	17.5	
6/7/2018	Epilimnion	30.7	5.48
6/7/2018	Surface Grab	26.7	
7/5/2018	Epilimnion	46.8	8.58
7/5/2018	Surface Grab	43.2	
8/9/2018	Epilimnion	35.1	3.96
9/6/2018	Epilimnion	43.1	18.81
10/4/2018	Epilimnion	23.4	1.58
11/6/2018	Epilimnion	14.9	2.11

Appendix D: Merrymeeting River and Lake - Lake Loading Response Model and Phosphorus Limit

A NPDES permit must include any water quality-based limitations necessary to ensure compliance with water quality standards of the state, including narrative criteria, where the pollutant discharge is to occur. 33 U.S.C. Parts 1311(a), 1342 and 40 C.F.R. §§ 122.4(d), 122.44(d)(1)(i) & 122.44(d)(1)(vi). New Hampshire has established a series of use-specific assessment criteria to identify and list waters for impairment of designated uses under Sections 305(b) and 303(d) of the CWA. The Merrymeeting River is not listed as impaired in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List"). Downstream of the Hatchery, however, Jones Pond and Downing Pond are listed in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List") as a Category 5 "Waters Requiring a TMDL" for the Primary Contact Recreation designated use.[19] The Primary Contact Recreation designated use is also listed as impaired for Marsh Pond in the Draft 2018 303(d) List.

While the Merrymeeting River, Marsh Pond, and the two impoundments downstream from the Hatchery are likely to be impacted by nutrients, the specific listed impairment is cyanobacteria (an indicator pollutant for primary contact recreation). The New Hampshire Department of Environmental Services (NHDES) interim nutrient threshold for primary contact recreation in NH lakes is 15 µg/L chlorophyll-a.[20] Lakes are also listed as impaired for primary contact recreation if surface blooms of cyanobacteria are present. NHDES documented surface blooms of cyanobacteria in Jones Pond and Downing Pond in 2016, which led to these waterbodies being listed as impaired for primary contact recreation. Elevated concentration of chlorophyll-a, excessive algal and macrophyte growth, and low levels of dissolved oxygen are all effects of nutrient enrichment. The relationship between these factors and high in-stream total phosphorus concentrations is well documented in scientific literature, including guidance developed by EPA to address nutrient over-enrichment (Nutrient Criteria Technical Guidance Manual – Rivers and Streams, EPA July 2000 [EPA-822-B-00-002]). Presence of cyanobacteria is an indicator of eutrophication, but excessive nutrients are likely to be the primary cause. Phosphorus is the limiting nutrient for plant growth in freshwater lakes and rivers. Therefore, establishing a numeric limit for total phosphrous (TP) that is protective of designated uses can be used as an indicator pollutant for impairments related to the presence of cyanobacteria.

The Draft Permit TP limits are also established to meet narrative water quality standards. New Hampshire's surface water quality standards require that Class B waters, such as the Merrymeeting River, shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring, and existing discharges containing phosphorus or nitrogen, or both, which encourage cultural eutrophication shall be treated to remove the nutrient(s) to ensure attainment and maintenance of water quality standards. Env-Wq 1703.01(b) & (c). In addition, surface waters must be free of substances which float as foam, debris, or scum; produce odor, taste, or turbidity making the water

[19] *New Hampshire 2016 Section 303(d) List of Threatened or Impaired Waters that Require a TMDL*. New Hampshire Department of Environmental Services, Concord, NH; November 2017.
[20] State of New Hampshire 2016 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2016/documents/r-wd-17-08.pdf

unsuitable for the designated use; result in nuisance species; or interfere with recreational activities (Env-Wq 1703.03). EPA is deriving a numeric phosphorus limit as an indicator parameter for cyanobacteria (and chlorophyll-a) in order to address the impairment for primary contact recreation designated use and to meet the narrative water quality standards at Env-Wq 1703.03 and 1703.14.

1.0 Background

NHDES uses an in-lake TP target of 12 µg/L for lakes unless the predicted concentration under natural (pre-development) conditions is greater. The value of 12 µg/L is derived from an analysis of the observed TP concentrations from a set of impaired and unimpaired lakes in New Hampshire and determined to be the threshold that will support recreational and aquatic life designed uses as reflected in chlorophyll-a levels and secchi disk transparency. For more information on the derivation of the target in-lake concentration see Appendix A of the Phillips Pond TMDL.

NHDES uses the Lake Loading Response Model (LLRM) to evaluate watershed loading and determine maximum loading allowed that will still achieve water quality standards for phosphorus (TP), chlorophyll-a (Chl), and Secchi disk transparency (SDT) in New Hampshire lakes. The LLRM is a spreadsheet-based model that uses three types of inputs: hydrology, nutrient yield based on land use in the watershed, and nutrient inputs from atmospheric deposition, internal loading, waterfowl and other wildlife, septic systems, and point sources (like the Powder Mill Fish Hatchery). The LLRM uses this information to make calculations about flow through the watershed and TP loading to the lake. The LLRM then uses these calculations to predict average in-lake TP, and from the predicted TP value, calculates values for Chl, SDT, and algal bloom probability. A detailed description of the LLRM is included as Appendix B to NHDES Lake Phosphorus TMDLs, including the recently approved TMDL for Phillips Pond.

In 2019, the Merrymeeting Cyanobacteria Steering Committee (MCSC) developed the Merrymeeting River and Lake Watershed Management Plan (2019 WMP) to assess water quality throughout the watershed, plan for improvements to reduce point and non-point sources of phosphorus, and as a possible mechanism for securing funding for actions necessary to achieve water quality goals (e.g., EPA Section 319 grants). As part of this effort, the MCSC and its consultant developed an LLRM for the Merrymeeting River and Lake Watershed. See 2019 Merrymeeting River and Lake Watershed Lake Loading Response Model Report. The Merrymeeting LLRM divides the watershed into 5 sub-basins: Merrymeeting Lake, Marsh Pond, Jones Pond, Downing Pond, and Coffin Brook-MMR in Alton. Land cover was obtained from the NH Land Cover Assessment using ESRI Work Imagery and updated by the consultant. The 2019 LLRM Report includes a detailed assessment of land cover maps (e.g., Figure 4 at 4). The output from each sub-basin is the upstream point source input for the downstream basin. The model uses data inputs from National Oceanographic and Atmospheric Administration National Centers for Environmental Information (precipitation data), New Hampshire Fish and Game Department (NHFGD) and NHDES (lake volume and area estimates), state and local records (septic data), and volunteers (waterfowl counts). Water quality data, including TP, Chl-a, and SDT, were obtained from the NHDES Environmental Monitoring Database and from the University of New Hampshire Cooperative Extension Lakes Monitoring Program.

The MCSC shared the Excel files with EPA (and NHDES) to assist in development of a phosphorus limit for the Powder Mill Fish Hatchery. EPA used the LLRM to manipulate the phosphorus concentration or load from the two hatchery outfalls in order to achieve a target in-lake phosphorus concentration that will protect the designated uses in the receiving water. No other inputs or flows to the LLRM were changed. EPA used the LLRM to evaluate the impact of reductions from the hatchery on the indicator variable (TP) and response variable (Chl-a). EPA used the LLRM to establish a water quality-based effluent limit for an indicator pollutant, TP, at the two hatchery outfalls at levels that are predicted to achieve narrative water quality standards and meet the primary contact recreation designated use in Marsh Pond. EPA focused on the hatchery TP load and in-lake TP concentration in Marsh Pond, which is the first lake downstream of the hatchery. Because most of the loading to Jones and Downing Ponds originates in Marsh Pond, EPA expects, and the LLRM predicts, that the water quality improvements in Marsh Pond will result in similar improvements in Jones and Downing Ponds. EPA's use of the LLRM to establish limits in the Draft Permit is not a TMDL for the watershed. Rather, EPA used the LLRM as significant, relevant information for translating the State's narrative WQS into a numeric limit. *See* 40 C.F.R. § 122.44(d)(1)(vi).

2.0 Current Conditions

The primary sources of water to the Merrymeeting River and Lake Watershed include atmospheric (direct) precipitation, runoff (overland flow to tributaries and direct drainage to the lake), and baseflow (precipitation that infiltrates and is released to the surface water via tributaries or directly to the lake). The Marsh Pond sub-basin includes direct drainage to the pond, flow from Merrymeeting Lake and the Hatchery, and flows from: Bear Pond, Bear Pond Brook, Brackett Road culvert, Rattlesnake Mountain Brook, and the North, South, and West tributaries. The Hatchery withdraws water from the Merrymeeting Lake year-round to supply water for rearing fish. According to the 2019 LLRM Report, about 42% of the total annual water budget from the Merrymeeting Lake to Marsh Pond is routed through the Hatchery's outfalls. Additional water from the lake enters the Merrymeeting River by overtopping the dam. In early spring and fall, NHFGD adjusts the lake level and flow over the dam is high. In summer, nearly all of the flow from the lake is through the hatchery. *See* 2019 LLRM Report Figure 8 (at 8). The annual water budget for the LLRM is provided in Table D-1, below.

Table D-1. Annual water budget to Marsh Pond based on the Merrymeeting River and Lake LLRM.

Water Budget	**m^3/year**
Atmospheric	135,221
Septic	3,623
Watershed Runoff	3,190,747
Watershed Baseflow + Runoff	28,169,699
Hatchery	*8,462,614*
Total	**28,308,544**

Each of these sources carries a phosphorus load. The TP loads from each source into Marsh Pond was calculated using export coefficients for each land use type and the point source load from the

two hatchery outfalls. The export coefficients used for calculating the TP load from baseflow and runoff are presented in Attachment 3 to the 2019 LLRM Report. The watershed load (baseflow and runoff) was combined with direct loads from atmospheric, internal, septic, and waterfowl sources to calculate the cumulative TP load to Marsh Pond. The current phosphorus loading summary based on existing conditions in the LLRM is provided in Table D-2. Based on the model, the Hatchery outflow via Outfall 001 and Outfall 002 adds 378 kilograms (kg) (833 pounds (lbs)) per year to the system, which comprises more than 70% of the TP load to Marsh Pond, including basin attenuation.

Table D-2. Total phosphorus load to Marsh Pond based on the Merrymeeting River and Lake LLRM.

TP Inputs	Modeled TP Load (kg/year)	% of Total Load
Atmospheric	2.0	0.4
Internal Load	6.4	1.2
Waterfowl	6.1	1.2
Septic Systems	4.9	0.9
Watershed Load (Baseflow + Runoff)	493.3*	96.2
Total	**512.7**	**100**

* The portion of the watershed load from the Hatchery outfalls is 378 kg/year.

Overall, the 2019 LLRM Report indicates that the model's predictions agree with observed data. The LLRM Report lists several limitations to the model, including 1) that the high flushing rate in Marsh Pond and the downstream impoundments resemble a riverine environment and that because of these conditions, the empirical formulas used to predict in-lake concentrations are near their practical limit; and 2) the water quality data used in the LLRM were limited to the growing season (April – November) and data were flow-weighted to estimate an annual summer statistic. *See* 2019 LLRM Report at 11-12.

According to the LLRM, watershed runoff and baseflow are the largest loading contribution across all sources, followed by atmospheric deposition, septic systems, waterfowl, and internal loading. The two hatchery outfalls contribute the largest TP load to Marsh Pond. Waterbodies downstream of Merrymeeting Lake are dominated by the upstream load, including the point source load from hatchery. The 2019 LLRM Report also indicates that internal loading is a concern in Marsh and Jones Pond. *See* 2019 LLRM Report Figure 9 at 9. As the point source load from the hatchery is reduced to comply with effluent limitations in the Draft Permit, the internal phosphorus load to Marsh and Jones Ponds will become more significant and may require additional action.

The TP load in Marsh Pond, based on the sources described above, including the baseflow phosphorus load and the load from the hatchery point sources, were used to predict in-lake concentrations using empirical models which estimate TP from features of the lake (e.g, depth and flushing rate). The models include: Kirchner-Dillon (1975), Vollenweider (1975), Larsen-Mercier (1976), and Nurnberg (1998). The LLRM calculates the predicted in-lake TP concentration based on the average of the empirical models and compares the prediction to the

median, observed year-round TP value. See Table D-3, below. The LLRM also calculates in-lake TP concentration based on a mass-balance approach. More information about the models is found in the NHDES Phillips Pond TMDL.

Table D-3. Estimated total phosphorus concentration in Marsh Pond based on the Merrymeeting River and Lake LLRM under current conditions.

Model	Equation	Predicted TP (µg/L)
Mass Balance	$TP = L/(Z(F))*1000$	18
Kirchner-Dillon*	$TP = L(1-R_p)/(Z(F))*1000$	17
Vollenweider*	$TP = L/(Z(S+F))*1000$	18
Larsen-Mercier*	$TP = L(1-R_{lm})/(Z(F))*1000$	16
Nurnberg*	$TP = L/(Z(F))(1-(15/(18+Z(F))))*1000$	17
Jones-Bachmann	$TP = (0.84L)/(Z(0.65+F))*1000$	15
Reckow General	$TP = L/(11.6 +1.2(Z(F)))*1000$	14
Average of 4 Models		**16.9**
Observed median value		**17.7**

*Predicted value included in calculation of average TP based on empirical models.
L = Phosphorus load to lake
Z = Mean depth
F = Flushing rate
S = Suspended fraction
R_p = Retention coefficient (settling rate)
R_{lm} = Retention coefficient (flushing rate)

The empirical models predict annual TP concentrations ranging from 14 to 18 µg/L with an average in-lake concentration of 16.9 µg/L. The median, flow-weighted TP concentration from observed in-lake data from 2017 through 2018 is 17.7 µg/L. The predicted and observed ambient TP concentration in Marsh Pond is greater than the NHDES in-lake TP target concentration of 12 µg/L. The current Marsh Pond TP levels are contributing to algal blooms, including cyanobacteria. The presence of cyanobacteria is the source of the impairment to the primary contract recreation designated uses in Marsh, Jones, and Downing Ponds.

The Jones-Bachman (1976) and Reckhow General (1977) models were excluded from the calculation of the average in-lake TP concentration because, according to the 2019 LLRM Report, these empirical models consistently underpredict the observed value. The LLRM empirical models are close to the predicted value based on a simple mass balance model, which considers only the lake depth and flushing rate. This is because the high flushing rate in Marsh Pond reduces the importance of the TP retention rate and the suspended fraction on the TP concentration, which is accounted for in the empirical models.

TP estimates from the empirical models are used to predict annual mean chlorophyll-a (Chl-a) and secchi disk transparency (SDT) using another set of empirical equations. The predicted frequency of algal blooms is calculated based on equations developed by Walker (1984, 2000) using a natural log mean Chl-a standard deviation of 0.5. These values are presented in Table D-4, below.

Table D-4. Predicted in-lake chlorophyll-a, secchi disk transparency, and bloom probability based on an annual mean in-lake phosphorus concentration of 16.9 µg/L.

Model	Equation	Predicted TP (µg/L)
Mean Chlorophyll-a		
Carson	Chl = 0.87*(Pred TP)^1.45	5.2
Dillon and Rigler	Chl = 10^(1.449*Log(Pred TP)-1.136)	4.4
Jones and Bachmann	Chl = 10^(1.46*Log(Pred TP)-1.09)	5.0
Oglesby and Schaffner	Chl = 0.574*(Pred TP)-2.9	6.8
Modified Vollenweider	Chl = 2*0.28*(Pred TP)^0.96	8.4
NHDES 2009		6.7
Average of Model Values		**6.3**
Observed Annual Mean		4.7
Observed Summer Mean		9.6
Peak Chlorophyll-a		
Modified Vollenweider	Chl = 2*0.64*(Pred TP)^1.05	24.9
Vollenweider (Chl)	Chl = 2.6*(Average(Pred Chl))^1.06	18.3
Modified Jones, Rast, Lee	Chl = 2*1.7*(Average(Pred Chl))+0.2	21.7
Average of Model Values		21.6
Observed Maximum (Surface)		30.5
Bloom Probability		
Probability of Chl>15 µg/L	See Walker 1984 & 2000	2.4%
Secchi Disk Transparency		
Mean: Oglesby and Schaffner	Chl = 10^(1.36-0.764*LOG(Pred TP))	2.6
Max: Modified Vollenweider	Chl = 9.77*Pred TP^-0.28	4.4
Observed Summer Mean		3.1
Observed Summer Max		4.9
"Pred TP" is the average TP calculated from the empirical models in Table 3		
"Pred Chl" is the average Chl from empirical models calculating mean Chl		
Jones-Bachmann Model for Chl was excluded for consistency with TP calculation		

3.0 Effluent Limit

The Merrymeeting River and Lake LLRM predicts annual in-lake TP concentrations based on changes to the current TP inputs into the system. EPA manipulated the TP input from Outfalls 001 and 002 to the Marsh Pond LLRM while keeping all other inputs equal to current conditions to evaluate how reducing the Hatchery load affects in-lake TP concentration. EPA systematically changed the Hatchery TP concentration until a target in-lake predicted TP concentration of 12 µg/L was achieved in Marsh Pond. As explained above, NHDES uses an in-lake TP target of 12 µg/L as the threshold that will support recreational and aquatic life designed uses in mesotrophic lakes. At an effluent phosphorus concentration of 25 µg/L at Outfalls 001 and 002, all of the empirical models predict an in-lake TP concentration of 12 µg/L or less in Marsh Pond. The results of this model run are presented in Table D-5.

Table D-5. Estimated in-lake total phosphorus concentration in Marsh Pond based on the Merrymeeting River and Lake LLRM with a total phosphorus effluent concentration of 25 µg/L at Outfalls 001 and 002.

Model	Predicted TP (µg/L)
Mass Balance	12
Kirchner-Dillon*	12
Vollenweider*	12
Larsen-Mercier*	11
Nurnberg*	10
Jones-Bachmann	10
Reckow General	11

Marsh Pond and the downstream impoundments resemble a riverine system because the flushing rate is relatively high (e.g., Marsh Pond flushes about 54 times per year and the downstream impoundments flush more frequently). For this reason, EPA chose a simple mass balance equation based on load, depth, and flushing rate (see Table D-3) as the most conservative representation of the in-lake TP concentration. At an annual average hatchery concentration of 25 µg/L from each outfall, the mass balance equation predicts an in-lake annual average concentration of 12 µg/L. The corresponding total maximum annual TP load that is expected to result in an in-lake annual mean TP concentration of 12 µg/L is 212 kg (466 lbs) per year. [21] Under current conditions, the load from the hatchery is 378 kg (833 lbs) per year. An annual load limitation of 212 kg/yr reflects a 44% reduction from the existing load from the Hatchery.

The in-lake TP concentration of 12 µg/L is used to predict annual mean chlorophyll-a (Chl-a) and secchi disk transparency (SDT) using another set of empirical equations, as described above. These values are presented in Table D-6, below.

Table D-6. Predicted in-lake chlorophyll-a, secchi disk transparency, and bloom probability based on an effluent concentration of 25 µg/L and annual mean in-lake phosphorus concentration of 12 µg/L.

Model	Predicted Value (µg/L)
Mean Chlorophyll-a	
Carson	3.0
Dillon and Rigler	2.5
Jones and Bachmann	2.8
Oglesby and Schaffner	3.6
Modified Vollenweider	5.8
NHDES 2009	4.7
Average of Model Values	**3.9**

[21] EPA presents the results of a model simulation in which the annual average concentration at each of the two hatchery outfalls was equal to 25 g/L; however, EPA ran additional simulations in which the average annual load or concentration at each of the two outfalls varied with the total load constant at 465 pounds/year and the target annual average in-lake concentration of 25 µg/L achieved.

Peak Chlorophyll-a	
Modified Vollenweider	16.4
Vollenweider (Chl)	11.0
Modified Jones, Rast, Lee	13.5
Average of Model Values	**13.6**
Bloom Probability	
Probability of Chl>15 µg/L	0.2%
Secchi Disk Transparency	
Mean: Oglesby and Schaffner	3.6
Max: Modified Vollenweider	4.9

The LLRM predicts that, with an in-lake TP concentration of 12 µg/L (based on a reduction in the Hatchery effluent to 25 µg/L), the mean chlorophyll-a is expected to decrease from 6.3 to 3.9 µg/L (a 38% reduction) and the peak chlorophyll-a is expected to decrease from 21.6 to 13.6 µg/L (a 37% reduction). The model predicts that with the Hatchery TP reduction, the peak chlorophyll-a concentration is not expected to exceed 15 µg/L and the probability of algal blooms is reduced to 0.2%. EPA expects that the calculated reductions in peak chlorophyll-a and probability of algal blooms will ensure the primary contact recreation designated use is supported in Marsh Pond.

The LLRM predicts that an annual load of 465 lbs/year (212 kg/year), which equates to an annual average effluent concentration of 25 µg/L from the Hatchery's outfalls, will achieve an in-lake TP concentration of 12 µg/L and will support the primary contact recreation designated use in Marsh Pond. The target in-lake concentration is consistent with recently approved NHDES TMDLs for impaired lakes. An implicit margin of safety (MOS) is appropriate when the assumptions used to develop the model (in this case, the LLRM) are sufficiently conservative to account for the MOS. An explicit MOS, on the other hand, allocates a portion of the total target load to the MOS. NHDES explains that using a target in-lake concentration of 12 µg/L in its TMDLs includes an implicit margin of safety. See Phillips Pond TMDL at 5-1 and Appendix A at A-5, A-8. The empirical models used to predict mean annual in-lake phosphorus concentrations assume fully mixed conditions, but the target in-lake concentration is based on summer epilimnetic concentrations. Studies indicate that mean annual concentrations can be 14 to 40% higher than summer epilimnetic concentrations (Nurnberg 1996, 1998).[22] An annual mean concentration of 15 µg/L TP is the threshold value for mesotrophic lakes used the they New Hampshire Lay Lakes Monitoring Program (Craycraft and Schloss 2005).[23] In other words, setting a target at 12 µg/L based on summer epilimnetic values (which are typically lower than the annual mean concentration) provides an implicit margin of safety.

Unlike the lakes in the Nurnberg studies, the Merrymeeting River and Lake Watershed are subject to a constant point source load of phosphorus from the hatchery. At Outfall 002, the peak

[22] Nurnberg, G.K. 1996. Trophic state of clear and colored, soft and hardwater lakes with special consideration of nutrients, anoxia, phytoplantkon, and fish. Journal of Lake and Reservoir Management 12(4): 432-447. Nurnberg, G.K. 1998. Prediction of annual and seasonal phosphorus concentrations in stratified and unstratified lakes. Limnology and Oceanography 43(7): 1544-1552.
[23] Craycraft, R., J. Schloss. 2005. Baboosic Lake Water Quality Monitoring: 2005. Center for Freshwater Biology, University of New Hampshire.

phosphorus concentrations occur in the 3rd calendar quarter. Based on the data used in the LLRM, mean summer epilimnetic and surface grab phosphorus concentrations in Marsh Pond were about 50% higher than the annual mean TP concentration. In addition, Marsh Pond has a relatively high flushing rate, which causes the pond to have characteristics similar to that of a riverine system. For these reasons, the implicit MOS in the LLRM may not be sufficiently conservative and an explicit MOS will provide an additional level of safety to ensure that the effluent limits based on the LLRM will remain protective during the summer growing season when cyanobacteria blooms occur. NHDES provides that typical lake nutrient TMDLs in New Hampshire use a MOS of 10-20%. For the Draft Permit, EPA applied an explicit 15% MOS to the total target load predicted to achieve an in-lake annual phosphorus concentration of 12 µg/L.

As discussed above, the LLRM predicts that an in-lake target of 12 µg/L will be met with an annual TP load of 465 lbs (212 kg) from the hatchery. This target annual load is based on an effluent TP concentration of 25 µg/L and is calculated on an annual average basis. During most months there is likely sufficient flow over the dam (i.e., not routed through the hatchery) and baseflow to Marsh Pond to allow some level of dilution of the hatchery's effluent at this TP concentration such that narrative water quality standards will be achieved. However, during the summer, all of the flow to the Merrymeeting River upstream of Marsh Pond is routed through the hatchery without dilution, and baseflow to Marsh Pond is likely to be low. However, in recent years, the ponds downstream of the hatchery have experienced repetitive cyanobacteria blooms and higher than expected chlorophyll-a concentrations in the summer months. At an effluent TP concentration of 25 g/L during the summer growing season, cyanobacteria blooms could continue to occur, which will interfere with the structure and function of the benthic community and primary contact recreation. In other words, an effluent concentration of 25 may not be low enough to achieve the target in-lake concentrations during a time when algal blooms and chlorophyll-a concentrations could result in impairments to the primary contact recreation designated use. EPA and NHDES determined that an additional MOS is needed to protect Marsh Pond during the summer growing season.

EPA applied a 15% MOS to the target annual load (465 lbs/year) from the LLRM, which results in an annual TP mass-based effluent limit of 395 lbs/year. The Draft Permit includes an annual, mass-based effluent limit of 395 lbs/year that applies to the cumulative load from Outfalls 001 and 002 and requires reporting the individual load at each outfall. The TP hatchery load from October through May based on an effluent TP concentration of 25 µg/L and average flow of 6.1 MGD from the two outfalls combined (i.e., 1.27 lbs/day) is 308 pounds. Subtracting this value from the total annual TP load that achieves a target in-lake phosphorus concentration (minus a 15% MOS) is 87 lbs. Allotting this remaining load of 87 lbs to the months of June through September (122 days) results in a daily load of 0.72 lbs/day from the hatchery. Using the average daily hatchery flow of 6.1 MGD results in a TP concentration from June through September of 14 µg/L. The Draft Permit thus includes a seasonal (June through September) average monthly TP concentration-based limit of 14 µg/L to the each of the two hatchery outfalls and a seasonal, mass-based TP load of 87 lbs for the combined discharge of Outfalls 001 and 002 from June through September. A TP concentration of 14 ug/L is in the range of regional and national evaluations on the typical total phosphorus concentrations for mesotrophic lakes. The average monthly, concentration-based limit is designed to restrict the phosphorus load from the Hatchery on a monthly basis to support designated uses in Marsh Pond.

Finally, the LLRMs for the downstream impoundments indicate that the primary TP input to Jones Pond and Downing Pond is the load from the upstream source. By controlling the TP input from the Hatchery to Marsh Pond, the upstream input is significantly reduced so that conditions necessary to support the primary contact recreation designated uses will be achieved in the downstream impoundments.

NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES
WATER DIVISION
P.O. BOX 95
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U.S. ENVIRONMENTAL PROTECTION
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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: **December 31, 2019 – February 14, 2020**

PERMIT NUMBER: **NH0000710**

PUBLIC NOTICE NUMBER: **NH-12-19**

NAME AND MAILING ADDRESS OF APPLICANT:

New Hampshire Fish & Game
11 Hazen Drive
Concord, NH 03301

NAME AND LOCATION OF FACILITY WHERE DISCHARGE OCCURS:

Powder Mill State Fish Hatchery
288 Merrymeeting Road
New Durham, NH 03855

RECEIVING WATER: Merrymeeting 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 Powder Mill State Fish Hatchery, which discharges fish culture water and treated hatchery effluent. 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:

Danielle Gaito
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (06-4)
Boston, MA 02109-3912
Telephone: (617) 918-1297
gaito.danielle@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 **February 14, 2020**, to the address or email address listed above. Due to the expected significant public interest, a public hearing will be held to consider this draft permit at least thirty days following public notice. The public hearing will be held in early February at a time and location to be announced. 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.

FINAL PERMIT DECISION:

Following the close of the comment period, and after the public hearing, 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
WATER DIVISION
U.S. ENVIRONMENTAL PROTECTION
AGENCY - REGION I