Public Service Company of New Hampshire
D/b/a Eversource
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WATER QUALITY CERTIFICATION

In Fulfillment of

Section 401 of the United States Clean Water Act (33 U.S.C 1341) and NH RSA 485-A:12, III and NH RSA 485-A:12, IV

WQC # 2016-FERC-001

Activity Name	Eastman Falls Hydropower Project (FERC No. 2457; NH Dam No.087.10)
Activity Location	Franklin, Hill, Sanbornton, and New Hampton, NH
Affected Surface waters	Pemigewasset River, Winnipesaukee River, Merrimack River (see section D-4 for specific waterbodies)
Owner/Applicant	Public Service Company of New Hampshire D/b/a Eversource 780 North Commercial Street Manchester, NH 03105
Applicable Federal permit(s)	Federal Energy Regulatory Commission (FERC) Order Granting New License (FERC No. 2457)
Date of Approval (subject to conditions below)	December 15, 2016

A. INTRODUCTION

Public Service Company of New Hampshire D/b/a Eversource (Applicant) is proposing to continue the operation of the Eastman Falls Hydroelectric Project (Dam) located on the Pemigewasset River in Franklin, Hill, Sanbornton and New Hampton, New Hampshire as a hydroelectric project (Activity). A more complete description of the Activity is provided in Finding D-1 of this Certification.

This 401 Water Quality Certification (401 WQC or Certification) documents laws, regulations, determinations and conditions related to the Activity for the attainment and maintenance of NH surface water quality standards, including the provisions of NH RSA 485-A:8 and NH Code of Administrative Rules Env-Wq 1700, for the support of designated uses identified in the standards.

B. 401 CERTIFICATION APPROVAL

Based on the facts, findings and conditions noted below, the New Hampshire Department of Environmental Services (NHDES or DES) has determined that there is reasonable assurance that construction and operation of the Activity will not violate surface water quality standards. NHDES hereby issues this Certification, subject to the conditions in Section E of this Certification, in accordance with Section 401 of the United States Clean Water Act (33 U.S.C. 1341), RSA 485-A:12,III.

C. STATEMENT OF FACTS AND LAW

C-1. Section 401 of the United States Clean Water Act (33 U.S.C. 1341) states, in part: "Any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate...that any such discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of this title.....No license or permit shall be granted until the certification required by this section has been obtained or has been waived...No license or permit shall be granted if certification has been denied by the State..."

C-2. §401(d) of the CWA provides that: "Any certification provided under this section [401] shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with [enumerated provisions of the CWA]...and with any other appropriate requirement of State law set forth in such certification, and shall become a condition on any Federal license or permit subject to the provisions of this section."

According to EPA 401 Guidance[1], "Under § 401(d) the water quality concerns to consider and the range of potential conditions available to address those concerns, extend to any provision of state or tribal law relating to the aquatic resource. Considerations can be quite broad so long as they relate to water quality. The U.S. Supreme Court has stated that, once the threshold of a discharge is reached (necessary for § 401 certification to be applicable), the conditions and limitations in the certification may address the permitted activity as a whole."[2]

C-3. NH RSA 485-A:12, III, states: "No activity, including construction and operation of facilities, that requires certification under section 401 of the Clean Water Act and that may result in a discharge, as that term is applied under section 401 of the Clean Water Act, to surface waters of the state may commence unless the

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[1] *Clean Water Action Section 401 Water Quality Certification: A Water Quality Protection Tool for States and Tribes*. U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds. 2010.

[2] *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700, 712 (1994).

department certifies that any such discharge complies with the state surface water quality standards applicable to the classification for the receiving surface water body. The department shall provide its response to a request for certification to the federal agency or authority responsible for issuing the license, permit, or registration that requires the certification under section 401 of the Clean Water Act. Certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide assurance that the proposed discharge complies with applicable surface water quality standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22."

C-4. NH RSA 485-A: IV states: "No activity that involves surface water withdrawal or diversion of surface water that requires registration under RSA 488:3, that does not otherwise require the certification required under paragraph III, and which was not in active operation as of the effective date of this paragraph, may commence unless the department certifies that the surface water withdrawal or diversion of surface water complies with state surface water quality standards applicable to the classification for the surface water body. The certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide reasonable assurance that the proposed activity complies with applicable surface water quality standards."

C-5. NH RSA 485-A:8 and Env-Wq 1700 (Surface Water Quality Regulations), together fulfill the requirements of Section 303 of the Clean Water Act that the State of New Hampshire adopt water quality standards consistent with the provisions of the Act.

C-6. Env-Wq 1701.02, entitled "Applicability", states that:

"(a) These rules shall apply to all surface waters.
(b) These rules shall apply to any person who causes point or nonpoint source discharge(s) of pollutants to surface waters, or who undertakes hydrologic modifications, such as dam construction or water withdrawals, or who undertakes any other activity that affects the beneficial uses or the level of water quality of surface waters."

C-7. Env-Wq 1703.01 Water Use Classifications.

(a) State surface waters shall be divided into class A and class B, pursuant to RSA 485-A:8, I, II and III. Each class shall identify the most sensitive use which it is intended to protect.

(b) All 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.

(c) 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.

(d) Unless the flows are caused by naturally occurring conditions, surface water quantity shall be maintained at levels adequate to protect existing and designated uses.

C-8. Env-Wq 1702.46 defines surface waters as "surface waters of the state" as defined in NH RSA 485-A:2, XIV and waters of the United States as defined in 40 CFR 122.2.

NH RSA 485-A:2, XIV defines "surface waters of the state" as "perennial and seasonal streams, lakes, ponds and tidal waters within the jurisdiction of the state, including all streams, lakes, or ponds bordering on the state, marshes, water courses and other bodies of water, natural or artificial."

40 CFR 122.2 defines "waters of the United States".

C-9. NH RSA 482-A:2, X. defines "Wetlands" as "[a]n area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

C-10. Env-Wq 1702.06 states "Best management practices" means those practices which are determined, after problem assessment and examination of all alternative practices and technological, economic and institutional considerations, to be the most effective practicable means of preventing or reducing the amount of pollution generated by point or nonpoint sources to a level compatible with water quality goals."

C-11. Env-Wq 1702.07 "Biological Integrity" means the ability of an aquatic ecosystem to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.

C-12. Env-Wq 1702.17 "Designated uses" means those uses specified in water quality standards for each water body or segment whether or not such uses are presently occurring. Based on a review of RSA 485-A:8 and Env-Wq 1700, and as reported in the New Hampshire Consolidated Assessment and Listing Methodology[3], designated uses include Aquatic Life, Fish and Shellfish Consumption, Primary and Secondary Contact Recreation, Drinking Water After Adequate Treatment and Wildlife.

C-13. Env-Wq 1702.18 defines a discharge as:

"a. The addition, introduction, leaking, spilling, or emitting of a pollutant to surface waters, either directly or indirectly through the groundwater, whether done intentionally, unintentionally, negligently, or otherwise; or
b. The placing of a pollutant in a location where the pollutant is likely to enter surface waters."

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[3] See http://des.nh.gov/organization/divisions/water/wmb/swqa/2012/index.htm

C-14. Env-Wq 1702.23 defines "Existing uses" as "those uses, other than assimilation waste transport, which actually occurred in the water body on or after November 28, 1975, whether or not they are included in the water quality standards."

C-15. Env-Wq 1702.34 defines "Nuisance species" as "...any species of flora or fauna living in or near the water whose noxious characteristics or presence in sufficient number or mass prevent or interfere with a designated use of those surface waters."

C-16. Env-Wq 1702.39 defines a pollutant as: "pollutant" as defined in 40 CFR 122.2. This means "dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological 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."

C-17. The term "discharge", as applied under section 401 of the Clean Water Act means the potential for a discharge. It does not need to be a certainty, only that it may occur should the federal license or permit be granted. Further, the discharge does not need to involve the addition of pollutants (such as water released from the tailrace of a dam). As the U.S. Supreme Court has stated "[w]hen it applies to water, 'discharge' commonly means a 'flowing or issuing out'" and an addition of a pollutant is not "fundamental to any discharge" [4].

C-18. Env-Wq 1703.03 entitled "General Water Quality" includes the following:

(c) (1) All surface waters shall be free from substances in kind or quantity which:

a. Settle to form harmful deposits;
b. Float as foam, debris, scum or other visible substances;
c. Produce odor, color, taste or turbidity which is not naturally occurring and would render it unsuitable for its designated uses;
d. Result in the dominance of nuisance species; or
e. Interfere with recreational activities.

C-19. Env-Wq 1703.07 entitled "Dissolved Oxygen" states the following:

"(a) Class A waters shall have a dissolved oxygen content of at least 75% saturation, based on a daily average, and an instantaneous minimum of at least 6 mg/l at any place or time except as naturally occurs.

(b) Except as naturally occurs, or in waters identified in RSA 485-A:8, III, or subject to (c), below,class B waters shall have a dissolved oxygen content of at

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[4] Information in this paragraph is from page 4 of the following guidance document: *Clean Water Action Section 401 Water Quality Certification: A Water Quality Protection Tool for States and Tribes*. U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds. 2010. The Supreme Court case that is referred to is *S.D. Warren Co. v. Maine Board of Environmental Protection et al*, 547 U.S. 370, 126 S. Ct. 1853 (2006).

least 75% of saturation, based on a daily average, and an instantaneous minimum dissolved oxygen concentration of at least 5 mg/l.

(c) For the period from October 1st to May 14th, in areas identified by the fish and game department as cold water fish spawning areas of species whose early life stages are not directly exposed to the water, the 7 day mean dissolved oxygen concentration shall be at least 9.5 mg/l and the instantaneous minimum dissolved oxygen concentration shall be at least 8 mg/l. This period shall be extended to June 30 for a particular waterbody if the fish and game department determines it is necessary to protect spring spawners or late hatches of fall spawners, or both.

(d) Unless naturally occurring or subject to (a), above, surface waters within the top 25 percent of depth of thermally unstratified lakes, ponds, impoundments and reservoirs or within the epilimnion shall contain a dissolved oxygen content of at least 75 percent saturation, based on a daily average and an instantaneous minimum dissolved oxygen content of at least 5 mg/l. Unless naturally occurring, the dissolved oxygen content below those depths shall be consistent with that necessary to maintain and protect existing and designated uses."

C-20. Env-Wq 1703.08 through 1703.11 contain standards relative to bacteria, benthic deposits, oil and grease, and turbidity.

C-21. Env-Wq 1703.13 entitled "Temperature", states the following:

"(a) There shall be no change in temperature in class A waters, unless naturally occurring.
(b) Temperature in class B waters shall be in accordance with RSA 485-A:8, II, and VIII.

NH RSA-A:8,II states the following for Class B waters "[A]ny 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."

NH RSA-A:8,VIII states the following: "In prescribing minimum treatment provisions for thermal wastes discharged to interstate waters, the department shall adhere to the water quality requirements and recommendations of the New Hampshire fish and game department, the New England Interstate Water Pollution Control Commission, or the United States Environmental Protection Agency, whichever requirements and recommendations provide the most effective level of thermal pollution control."

C-22. Env-Wq 1703.14, entitled "Nutrients", states that

"a. Class A waters shall contain no phosphorous or nitrogen unless naturally occurring.
b. Class B waters shall contain no phosphorous or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring.

c. Existing discharges containing either phosphorous or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards.
d. There shall be no new or increased discharge of phosphorous into lakes or ponds.
e. There shall be no new or increased discharge(s) containing phosphorous or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds."

C-23. Env-Wq 1703.18, entitled "pH", states that

"(a) The pH of Class A waters shall be as naturally occurs.
(b) The pH of Class B waters shall be 6.5 to 8.0, unless due to natural causes.
(c) The pH of waters identified in RSA 485-A:8, III shall be 6.0 to 9.0, unless due to natural causes."

C-24. Env-Wq 1703.19, entitled "Biological and Aquatic Community Integrity", states that

"a. The surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region; and
b. Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function."

C-25. Env-Wq 1703.21 (a)(1) states that "Unless naturally occurring or allowed under part Env-Wq 1707, all surface waters shall be free from toxic substances or chemical constituents in concentrations or combinations that injure or are inimical to plants, animals, humans or aquatic life."

C-26. Antidegradation provisions are included in Env-Wq 1702 and Env-Wq 1708.

a. Env-Wq 1702.02 states that "Antidegradation" means a provision of the water quality standards that maintains and protects existing water quality and uses.
b. Env-Wq 1708.02 states that "Antidegradation shall apply to: (a) Any proposed new or increased activity, including point source and nonpoint source discharges of pollutants, that would lower water quality or affect the existing or designated uses;(b) Any proposed increase in loadings to a waterbody when the proposal is associated with existing activities; (c) Any increase in flow alteration over an existing alteration; and (d) Any hydrologic modifications, such as dam construction and water withdrawals."
c. Antidegradation applies to all parameters as evidenced by Env-Wq 1708.08 (a) (Assessing Waterbodies) which states " The applicant shall characterize the existing water quality and determine if there is remaining assimilative capacity for each parameter in question."
d. According to Env-Wq 1708.04 (b), "A proposed discharge or activity shall not eliminate any existing uses or the water quality needed to maintain and protect those uses".

e. Env-Wq 1702.03 states that "Assimilative capacity" means the amount of a pollutant or pollutants that can safely be released to a waterbody without causing violations of applicable water quality criteria or negatively impacting uses.
f. Env-Wq 1708.08 describes the process for assessing waterbodies to determine if there is remaining assimilative capacity for each parameter in question.
g. Env-Wq 1708.09 Significant or Insignificant Determination states :(a) Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, shall be considered a significant lowering of water quality. The department shall not approve such a discharge or activity unless the applicant demonstrates that the proposed lowering of water quality is necessary to achieve important economic or social development, in accordance with Env-Wq 1708.10, in the area where the waterbody is located.
h. Env-Wq 1708.01 (b) states: "For significant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the department finds, after full satisfaction of the intergovernmental coordination and public participation provisions that, in accordance with Env-Wq 1708.10, allowing lower water quality is necessary to accommodate important economic or social development in the area in which the surface waters are located. In allowing such degradation or lower water quality, the department shall assure water quality adequate to fully protect existing uses. Further, the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented".
i. Env-Wq 1708.01 (c) states: "For insignificant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected. In allowing such degradation or lower water quality, the department shall assure water quality adequate to protect existing uses fully. Further, the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented".

C-27. Env-Wq 1708.05 entitled "Protection of Water Quality in ORW" states that

"(a) Surface waters of national forests and surface waters designated as natural under NH RSA 483:7-a, I, shall be considered outstanding resource waters (ORW).
(b) Water quality shall be maintained and protected in surface waters that constitute ORW, except that some limited point and nonpoint source discharges may be allowed providing that they are of limited activity which results in no more than temporary and short-term changes in

water quality. "Temporary and short term" means that degradation is limited to the shortest possible time. Such activities shall not permanently degrade water quality or result at any time in water quality lower than that necessary to protect the existing and designated uses in the ORW. Such temporary and short term degradation shall only be allowed after all practical means of minimizing such degradation are implemented."

C-28. Env-Wq 1708.07 entitled "Protection of Water Quality in High Quality Waters" states that

"(a) Subject to (b) below, high quality waters shall be maintained and protected, except that insignificant changes in water quality, as determined by the department in accordance with Env-Wq 1708.09, shall be allowed.
(b) Degradation of significant increments of water quality, as determined in accordance with Env-Wq 1708.09, in high quality waters shall be allowed only if it can be demonstrated to the department, in accordance with Env-Wq 1708.10, that allowing the water quality degradation is necessary to accommodate important economic or social development in the area in which the receiving waters are located.
(c) Economic/social benefits demonstration and alternatives analysis shall not be required for authorization of an insignificant lowering of water quality. However, in allowing a lowering of water quality, significant or insignificant, all reasonable measures to minimize degradation shall be used.
(d) If the water body is Class A Water, the requirements of Env-Wq 1708.06 shall also apply."

C-29. RSA 483 regarding Designated Rivers, states the following:

RSA 483:4, XVIII. "River corridor" means the river and the land area located within a distance of 1,320 feet of the normal high water mark or to the landward extent of the 100 year floodplain as designated by the Federal Emergency Management Agency, whichever distance is larger.

RSA 483:8-a, III. The duties of such committees shall be:
(a) To advise the commissioner, the advisory committee, the municipalities through which the designated river or segment flows, and municipalities within tributary drainage areas on matters pertaining to the management of the river or segment and tributary drainage areas. Municipal officials, boards, and agencies shall inform such committees of actions which they are considering in managing and regulating activities within designated river corridors.
(b) To consider and comment on any federal, state, or local governmental plans to approve, license, fund or construct facilities that would alter the resource values and characteristics for which the river or segment is designated.

RSA 483:10-b. Withholding of Section 401 Certification. – The general court finds that the development of any dam or channel alteration activities within a natural river or segment or the development of any new dam within a rural or

community river or segment, except as provided in RSA 483:9-a, II and RSA 483:9-b, II, will alter the physical and chemical characteristics of that river and will constitute violation of the water quality standards established under RSA 485-A:8. The commissioner shall deny certification of any federally licensed or permitted activity on such designated rivers or segments under section 401 of the Federal Water Pollution Control Act, P.L. 92-500, as amended.

RSA 483:12-a State Action; Notification of Rivers Coordinator; Petition for Review

I. Any state agency considering any action affecting any river or segment designated under this chapter shall notify the rivers coordinator prior to taking any such action. Such agency shall forward to the rivers coordinator for review and comment copies of all notices of public hearings, or, where a public hearing is not required, a copy of the application for issuance of a permit, certificate, or license within the designated river or corridor under RSA 485-C, RSA 485-A, RSA 483-B, RSA 12-E, RSA 270:12, RSA 482, RSA 482-A, RSA 149-M, RSA 430, or RSA 147-A. If an agency is notified by the rivers coordinator that a proposed activity would violate a protection measure under RSA 483:9, 483:9-a, 483:9-aa, or 483:9-b, such agency shall deny the application.

C-30. NH RSA 488:3 regarding registration of withdrawals and discharges states the following:

I. No person shall withdraw or discharge a cumulative amount of more than 20,000 gallons of water per day, averaged over any 7-day period, or more than 600,000 gallons of water over any 30-day period, at a single real property or place of business without registering the withdrawal or discharge with the department. Transfers of such volume of water shall also be registered. Registration shall be in addition to any required permits.

II. No registration shall be transferred to another person without written notification to the commissioner.

C-31. NH RSA 485:61 regarding Rules for Water Conservation, states the following:

"I. The department shall adopt rules, pursuant to RSA 541-A, for water conservation practices for water users. These rules shall strike a reasonable balance between environmental, energy, and economic impacts and be consistent with current industry standards and practices for different types of water users.

II. The water conservation rules in paragraph I of this section shall apply to all new permit applicants and applications for water withdrawals subject to the provisions of RSA 485:3, RSA 485:48, RSA 485-C:21 and section 401 of the Clean Water Act.

III. Water conservation rules shall be consistent with applicable state or federal rules and regulations. Water Conservation Rules were adopted May 14, 2005 codified as Env-Wq 2101."

C-32. Env-Wq 2101.24 entitled "Water Conservation Plan Required", states that

"(a) The applicants for approval of a source that would be a conservation source shall submit a water conservation plan that demonstrates compliance with the applicable provisions of Env-Wq 2101.05 through Env-Wq 2101.22 in accordance with the following:"

"(5) For a new withdrawal from a surface water associated with a project requiring a 401 Water Quality Certification, the water conservation plan shall be submitted prior to or in conjunction with the application for a 401 Water Quality Certification pursuant to Section 401 of the federal Clean Water Act;
(6) For a new withdrawal from a surface water that requires water quality certification pursuant to RSA 485-A:12, IV, the water conservation plan shall be submitted prior to or in conjunction with the certification request".

Env-Wq 2101.23, entitled Waivers, allows DES to grant waivers of certain provisions in Env-Wq 2101 provided the person requesting the waiver submits a written request to DES that includes the information specified in Env-Wq 2101.23(d).

C-33. In 2010, DES published guidance (hereinafter called the 2010 instream flow guidance or 2010 ISF guidance) for estimating instream flow requirements for the protection of aquatic life for situations. The guidance is available at: http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-3.pdf.

C-34. Section 303(d) of the Clean Water Act (33 U.S.C. 1313(d)) and the regulations promulgated thereunder (40 C.F.R. 130.0 – 40 C.F.R. 130.11) require states to identify and list surface waters that are violating state water quality standards (i.e., Section 303(d) List) that do not have an approved TMDL. For these water quality-impaired waters, states must establish Total Maximum Daily Loads (TMDLs) for the pollutants causing the impairments and submit the list of impaired surface waters and TMDLs to EPA for approval. TMDLs include source identification, determination of the allowable load and pollutant reductions (by source) necessary to meet the allowable load. Once a TMDL is conducted, the pollutant/surface water is transferred to the list of impaired waters with approved TMDLs (known as Category 4A waters). The Section 303(d) List is, therefore, a subset of all impaired waters. The most recent Section 303(d) list of impaired waters is the 2014 Section 303(d) List. A list of all impaired waters is available at
http://www2.des.state.nh.us/WaterShed_SWQA/WaterShed_SWQA.aspx

C-35. On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL[5] which addressed mercury impairments in all New Hampshire fresh surface waters.

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[5] Northeast Regional Mercury Total Maximum Daily Load. Connecticut Department of Environmental Protection, Maine Department of Environmental Protection, Massachusetts Department of Environmental Protection, New Hampshire Department of Environmental Services, New York Stated Department of Environmental Conservation, Rhode Island Department of Environmental Management, Vermont Department of Environmental

C-36. When a surface water does not meet water quality standards (i.e., when it is impaired), the addition of pollutants causing or contributing to impairment is prohibited in accordance with the following:

Env-Wq 1703.03 (a) states that "The presence of pollutants in the surface waters shall not justify further introduction of pollutants from point or nonpoint sources, alone or in any combination".

NH RSA 485-A:12 (I) (Enforcement of Classification) states that "After adoption of a given classification for a stream, lake, pond, tidal water, or section of such water, the department shall enforce such classification by appropriate action in the courts of the state, and it shall be unlawful for any person or persons to dispose of any sewage, industrial, or other wastes, either alone or in conjunction with any other person or persons, in such a manner as will lower the quality of the waters of the stream, lake, pond, tidal water, or section of such water below the minimum requirements of the adopted classification".

C-37. Pursuant to Section 23(b)(1) of the Federal Power Act (FPA), §817(1), a non-federal hydroelectric project must (unless it has a still-valid pre-1920 federal permit) be licensed if it: (1) is located on a navigable water of the United States; (2) occupies lands of the United States; (3) utilizes surplus water or water power from a government dam; or (4) is located on a stream over which Congress has Commerce Clause jurisdiction, is constructed or modified on or after August 26, 1935, and affects the interests of interstate or foreign commerce.

C-38. On December 21, 2015 the NHDES received an Application for Water Quality Certification for the Activity dated December 18, 2015. The application included a copy of the final license application[6,7] filed by the Applicant with FERC.

C-39. On June 22, 2016, the U.S. Department of Interior (USDI) issued preliminary comments, recommendations, and prescriptions for the Activity to FERC to prevent loss of, or damage to, fish and wildlife resources, and to otherwise carry out the purposes of the Fish and Wildlife Coordination Act [7]. On June 28, 2016, the New Hampshire Fish and Game Department (NHFGD) filed a letter with FERC supporting the USDI letter of June 22, 2016 [7].

C-40. On October 24, 2016, FERC issued their Environmental Assessment (EA)[7] for public comment.

C-41. NHDES issued a draft section 401 Water Quality Certification for public comment from October 31, 2016 to December 2, 2016. Comments were received from the Applicant and the Upper Merrimack River Local Advisory Committee (UMRLAC). A response to comments was prepared and posted on the NHDES

Conservation, New England Interstate Water Pollution Control Commission. October 24, 2007.

[6] License Application, Eastman Falls Hydroelectric Project (FERC No. 2457). Prepared by Kleinschmidt. December 2015.

[7] A copy of this document is available on the FERC website at http://www.ferc.gov using the "eLibrary" link. Enter the docket number P-2457 to access the document.

Water Quality Certification website
(http://des.nh.gov/organization/divisions/water/wmb/section401/ferc.htm).

D. FINDINGS

D-1. *Activity Description:* (The following is from the Applicant's final license application[6]):

Background: The Eastman Falls Hydroelectric Project (Activity) is located in central New Hampshire in Merrimack and Belknap Counties, and in the city of Franklin and towns of Hill, Sanbornton, and New Hampton. The Activity is located on the Pemigewasset River. The Eastman Falls Dam (Dam) is located at river mile 116.5,approximately 1.5 miles downstream of the U.S. Army Corps of Engineers (USACE) Franklin Falls Flood Control Dam, and about one mile upstream of its confluence with the Winnipesaukee River. The impoundment (i.e., reservoir) created by the dam extends approximately 9 miles upstream, running through the USACE Franklin Falls Flood Control Dam. The Activity was originally constructed by the Pemigewasset Power Company in 1903, and has been redeveloped in 1910-1911,1937 and 1983. The drainage area upstream of the dam is 1,003 square miles.

The general area of the Activity includes the Pemigewasset River from Sumner Island in the north to the Pemigewasset-Winnipesaukee River confluence in the south, and the lands immediately adjacent to the Pemigewasset River throughout this reach. The dam and powerhouses are located off North Main Street in Franklin, New Hampshire, approximately 0.6 miles west of the center of Franklin.

The Activity is currently licensed to PSNH (D/b/a Eversource) under a FERC Order (i.e., license) dated August 25, 1987. The current FERC license expires on December 31, 2017. A section 401 Water Quality Certification was issued by NHDES on January 30, 1985.

Existing Structures: The Activity consists of a dam, one spillway waste gate and two single unit powerhouses which are described below.

The existing spillway is a concrete gravity structure that is 341 foot long with a maximum height of 37 feet high (NH Dam No.087.10). The fixed crest elevation of the ogee section of the dam is 301 feet mean sea level (msl). With 6 foot high flashboards installed, the normal pool elevation is 307 feet msl. The 6 foot high steel flashboards are hinged at the crest and supported on the downstream side by timber struts that are designed to fail at 2 feet of overtopping. There are three bays of flashboards that when lowered can each pass approximately 5302 cfs with the pond at the normal pool elevation. At the normal pool elevation of 307 feet msl, the impounded surface area created by the dam is approximately 582 acres, the gross storage capacity of the impoundment is approximately 4570 acre-feet and the useable storage capacity is 1090 acre-feet. The storage capacity is not used since the project is operated as run-of-river.

A waste gate structure abuts the right side of the spillway. It includes a 16 foot high by 30 foot wide steel slide gate with a gate sill elevation of 292 feet msl. The reported capacity of the waste gate at the normal pool elevation of 307 msl) is 6,109 cubic feet per second (cfs).

The Unit No.1 intake has a headgate structure that is about 12.5 feet high by about 15 feet wide. Trashrack dimensions are 23 feet, 9-1/8 inches high by 17 feet wide and consist of 1/2 inch wide bars spaced 4 inches on center for a clear spacing of 3.5 inches. The intake structure for this section of the powerhouse admits water to the turbine through a 12.5 feet by 12.5 feet reinforced concrete penstock which is approximately 21 feet long. The bulkhead is about 40 feet high and 20 feet wide with a 1 foot wide stop log slot that can be used to dewater the intake.

The Unit No.2 intake is integral with the powerhouse and is comprised of a reinforced concrete and masonry gravity structure with an 18 foot square entrance opening. An electrically operated headgate is located within the powerhouse and is about 20 feet high by about 21 feet wide. Trashracks consist of two 12 foot 4 inch wide by 9 foot 4 inch high panels with 1/2 inch wide bars spaced 4 inches on center for a clear spacing of 3.5 inches. The intake stop log panel is about 20 foot 10 inches high and 22 foot 5-1/2 inches wide that can be lowered into the stoplog frame of the bulkhead to dewater the intake via pumping.

The two power houses are built within the dam structure on the west side; consequently, there is no bypassed reach at the dam. The powerhouses located on river left of the project contain two single generating turbines. Unit 1 is a 1.95-MW vertical Kaplan turbine that operates from 250 cfs up to 850 cfs. The Unit 1 generator is rated at 1.8 MW. Unit 2 is a 4.26-MW horizontal Kaplan type turbine that operates from 700 cfs up to 1,930 cfs. The Unit 2 generator is rated at 4.6 MW. The project has a total installed capacity of 6.4 MW. When combined the turbines can operate between a minimum flow of 250 cfs and a maximum flow of 2,780 cfs.

Downstream of the Dam, the Pemigewasset River is a free flowing, riverine body through its confluence with the Winnipesaukee River approximately one mile downstream. The normal tailwater elevation is 273.0 msl.

Downstream fish passage is provided by a 342 foot long floating louver array which guides migrating fish away from the generating facility intakes to a lowered flashboard on the spillway. The array consists of nineteen wood and steel frames holding plastic angled louver slats that extend to a depth of eight feet.

Existing Operation: Under the existing 1987 FERC license the Activity is currently operated as an un-manned, run-of-river facility with a continuous minimum flow of 410 cubic feet per second (cfs) as measured immediately downstream of the Dam, or inflow to the reservoir (whichever is less). The flow may be temporarily modified if required by operating emergencies beyond the

control of the Applicant, and for short periods upon mutual agreement between the Applicant, and the New Hampshire Fish and Game Department (NHFGD).

The minimum flow of 410 cfs was negotiated with the U.S Fish and Wildlife Service (USFWS) and the NHFGD in connection with 1983 project modifications and the 1984 relicensing. This flow corresponds to the flow equaled or exceeded 80% of the time on the flow duration curve for the Pemigewasset River. The mean annual flow of the Pemigewasset River at the Dam is approximately 2,130 cfs with peak flows of 51,576 cfs and minimum flows of 120 cfs.

River flow is calculated by subtracting the flow at the U.S. Geological Survey (USGS) 01081000 gage on the Winnipesaukee River from USGS 01081500 gage on the Merrimack River and prorating it to compensate for the drainage area between the Dam and the USGS gage.

The upstream USACE Franklin Falls Dam can affect operation of the Activity during high flows. However, during low and normal river flow conditions, the Franklin Falls Dam typically passes inflow and therefore has no effect on operation of the Activity.

The Activity is typically operated on an automated pond level control system (APLCS) to maintain a steady pond at the top of the flashboards (elevation 307 feet msl). The generating units are normally operated remotely from the Applicant's Electrical System Control Center (ESCC) in Manchester, New, Hampshire, although both units are capable of local operation. A level transducer is utilized to measure the headwater in the reservoir and this data is fed to the APLCS through a SCADA based system. With the set point at the top of the flashboards, the APLCS typically maintains this level within +/- 0.2 feet. A hydro operator visually verifies the headwater from the ESCC computer readings a minimum of 2 times per week. Any discrepancies are noted and if necessary, adjustments are made to ensure accuracy.

When inflow is less than 250 cfs (the minimum hydraulic capacity of the turbines) all inflow is passed either through the waste gate or over the spillway. When inflow exceeds the turbine capacity of 2,780 cfs, the waste gate is opened to manually maintain the reservoir at or near the top of the flashboards. If necessary the flashboards are also lowered by removing the wooden struts on the downstream side of the hinged steel flashboards. When just the waste gate is opened, the pond level can be maintained within +/- 0.5 feet. When flashboards are lowered (i.e., to accommodate high flow events) or raised due to changing river flow the pond level can be maintained within +/- 1 foot. A cable car system spans the spillway to facilitate strut removal and replacement.

With regards to current impoundment refill procedures following drawdowns for maintenance of emergencies, it is unclear how much flow is discharged downstream of the dam and how much is used for refilling the impoundment.

Applicant's Proposed Operation: The Applicant is proposing to continue operating the Activity as run-of-river as it has for the past decade. The Applicant is not proposing to add capacity or make any physical modifications to the Activity.

The Applicant does, however, propose to eliminate the current downstream minimum flow of 410 cfs. According to the final license application[6], the "minimum flow requirement is an artifact of when the project was allowed to operate in a limited peaking mode many years ago." Since the Activity now proposes to operate in a run-of-river mode, as it has for many years, the Applicant does not believe that a minimum flow requirement is necessary.

The Applicant also proposes the following measures:

- Develop and implement an operation compliance monitoring and maintenance plan (OCMMP) to monitor impoundment level, flow releases and impoundment refill procedures (a draft was included in the final license application[6]);
- Maintain downstream flows of 502 cfs [equal to the aquatic base flow (ABF)] or 90 percent of inflow to the impoundment (whichever is less) to protect downstream aquatic habitat when refilling the impoundment after drawdowns for maintenance or emergencies;
- Develop and implement an invasive species management and monitoring plan (ISMMP) to monitor the spread of invasive species within the project boundary and implement control measures, if necessary (a draft plan was included in the final license application[6]).

D-2. The Applicant is responsible for the operation of the Activity.

D-3. Surface waters are navigable waters for the purposes of certification under Section 401 of the Clean Water Act. Surface waters are jurisdictional wetlands for the purposes of wetlands permitting under RSA 482-A.

D-4. The named and unnamed fresh water rivers and streams, lakes and ponds, and wetlands in New Hampshire affected by the Activity, are surface waters under Env-Wq 1702.46. NHDES has assigned Assessment Unit (AU) identification numbers to many, but not all surface waters. Surface waters that do not have an AU number are still considered surface waters of the State in accordance with Env-Wq 1702.46 (see C-8). Surface waters that could be potentially affected by the Activity and their associated AU numbers (where available) include, but are not limited to the following:

Assessment Unit ID	Description
NHIMP700010804-02	Impoundment of Pemigewasset River Upstream of Dam
NHRIV700010804-14	Pemigewasset River Downstream of Dam
NHRIV700010804-13	Confluence of Chance Pond Branch Brook and the Pemigewasset River
NHRIV700020203-18	Confluence of the Winnipesaukee River With the Merrimack River Downstream of Dam
NHRIV700060101-12	Merrimack River Downstream of Dam

D-5. The potentially affected surface waters are Class B waterbodies; therefore Class B New Hampshire surface water quality standards apply to the Activity. Class B waterways are considered suitable for aquatic life, primary and secondary

contact recreation, fish consumption, wildlife, and, after adequate treatment, as a water supply (see C-12).

D-6. The Pemigewasset River and portions of the Merrimack River downstream of the Activity are designated rivers under RSA 483 (see C-29).

D-7. The surface waters in the vicinity of the Activity are not Outstanding Resource Waters (see C-27).

D-8. According to the 2014 303(d) list of impaired waters (see C-34), the following surface waters in the vicinity of the proposed Activity are listed as impaired. All impairments, with the exception of those highlighted in bold (which have approved TMDLs), are on the Section 303(d) List:

Assessment Unit (AU)	Waterbody Name	Cause of Impairment (Designated Use Impaired)
NHIMP700010804-02	Pemigewasset River Impoundment	**Mercury(FC)**
NHRIV700010804-14	Pemigewasset River	**Mercury(FC)**
NHRIV700010804-13	Chance Pond Branch Brook	**Mercury(FC)**
NHRIV700020203-18	Winnipesaukee River	**Mercury(FC)**
NHRIV700060101-12	Merrimack River	**Mercury(FC)**
Notes: AL = Aquatic Life, PCR = Primary Recreation, SCR = Secondary Recreation, FC = Fish Consumption, SFC = Shellfish Consumption Impairments highlighted in bold have approved TMDLs. All other impairments are on the Section 303(d) List. All fresh surface waters are impaired mercury due to elevated levels of mercury in fish tissue which has resulted in statewide fish consumption advisory.		

As stated in C-36 of this Certification, when a surface water does not meet water quality standards (i.e., when it is impaired), the addition of pollutants causing or contributing to impairment is prohibited. As noted above, all fresh surface water in New Hampshire are impaired for mercury due to concentrations found in fish tissue which have resulted in a statewide fish consumption advisory. On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL which addressed mercury impairments in all New Hampshire fresh surface waters (see C-35). The primary source of mercury is atmospheric deposition from in-state and out-of-state emissions. The proposed Activity is not expected to have a significant impact on mercury levels in fish tissue.

D-9. The Activity will include the release of water from the tailrace of the Dam, which is considered a discharge as applied under § 401 of the Clean Water Act (see C-17).

D-10. NH RSA 485-A:III applies to any activity that requires certification under § 401 of the Clean Water Act (see C-3). According to § 401 of the CWA , one of the "triggers" that determines if a § 401 certification is required, is the need for a federal license or permit (see C-1). The FERC license that the Applicant must renew to continue operation of the Activity, satisfies this requirement.

D-11. Because the Activity involves a discharge (see D-9) and requires a federal license from FERC, a § 401 Water Quality Certification is required in accordance with RSA 485-A:12, III.

D-12. According to staff in the NHDES Water Use Registration and Reporting program (WURRP), the Activity is currently registered with the WURRP and must continue to report under this program. Because there is no bypass reach and the Applicant is not proposing a change in operation, a water conservation plan is not required (see C-32).

D-13. On June 22, 2016, the U.S. Department of Interior (USDI), which includes the U.S. Fish and Wildlife Service (USFWS), filed a letter with FERC in response to FERC's Notice of Application Ready for Environmental Analysis, dated April 26, 2016. The letter included preliminary recommendations and prescriptions for inclusion in the FERC license (i.e., the USDI PRP letter). On June 28, 2016, the New Hampshire Fish and Game Department (NHFGD) filed a letter with FERC supporting the USDI PRP letter. On October 24, 2016, FERC issued the Environmental Assessment (i.e., the FERC Draft EA) for the public comment, which addressed each of the preliminary recommendations and prescriptions in the USDI PRP letter. The FERC Draft EA also included draft license requirements (i.e., Articles) recommended by FERC staff. All of the above documents may be found on the FERC website[7].

D-14. *Run-of-River:* The Applicant, the USDI PRP letter (which is supported by NHFGD) and the FERC draft EA all propose that the Activity operate as a run-of-river facility. NHDES concurs with operating the Activity as a run-of-river facility, whereby outflow from the Activity equals inflow on an instantaneous basis except during emergencies beyond the control of the Applicant and for short periods upon mutual agreement with of the resource agencies, as such actions will help to support Biological and Aquatic Community Integrity (Env-Wq 1703.19 – see C-24).

D-15. *Impoundment Fluctuations:* The USDI PRP letter (which is supported by NHFGD) supports the Applicant's current operation wherein the impoundment is maintained at an elevation of 307 feet msl (+/- 0.2 feet). According to the USFWS, maintaining a steady pond elevation will help protect the flora and fauna in the littoral and riparian zones of the impoundment.

NHDES concurs with minimizing the frequency and magnitude of fluctuations in the impoundment as it will help to support Biological and Aquatic Community Integrity (Env-Wq 1703.19 – see C-23) in the impoundment.

D-16. *Impoundment Refill Procedures:* During authorized drawdowns, a refill procedure is required to ensure adequate flow is maintained downstream of the Dam and adequate flow is available to refill the impoundment at an appropriate rate to protect aquatic habitat and to support Biological and Aquatic Community Integrity (Env-Wq 1703.19 – see C-24). The USDI PRP letter (which is supported by NHFGD), recommended the USFWS standard impoundment refill procedure whereby 90 percent of the inflow would be passed downstream and 10 percent would be used to refill the impoundment. On August 2, 2016, the

Applicant responded to the USDI PRP letter and proposed a release of 502 cfs (equal to the aquatic base flow[8]) unless inflow is less, in which case it would release 90 percent of inflow. The FERC Draft EA recommends the Applicant's proposal.

Compared to the Applicant's proposal, the USFWS standard refill procedure allows more of the inflow to pass downstream under all inflow conditions. The Applicant's proposal requires the same downstream flow as the USFWS protocol when inflow is less than or equal to 502 cfs. However, when inflow exceeds 502 cfs, the Applicant's proposal results in less flow downstream than the USFWS standard procedure (502 cfs vs 90 percent of inflow) in exchange for allowing the impoundment to refill more quickly. If not properly controlled, this could result is large, rapid reductions in flow downstream of the Dam which could be harmful to aquatic life and potentially large, rapid increases in flow after the impoundment is filled. The USDI PRP letter states that in instances where there are significant resources in the impoundment that would benefit from a quicker refill, the USFWS has deviated from its standard protocol. However, in this case, the USFWS is recommending their standard refill protocol because there are State-listed endangered species of mussels (i.e. the brook floater) downstream of the dam which could be at risk if downstream flows are dramatically reduced during refill (or if downstream flows are dramatically increased after the pond is refilled. These concerns are supported by the following excerpts from the final license application:

- "...the brook floater is considered one of the most endangered mussels in the Northeast" , and "... is listed as critically impaired in New Hampshire...";
- "Over 100 brook floaters were observed downstream of Eastman Falls, accounting for the second most abundant species of freshwater mussels documented in PSNH's 2013 study";
- brook floaters "...are not found in high energy scour-prone areas".

NHDES concurs with the USFWS standard protocols for refilling impoundments because it will help to minimize dramatic reductions or increases in downstream flow (as compared to inflow) during and immediately after impoundment refill and is therefore supportive of Biological and Aquatic Community Integrity (Env-Wq 1703.19 – see C-24). However, NHDES will consider other refill procedures if it can be demonstrated to the satisfaction of NHDES, NHFGD and the USFWS that it will be protective of aquatic life, and, in particular, the brook floater mussels.

D-17. *Drawdown Rate:* The NHFGD typically recommends a maximum drawdown rate of approximately six (6) inches per day to allow adequate time for aquatic organisms (including, but not limited to mussels), to move and stay sufficiently submerged as the water level gradually recedes.

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[8] The aquatic base flow (ABF) of 502 cfs is equal to 0.5 cfs/square mile multiplied by the drainage area at the dam (1003 square miles).

NHDES concurs that, to the extent practicable, drawdowns should be limited to a maximum rate of six (6) inches per day as it will help to support Biological and Aquatic Community Integrity (Env-Wq 1703.19 – see C-24).

D-18. *Operation Compliance and Monitoring Plan:* The Applicant (see D-1), the USDI PRP letter (which is supported by NHFGD) and the FERC draft EA all propose that the Applicant develop and implement an approved operation compliance and monitoring plan (OCMP) that includes details of equipment and procedures necessary to maintain, monitor and report compliance of the Activity. A draft OCMP was provided in the final license application.

NHDES concurs that an OCMP approved by NHDES, NHFGD, USFWS, should be developed and implemented because it will help to ensure compliance with this Certification and therefore compliance with New Hampshire surface water quality regulations (Env-Wq 1700).

D-19. *Invasive Species:* The Applicant (see D-1), the USDI PRP letter (which is supported by NHFGD) and the FERC draft EA all propose that Applicant develop and implement an approved invasive species management and monitoring plan (ISMMP) to monitor the spread of invasive species within the project boundary and implement control measures, if necessary. A draft ISMMP was provided in the final license application.

NHDES concurs that an ISMMP approved by NHDES, NHFGD and the USFWS, should be developed and implemented because it would it will help to support Biological and Aquatic Community Integrity (Env-Wq 1703.19 – see C-24) and help to ensure compliance with Env-Wq 1703.03 (c)(1)d which requires all surface waters to be free from substances in kind or quantity that result in the dominance of nuisance species (see C-18) as defined in Env-Wq 1702.34 (see C-15).

D-20. *Water Quality Monitoring:* The Applicant is not proposing to conduct any water quality monitoring. The following excerpt from the USDI PRP letter explains why:

> "PSNH originally anticipated conducting a baseline water quality study to confirm compliance with state water quality standards. However, subsequent to proposing the study, the ACOE released a report titled "Upper Merrimack and Pemigewasset River Study: Field Program 2009-2012 Monitoring Data Report" (2012) that contained relevant data. Based on the existence of this new site-specific information, PSNH withdrew its study proposal.
>
> The ACOE study included sites within the vicinity of the Eastman Falls Project. Dissolved oxygen (DO) and water temperature were measured continuously from July to September in 2009 upstream and downstream of the dam. In addition, vertical profiles of DO and temperature in the impoundment were sampled monthly from June to October in 2009. Results indicate that during the study period: (1) DO concentrations and percent saturation did not fall below State standards; (2) no stratification

> of the impoundment was evident; and (3) DO and temperature patterns followed similar trends upstream and downstream of the dam".

On October 29, 2015, NHDES filed comments with FERC regarding the Applicant's Draft License Application dated August 4, 2015 which included the following statements indicating that the data collected by the ACOE (also referred to as the USACE) in 2009 is not representative of worse case conditions with regards to dissolved oxygen, temperature and algal growth.

> "...river flows during the study were generally above average during the study which likely resulted in water quality (i.e., temperature, dissolved oxygen, nutrients and chlorophyll-a) being better than what would have been measured during a drier summer with lower flows. For example, as reported in USACE 2012 report, although there was no evidence of stratification in the impoundments during the 2009 impoundment study, flows were above average for the summer (except for a part of September) which "likely increased flushing of the impoundments and prevented stratification at locations that may stratify under normal or below average summer streamflow conditions" (Section 2.6.1, p 2-26). Similarly, Section 2.6.2, p. 2-27 of the USACE 2012 report states that the lack of evidence of significant algal growth in the lower impoundments "suggests that the higher than average flows in the impoundments in the summer of 2009 prevented excessive growth that could result in stressed dissolved oxygen conditions.""

The USDI PRP letter recommends that the new FERC license be conditioned to require that the Licensee implement post-license water quality monitoring, in consultation with the USFWS and NHDES because the ACOE water quality data were not collected under "worst-case (i.e., dry) conditions". On August 2, 2016, the Applicant filed a letter with FERC responding to the USDI PRP letter. In it, the Applicant stated that although they do not believe additional water quality studies are necessary (based on the USACE study), should a study be required, they anticipate "...that the agencies would clearly define what parameters constitute "worst case" conditions prior to conducting data collection."

NHDES concurs with the USDI that water quality monitoring should be conducted by the Applicant to confirm that the Activity is not causing or contributing to water quality violations for dissolved oxygen, temperature, pH, total phosphorus and chlorophyll a in the impoundment and downstream of the Eastman Falls dam. In addition, vertical profiles of dissolved oxygen and temperature should be taken in the impoundment to determine if it stratifies because stratification can result in low levels of dissolved oxygen in the impoundment and tailrace. In response to the Applicant's request of August 2, 2016 (see above), NHDES will clarify what is meant by "worst case" conditions (see condition E-13).

Fish Passage: Section 18 of the Federal Power Act states that FERC must require construction, operation, and maintenance by the licensee of fishways as may be prescribed by the Secretaries of Commerce or Interior. The USDI PRP

letter filed on June 22, 2016, which is supported by NHFGD (see D-13) included preliminary prescriptions for fishways, which, according to the Draft EA (see D-13), FERC proposes to include in the final license.

The USDI PRP letter states that the USDI through the USFWS " is preliminarily prescribing pursuant to section 18 of the Federal Power Act, ...that such new fishways be designed, constructed, operated and maintained as are necessary to accomplish safe, timely and effective upstream passage and interim downstream passage of American eel; and such measures shall be taken as necessary to ensure the effectiveness of those fishways during the term of the license." Details are provided in Attachment A to the USDI PRP letter. The following summary of the USDI preliminary prescription is from the FERC Draft EA:

> "Interior's preliminary section 18 prescription would require PSNH to: (1) develop a plan to install up to three upstream fishways for American eel that would be operated from May 1 to October 30 (the number and location of these fishways would be determined by two seasons of monitoring); (2) develop a plan to implement downstream passage measures for American eel from August 15 to November 15 of each year (interim measures would be implemented starting in the second year of the license and permanent measures would be implemented starting in the eighth year after eels are documented using the upstream eel passage facilities); (3) develop and implement a fishway operation and maintenance plan; and (4) develop and implement a fishway effectiveness monitoring plan.
>
> Interior also requests that any license issued for the project include a reservation of authority to prescribe fishways under section 18 of the FPA."

In the June 22, 2016 letter, the USDI stated that they "reserve the right to modify recommendations and prescriptions within a reasonable time frame following the filing of any additional information or modified proposals by PSNH".

NHDES concurs with the USDI's preliminary prescriptions for fishways, and any amendments, as it will help to ensure adequate fish passage and will support Biological and Aquatic Community Integrity (Env-Wq 1703.19 – see C-24).

E. WATER QUALITY CERTIFICATION CONDITIONS

Unless otherwise authorized by NHDES, the following conditions shall apply:

E-1. **Compliance with Certification Conditions:** The Applicant shall operate and maintain the Activity to comply with the conditions of this Certification.

E-2. **Compliance with Water Quality Standards:** The Activity shall not cause or contribute to a violation of surface water quality standards.

E-3. **Modification of Certification:** The conditions of this Certification may be amended and additional terms and conditions added as necessary to ensure

compliance with New Hampshire surface water quality standards, when authorized by law, and after notice and opportunity for hearing.

E-4. **Proposed Modifications to the Activity:** The Applicant shall consult with and receive prior written approval from NHDES regarding any proposed modifications to the Activity that could have a significant or material effect on the conditions of this Certification including any changes to project operation or approved plans required by this Certification. If necessary, NHDES may modify the Certification in accordance with condition E-3 of this Certification.

E-5. **Compliance Inspections:** In accordance with applicable laws, the Applicant shall allow NHDES to inspect the Activity and affected surface waters to monitor compliance with the conditions of this Certification.

E-6. **Posting of Certification and Operation and Compliance Monitoring Plan:** A copy of this Certification and the approved Operation and Compliance Monitoring Plan (OCMP – see E-11) shall be prominently posted within the powerhouse within seven days of receiving written approval of the OCMP from NHDES.

E-7. **Transfer of Certification:** Should this Certification be transferred to a new owner, contact information for the new owner (including name, address, phone number and email) shall be provided to NHDES within 30 days of the transfer.

E-8. **Project Operation:** Unless otherwise allowed in the NHDES approved Operation Compliance Monitoring Plan (OCMP – see condition E-11 below) the Activity shall be operated as follows:

a. **Run-of-River Flow:** The Applicant shall operate the Activity in a run-of-river mode such that inflows equal outflows on an instantaneous basis. Run-of-river may be temporarily modified if required by operating emergencies beyond the control of the Applicant and for short periods upon mutual agreement with the NHDES, USFWS and NHFGD.

b. **Impoundment Water Level:** The Applicant shall strive to minimize fluctuations in the impoundment (i.e., pond) to the maximum extent practicable and shall not draw the water level in the impoundment down for the purpose of generating power. To minimize fluctuations, water level in the impoundments shall be automatically controlled (versus manual operation) to the maximum extent practicable. Water level fluctuations in the impoundment shall not exceed +/- 0.2 feet from the top of the flashboards (elevation 307.00 msl) when power is generated and inflow is no greater than the hydraulic capacity of the turbines (2,780 cfs). When inflow exceeds 2,780 cfs and inflow is passed through the turbines and waste gate to maintain a steady pond, the pond level shall be maintained within +/- 0.5 feet of the top of flashboards (elevation 307.00 msl). When inflow exceeds approximately 6000 cfs and flashboards are lowered to accommodate high inflows, the pond level shall be maintained within +/- 1.0 feet of elevation 307.00 msl.

c. **Impoundment Refill:** When refilling the impoundment after drawdown for maintenance or emergencies, the Applicant shall release 90 percent of the inflow downstream to the Pemigewassett River and utilize the remaining 10% of inflow to refill the impoundment. This refill procedure may be modified with prior approval of NHDES, USFWS and the NHFGD (see D-16).

d. **Drawdown Rates:** When drawing the water level in the impoundment down, the Applicant shall strive to achieve, to the extent practicable, a gradual drawdown rate of six (6) inches per day or less. Exceptions to the above may be allowed if required by operating emergencies beyond the control of the Applicant or for short periods upon approval by NHDES.

E-9. **Monitoring Requirements for Impoundment and Flow Management:** Unless otherwise allowed in the NHDES approved Operation Compliance Monitoring Plan (OCMP – see condition E-11 below) the Activity shall be comply with the following monitoring requirements for impoundment and flow management:

a. Records of operations, run-of-river flows and water levels shall be maintained electronically in a spreadsheet format and made available to NHDES upon request.

b. By April 1 of each year (beginning the first April after the FERC license renewal for the Activity becomes effective), the Applicant shall submit to NHDES a summary report for the previous calendar year with appropriate summary tables, graphs, text and supporting documentation that demonstrates compliance with (and, if applicable, any excursions of the project operation requirements specified in the OCMP (see condition E-11) regarding condition E-8 of this certification. Where excursions occurred, the summary shall indicate when the excursion occurred, the duration of the excursion and a description of corrective actions taken to prevent such excursions from reoccurring.

E-10. **Notification Requirements:** Unless otherwise allowed in the NHDES approved Operation Compliance Monitoring Plan (OCMP – see condition E-11 below) the Activity shall be comply with the following notification requirements:

a. If the Activity causes a deviation from run-of-river operational requirements specified in the OCMP (see condition E-11) the Applicant shall notify NHDES, NHFGD and USFWS as soon as possible, but no later than 24 hours after each such incident. The notification shall include, to the extent known, an explanation as to why the deviations occurred, a description of corrective actions taken, and how long it will take until operations will comply with the OCMP.

b. Within 45 days after each incident and after consultation with NHDES, NHFGD and USFWS, the Applicant shall submit a report to NHDES, NHFGD and USFWS that contains, to the extent possible, the cause, severity and duration of the incident, any observed or reported adverse environmental

impacts from the incident, pertinent data and a description of corrective measures.

E-11. **Operation Compliance Monitoring Plan (OCMP):**

a. Within six months of the effective date of the FERC license renewal for the Activity, the Applicant shall consult with NHDES, NHFGD and USFWS, and submit to NHDES, for approval, an operation compliance monitoring plan (OCMP) for the Activity. The Applicant shall then implement the approved plan.
b. The OCMP shall include, but is not limited to, the following:
    1) a detailed description of how the Activity will be operated under all conditions (i.e., under normal operating conditions as well as during low flow, high flow, maintenance and emergency conditions) to maintain compliance with the operation, monitoring and notification requirements in condition E-8, E-9 and E-10 of this Certification;
    2) a description of the mechanisms and structures (i.e., type, location and accuracy of all flow and impoundment elevation monitoring equipment and gages) to be used for maintaining compliance with operational requirements;
    3) procedures for maintaining and calibrating monitoring equipment;
    4) a description of the level of manual and automatic operation, and, where appropriate, an explanation why manual operations are not automated (e.g., the waste gate);
    5) rating curves and calculations for all methods of releasing flow downstream;
    6) a description of the accuracy of the elevations used to determine compliance with operation requirements and if they are based on as-built elevations;
    7) a description of the methods and frequency for reporting data to NHDES, NHFGD and USFWS;
    8) a description of the procedures for reporting deviations from the OCMP to NHDES; and
    9) an implementation schedule.

The Applicant shall consult with NHDES, NHFGD and USFWS, and receive NHDES approval of any proposed modifications to the OCMP. Any NHDES approved modifications to the OCMP shall be considered a part of this Certification. Proposed modifications shall not be implemented until approved by NHDES.

E-12. **Invasive Species Management and Monitoring Plan (ISMMP):**

a. Within six months of the effective date of the FERC license renewal for the Activity, the Applicant shall consult with NHDES, NHFGD and USFWS, and submit to NHDES, for approval, an invasive species monitoring and management plan (ISMMP) for the Activity. The Applicant shall then implement the approved plan.
b. The ISMMP shall include, but is not limited to, the following:

1) a description of invasive species monitoring methods and the frequency of monitoring;
2) a description of best management practices that will be used to reduce the spread of nuisance species found at the Activity;
3) a description of any criteria that will be used to determine when control measures are needed and a description of any control measures that the Applicant will implement to control nuisance species found at the project (i.e., manual pulling, chemical application, biological controls); and
4) a schedule for filing any monitoring reports with NHDES, USFWS and NHFGD for review.

c. The Applicant shall consult with NHDES, NHFGD and USFWS, and receive NHDES approval of any proposed modifications to the ISMMP. Any NHDES approved modifications to the ISMMP shall be considered a part of this Certification. Proposed modifications shall not be implemented until approved by NHDES.

E-13. **Water Quality Monitoring Plan (WQMP):**

a. Within six months of the effective date of the FERC license renewal for the Activity, the Applicant shall submit to NHDES, for approval, a water quality monitoring plan (WQMP) to determine if the Activity is causing or contributing to violations of state surface water quality regulations (Env-Wq 1700).
b. The WQMP shall include, but is not limited to, the following:
    1) collection of continuous (i.e., every 15 minutes) dissolved oxygen (concentration and percent saturation), water temperature and pH measurements using multi-parameter dataloggers from a site in the impoundment and a site downstream of the dam;
    2) deployment of dataloggers for at least 30 consecutive days in a summer that includes extended dry periods when river flow is approximately at the 7Q10 flow and water temperatures are approximately 25 degrees Celsius or greater (i.e., near worse case conditions);
    3) collection of two vertical profiles in the impoundment for dissolved oxygen and water temperature (in one foot increments from the surface to the bottom) on two days when continuous dataloggers are deployed and conditions are near worse case;
    4) collection of 4 grab samples (once a week for 4 weeks when the dataloggers are deployed) in the impoundment for total phosphorus and chlorophyll-a;
    5) quality assurance/ quality control provisions;
    6) the longitudinal and latitudinal coordinates of each monitoring location as well as photographs and a map showing each location;
    7) submittal of all data electronically to NHDES and in a form that can be automatically uploaded into the NHDES Environmental Monitoring Database (EMD)[9]; and

[9] Information on how to upload data into the EMD can be found at

8) submittal of a report to NHDES summarizing the results, with appropriate text, tables and graphs, by January 31st of the year after monitoring was conducted.

c. Monitoring shall commence in accordance with the NHDES approved WQMP the first summer that meets the conditions of b.2) above;

d. If results indicate the potential for water quality violations with relatively little change in water quality (i.e., water quality standards have been marginally met), DES may require additional sampling no sooner than five years after the previous sampling was conducted.

e. If results indicate that the Activity is causing or contributing to violations of surface water quality standards, NHDES may require implementation of mitigation measures and additional monitoring to confirm that mitigation measures have resulted in attainment of surface water quality standards.

f. The Applicant shall consult with NHDES and receive NHDES approval of any proposed modifications to the WQMP. Any NHDES approved modifications to the WQMP shall be considered a part of this Certification. Proposed modifications shall not be implemented until approved by NHDES.

E-14. **Fish Passage.** The Applicant shall comply with the "Preliminary Prescription for Fishway" in the U.S. Department of Interior's June 22, 2016 letter to FERC (see 0), and any amendments. Any amendments shall be considered a part of this Certification.

E-15. **NHDES Water Use Registration and Reporting:** The Applicant shall register, measure, and report all withdrawals and discharges with the NHDES Water Use Registration and Reporting program in accordance with RSA 488:3 and its supporting regulations, Env-Wq 2102.

F. APPEAL

Any person aggrieved by this decision may appeal to the N.H. Water Council ("Council") by filing an appeal that meets the requirements specified in RSA 21-O:14 and the rules adopted by the Council, Env-WC 100-200. The appeal must be filed directly with the Council within 30 days of the date of this decision and must set forth fully every ground upon which it is claimed that the decision complained of is unlawful or unreasonable. Only those grounds set forth in the notice of appeal can be considered by the Council.

Information about the Council, including a link to the Council's rules, is available at http://nhec.nh.gov/ (or more directly at http://nhec.nh.gov/water/index.htm). Copies of the rules also are available from the NHDES Public Information Center at (603) 271-2975.

If you have questions regarding this Certification, please contact Owen David at (603) 271-0699 or Owen.David@des.nh.gov

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http://des.nh.gov/organization/divisions/water/wmb/emd/ .

Eugene J. Forbes, P.E.
Director, NHDES Water Division

cc: Melissa Grader, USFWS
John Warner, USFWS
Carol Henderson, NHFGD
Ken Merrifield, Mayor City of Franklin, NH
Katie Ambrose, Town Administrator, Sanbornton, NH
Board of Selectman or Shelly Henry, Town Clerk , Hill, NH
Barbara Lucas, Town Administrator New Hampton, NH
FERC, e-file (final WQC only)