**New Hampshire Department of Environmental Services**
**WATER QUALITY CERTIFICATION**
**In Fulfillment of RSA 485-A:12, III**

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| **Certification Number** | WQC 2022-FERC-001 |
| **Activity Name** | Errol Hydroelectric Project (FERC Project No. 3133) |
| **Activity Location** | Errol, New Hampshire (Coös County) |
| **Potentially Affected Surface Waters Near the Activity (other affected surface waters may exist)** | Umbagog Lake (NHLAK400010602-04, Class B)<br>Androscoggin River:<br>Riverine section downstream of the Project impoundment (NHRIV400010602-03, Class B; NHRIV400010602-04; Class B) |
| **Owner/Applicant** | Brookfield White Pine Hydro, LLC and Errol Hydro Co., LLC |
| **Agent Filing Application on Behalf of Owner/Applicant** | Randall Dorman, Licensing Manager<br>Brookfield Renewable<br>150 Main Street<br>Lewiston, ME 04240 |
| **Applicable Federal License or Permit Requiring Section 401 Water Quality Certification** | Federal Energy Regulatory Commission - Subsequent License for Major Project Less Than 5 Megawatts |
| **Receipt Date of Certification Request and Reasonable Period of Time** | June 1, 2022; One-year Reasonable Period of Time established by FERC |
| **Decision** | Granted with Conditions |
| **Date of Issuance** | Signature Date |

## A. INTRODUCTION

Brookfield White Pine Hydro, LLC and Errol Hydro Co., LLC (the Applicant) has applied for a license from the Federal Energy Regulatory Commission (FERC) to continue the operation and maintenance of the Errol Hydroelectric Project (Project) located on the Androscoggin River and Umbagog Lake in the Town of Errol and townships of Cambridge and Wentworths Location, Coös County, New Hampshire and the towns of Magalloway Plantation and Upton, Oxford County, Maine. The Project has a total installed power generating capacity of 2.031 megawatts (MW). The Project generates electricity, and the Applicant sells the electricity to the power grid. A more complete description of the Project is provided in section C. PROJECT DESCRIPTION of this certification.

In accordance with 33 U.S. Code § 1341 (Section 401 of the federal Clean Water Act [CWA]), federal regulations promulgated under the CWA at Title 40 Code of Federal Regulations (CFR) Part 121, and New Hampshire law under New Hampshire Revised Statutes Annotated (RSA) 485-A:12, III, the Applicant submitted an Application for Water Quality Certification, which included a certification request, to the New Hampshire Department of Environmental Services (NHDES) for a FERC license for the Project, on June 1, 2022 (the Application). The purpose of the certification is to provide a reasonable assurance that discharges into surface waters of the state and waters of the United States, hereinafter collectively referred to as “surface waters”, from the proposed Project will comply with applicable water quality

requirements, including New Hampshire surface water quality standards that are specified under RSA 485-A:8 and New Hampshire Code of Administrative Rules Env-Wq 1700 (Surface Water Quality Standards) to comply with 33 U.S. Code § 1313 (section 303 of the CWA), effluent limitations and other limitations, under section 301 or 302 of the CWA, standards of performance under section 306 of the CWA, or prohibition, effluent standard, or pretreatment standard under section 307 of the CWA, and with any other appropriate requirement of State law (Provisions of the CWA). Of the Provisions of the CWA, section 303 of the CWA is the most applicable provision for the Project.

## B. DECISION

Based on a review of the Application, and subject to conditions included herein, NHDES has determined that there is reasonable assurance that discharges from operation of the proposed Project will comply with applicable water quality requirements, including New Hampshire Surface Water Quality Standards and Provisions of the CWA. NHDES hereby grants this certification in accordance with RSA 485-A:12, III, subject to the conditions in Section E. CERTIFICATION CONDITIONS of this certification.

## C. PROJECT DESCRIPTION

C-1. In Table 1-1 of the Final License Application (FLA) for the Project that the Applicant filed with FERC on July 30, 2021,[1] which the Applicant attached to the Application, the Applicant provided the following information about the Project, among other information:

| **Impoundment** | |
|---|---|
| Defined as the approximate 3-mile stretch of the Androscoggin River above Errol Dam, Umbagog Lake up to an elevation (El.) of 1247 feet (ft) National Geodetic Vertical Datum of 1929 (NGVD29)[2], and the Magalloway River approximately 4.3 miles upstream of its confluence with Umbagog Lake. | |
| Normal Full Pond Elevation | Elevation (El.) 1247 feet (ft) |
| Seasonal Drawdown | 5-7 ft from El. 1247 ft |
| Normal Maximum Powerhouse Tailwater El. | El. 1231 ft |
| Length of shoreline (excluding islands) | ~ 88 miles |
| Gross Storage between El. 1232 ft (the lowest gate sill elevation) and El. 1247 ft | 89,568 acre-ft |
| Net Storage between El. 1240 ft and El. 1247 ft | 54,272 acre-ft |
| Surface Area at El. 1247 ft | 9,098 acres |

[1] FERC Document Accession Number 20210730-5069.
[2] All elevations referenced in this certification are based on the National Geodetic Vertical Datum of 1929 reference elevation.

| Dam | |
|---|---|
| Rock-filled timber and concrete piers supporting 5 sluice gates and 6 deep gates, and an earthen dike with a sheet steel cut-off wall on the upstream side, extending approximately 50 feet from the end of the gated section of the dam to the northwestern powerhouse wall then extending another approximately 70 feet from the southeastern powerhouse wall to the eastern embankment. | |
| Top of Dike El. | 1252 ft |
| Total Length and Height | 432.5 ft long and 25 ft high. |
| Gated Section Length | 202.5 ft |
| Gates | Sluice Gates separated by Rock-filled Timber or Concrete Crib Piers:<br>Gate 1: 14'-9" wide x 12'-4" high<br>Gate 2: 15'-2" wide x 12'-4" high<br>Gate 3: 15'-2" wide x 11'-2" high<br>Gate 4: 15'-4" wide x 11'-9" high<br>Gate 5: 16'-1" wide x 12'-7" high<br>Deep Gates separated by Steel Beams:<br>Gates 6-11: 10'-6.625" wide x 15' high |
| Sluice Gate Sill Elevations<br>(Gates 1-5) | Gates 1-3: El. 1236.1 ft<br>Gate 4: El. 1236.0 ft<br>Gate 5: El. 1235.3 ft |
| Deep Gate Sill Elevations<br>(Gates 6-11) | Gates 6-11: El. 1232 ft |
| Maximum Discharge Capacity | 16,400 cubic feet per second (cfs) |

| Powerhouse | |
|---|---|
| No. of Turbines / Generator Units | 1 unit |
| Turbine Type | Horizontal double-regulated Kaplan bulb turbine |
| FERC Total Authorized Installed Capacity | 2,031-kilowatt (kW)[3] |
| Average Annual Generation (2011-2019) | 15,944 megawatt hours (MWh) per year |
| Typical Turbine Operating Range | 522-2,600 cfs[4] |
| Trash rack Top Elevation<br>Trash rack Sill Elevation<br>Trash rack Width<br>Trash rack Gross Opening<br>Trash rack Clear Bar Spacing | El. 1236.08 ft<br>El. 1208.50 ft<br>28 feet wide<br>772.2 $ft^2$<br>4 inches |

[3] Although the turbine nameplate is 3,144 kW at a rated head of 15.75 ft, the FERC authorized installed capacity is based upon a New Hampshire Public Utilities Commission audit, which field tested and rated the Errol facility as 2,031 kW on January 26, 1987.

[4] The turbine can technically operate as low as 522 cfs, but the normal low hydraulic capacity is 900 cfs.

The Project does not bypass the Androscoggin River below the Errol Dam (i.e., the Project does not result in a bypass reach).

C-2. In section 2.2.2 of Exhibit A of the FLA, the Applicant provided the following description of the existing operations of the Project:

> "The Project is operated in accordance with the terms of the current FERC license, the 1909 agreement between Union Water Power Company (UWPC) and downstream paper and power companies (1909 Agreement), the 1983 Androscoggin River Headwaters Agreement (1983 Headwaters Agreement), and the 1998 Water Level Management Plan for Nesting Common Loons (1998 Plan). The 1909 Agreement, which was refreshed by the 1983 Headwaters Agreement, requires the Project, in combination with other upstream reservoirs, to target providing at least 1,550 cubic feet per second (cfs) on the Androscoggin River in downstream Berlin, NH (as measured at the Gorham, NH United States Geological Survey (USGS) gage (USGS Gage No. 01054000). The primary purpose of the 1983 Headwaters Agreement is to ensure the 1909 Agreement is met and to require hydroelectric generators who benefit from the flow regulation to reimburse the water storage reservoir owner's annual operations and maintenance costs. The 1998 Plan establishes protocols to be followed during the critical waterfowl nesting period […].
>
> […T]he Project contains a single turbine/generator unit with an operating range of 900 to 2,600 cfs, although the unit can technically operate as low as 522 cfs […]. The Project is automated and modifications to the turbine discharge can be conducted remotely. The Project is not operated as a peaking facility, rather discharges are relatively steady and are based on striving to meet the target flow of 1,550 cfs on the Androscoggin River in Berlin, NH.
>
> The only times when the turbine would be inoperable is due to unexpected outages, scheduled outages, or when the river drops below the minimum turbine flow capacity (i.e., 900 cfs). The Project is required to discharge a continuous minimum flow of 522 cfs, or inflow, whichever is less, below the Project. Per Article 28 of the current license, the minimum flow may be temporarily modified if required by operating emergencies beyond the control of the Licensee [i.e., the Applicant] and for short periods for fishery management purposes upon mutual agreement between the Licensee and the New Hampshire Fish and Game Department (NHFGD).
>
> The minimum flow of 522 cfs, which is equivalent to 0.50 cubic feet per second per square mile (cfs/$mi^2$), is conveyed to the Project tailrace as flow through the powerhouse, through the gated section of the dam, or some combination of both. Outflows more than the hydraulic capacity of the unit are passed through the gated section of the dam. If the single unit were to trip and go offline, the Project's three deep gates open automatically to spill enough water to maintain the minimum flow requirements. Typically, the gates open enough to maintain the same turbine discharge prior to the outage.
>
> Most of the time the Errol Dam discharge is much greater than the 522 cfs minimum flow due to trying to maintain a target flow of 1,550 cfs on the Androscoggin River as measured at the Gorham USGS Gage. […. T]he average annual discharge from Errol Dam, as measured at the

USGS Gage on the Androscoggin River 0.4 miles downstream of Errol Dam, is 2,166 cfs for the period January 1, 1987 to December 31, 2019. In addition, the Project discharge exceeds the turbine capacity of 2,600 cfs approximately 20% of the time annually.

Umbagog Lake is operated as a seasonal storage reservoir, meaning that water elevations are slowly drawn down in the fall/winter and refilled in the spring. The typical winter drawdown of Umbagog Lake is approximately 5 feet (ft) below elevation (El) 1247 ft but could be as much as 7 ft depending on the amount of snowpack. The normal full pond is El. 1247 ft, while the normal low pond is El. 1240 ft. […]

The 1998 Plan was intended to improve conditions for loons throughout their summer nesting season and was developed through years of adaptive consultation with applicable stakeholders in accordance with Article 27 of the current license. The 1998 Plan establishes protocols to be followed during the critical waterfowl nesting period. Spring runoff typically refills the lake levels above El. 1246 ft in late April. The plan indicates that the water level on June 1st should be at or below El. 1246 ft and should be maintained at the June 1st level (as constant as possible) until 75% of the territorial loon pairs have established their nests, or no later than June 20. Once nests have been established, or no later than June 20, Umbagog Lake is to be drawn down 0.5 feet over the course of no less than one week and held at the drawn down level (as constant as possible) until 75% of the nests have hatched. Once 75% of the nests have hatched, the restrictions on Umbagog Lake water levels are lifted. The plan assumes that 75% of the nests will be established no later than June 20, and that 75% of the nests will have hatched by July 20 […]."

C-3. In section 2.2.3 of Exhibit A of the FLA, the Applicant provided the following description of water level management for the proposed Project operations:

"*May 15 to September 30- Target Water Levels*

The Licensee shall strive to manage Umbagog Lake levels, as measured at the Errol Dam, to +/- 0.25 ft of the target elevations shown in Figure 2.2.3-1 from May 15 to September 30 to the best of its ability recognizing natural variations in rainfall and runoff will result in not being able to exactly match the daily target elevations at all times. The +/- 0.25 feet of the target elevation shall be defined as the buffer zone elevation. The goal of maintaining water levels within the buffer zone is to provide high quality nesting habitat for wildlife and an abundant food supply for migratory shorebirds and waterfowl in the fall. Figure 2.2.3-1 shows the target water level at El. 1244.5 ft from August 1 to September 1, then reducing gradually over approximately a week to El 1244.0 ft. Although the target is El. 1244.5 ft on September 1, in practice, the target elevation shall be tied to Labor Day (which can vary from September 1 to September 7 depending on the year). Thus, the water level shall remain at El. 1244.5 ft any time between September 1 and 7, depending on the year. From Labor Day, the Licensee shall draw down to El. 1244 ft over approximately a week.

There will be times when water levels will rise above the buffer zone elevation (typically due to high precipitation events) or drop below the buffer zone elevation to maintain downstream target flow needs (typically during dry conditions). The Licensee has established actions to be

taken when the water level exceeds or drops below the buffer zone elevation such that the water level is returned to within the buffer zone elevation in a reasonable time frame. The Licensee shall take additional measures if the water level exceeds the buffer zone elevation but is below an Upper Operating Band as described below. Similarly, the Licensee shall take additional measures if the water level drops below a Lower Operating Band as described below.

**Upper Operating Band**

From May 15 to July 31, an Upper Operating Band shall be established as shown in Figure 2.2.3-1. If water levels rise above the buffer zone elevation, the Licensee shall increase the Errol Project discharge or decrease the regulated inflow with the purpose of returning water levels back to the buffer zone elevation provided that the increase in discharge does not contribute to downstream flooding conditions. If the water level continues to increase, but remains below the Upper Operating Band, the Licensee shall further increase the Errol project discharge or decrease the regulated inflow with the same purpose of returning water levels back to the buffer zone elevation.

**Lower Operating Band**

From June 1 to July 31, a Lower Operating Band shall be established as shown in Figure 2.2.3-1. The Licensee shall manage the Errol Project, in combination with other upstream reservoirs (Upper Dam, Middle Dam, and Aziscohos Dam), to target a flow of at least 1,550 cfs on the Androscoggin River at Gorham, NH (as measured at the Gorham USGS Gage No. 01054000) per the 1983 Headwaters Agreement. Water levels may drop below the target elevation to maintain the target flow of 1,550 cfs at the Gorham USGS Gage down to the Lower Operating Band.

If water levels drop below the buffer zone elevation, the Licensee shall reduce the Errol Project discharge or increase the regulated inflow with the purpose of returning water levels back to the buffer zone elevation. If the water level continues to decrease, but remain above the Lower Operating Band, the Licensee shall further decrease the Errol project discharge or increase the regulated inflow with the same purpose of returning water levels back to the buffer zone elevation.

*October 1 to Spring Refill- Target Water Levels*

From October 1 until the spring refill, the Licensee shall manage the Project water levels for the purposes of reducing downstream flood flows and optimizing downstream hydropower generation the Project water levels within its FERC licensed allowable operating range of El. 1240 ft to El. 1247 ft and shall continue its long-standing practice of winter drawdown and spring refill.

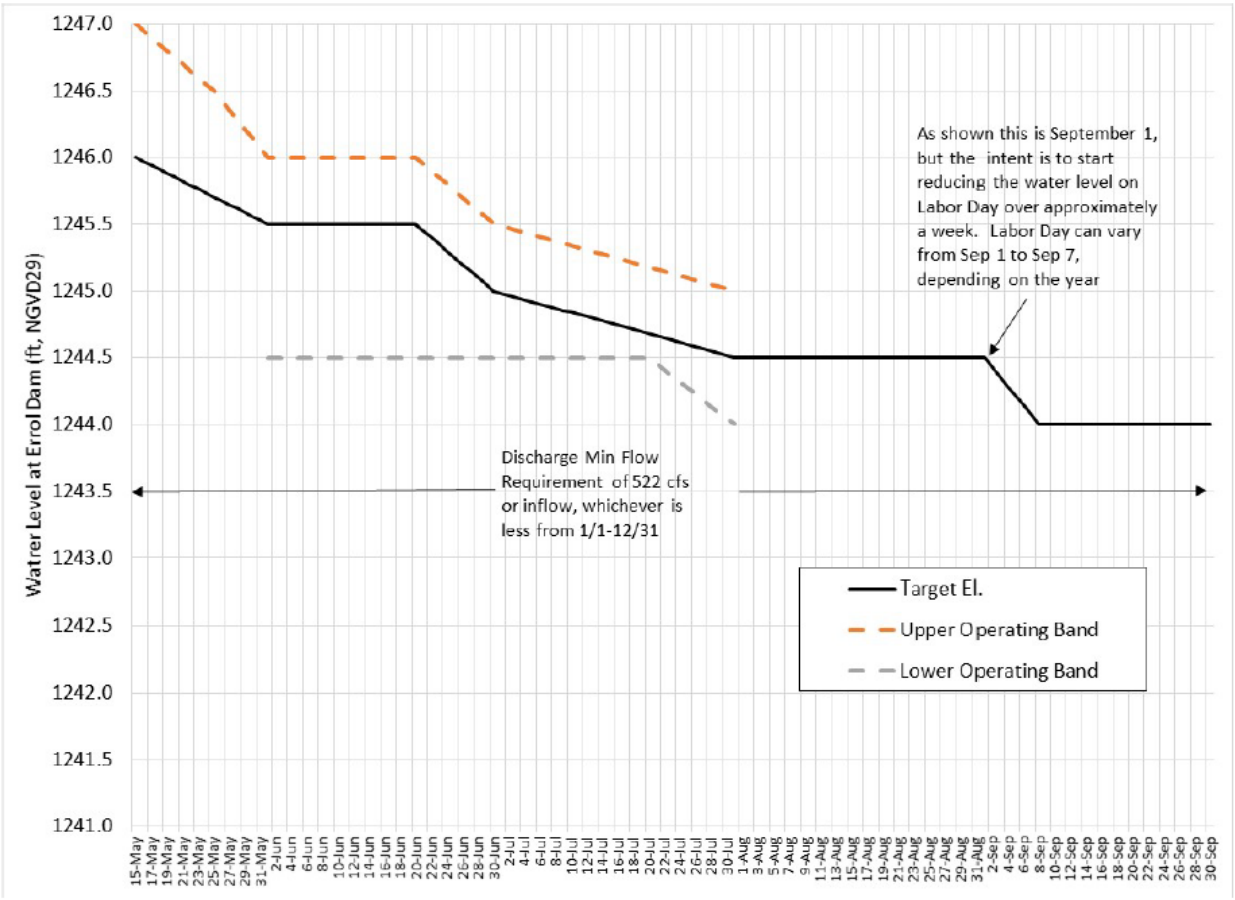
**Minimum Flows**

The Licensee shall maintain a year-round minimum flow of 522 cfs, or inflow, whichever is less, below the Errol Project powerhouse, which is integral to the Errol Dam. The minimum flow may

be temporarily modified if required by operating emergencies beyond the control of the Licensee and for short periods for fishery management purposes upon mutual agreement between the Licensee and the New Hampshire Fish and Game Department (NHFGD)"

A copy of Figure 2.2.3-1 from the FLA is provided below:

**Figure 2.2.3-1. Proposed Target Water Elevations, Upper and Lower Operating Bands 5/15-9/30**




C-4. In Section 3.2.1 of Exhibit E of the FLA, the Applicant provided the following description of the Project's impacts on water quantity:

"The Errol Dam has been operated as a seasonal storage reservoir following the same general temporal operating pattern for over 100 years. Environmental resources present in the Project area, including wetlands and terrestrial resources, have become established over the past 100 years under the same general reservoir water level operating regime – winter drawdown, spring refill, seasonal variability throughout the summer and fall. Although the impoundment water level is drawn down in late winter, such a draw down occurs gradually over the course of 25-30 days. Review of available water level data for the period 1998-2019 indicates that beginning in early March, the impoundment is drawn down, on average, approximately two (2) feet over 25-30 days, equating to an approximate drawdown rate of 1 inch/day. In late March/early April the

> water level rises gradually over the course of approximately 30 days due to runoff and refill. The Licensee is proposing to maintain these operations under the new license.
>
> Proposed water level management changes between May 15 and September 30 will result in slightly lower water levels than those observed during the same period under baseline conditions […]. During this period, the reservoir will still be operated within a relatively tight band with intra-daily or day-to-day fluctuations still expected to be insignificant (other than during naturally occurring high flow events or from substantial changes to the inflow from the upper reservoirs). Proposed modifications to the impoundment water level management regime between May 15 and September 30 were developed in consultation with the USFWS to support and enhance various natural resources found throughout the Project area."

## D. DISCHARGES

Potential and proposed discharges to surface waters from the Project include discharges of various water quantities to the Project's impoundment, including Umbagog Lake, and to the Androscoggin River upstream and downstream of the Project's dam, which affect flow of the Androscoggin River and water surface elevation levels of Umbagog Lake.

## E. CERTIFICATION CONDITIONS

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

1. **Compliance with Surface Water Quality Standards:** The Applicant shall ensure that the discharges from the Project will maintain and protect Surface Water Quality Standards of surface waters that are affected by the Project, including the chemical, physical, and biological integrity of those surface waters, to achieve the purposes of the legislative classification of those surface waters.

    a. This condition is necessary to assure that the discharges from the Project will comply with the Surface Water Quality Standards because those standards apply to all surface waters of the state and any person who undertakes any activity that affects the beneficial uses or the water quality of surface waters. Those standards require, among other things, that all surface waters 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; provide for the protection of designated uses; and maintain surface water quantity at levels that protect existing and designated uses.

    b. Citations that authorize this condition: section 401 of the CWA; RSA 485-A:8; RSA 485-A:12, III; and Chapter Env-Wq 1700.

2. **Proposed Modifications to the Project:** The Applicant shall consult with and receive prior written approval from NHDES regarding any proposed modifications to the Project, including any modifications to the operation of the Project that could have a significant or material effect on discharges to surface waters from the Project.

    a. This condition is necessary to assure that the discharges from the Project, with any proposed

modifications, would comply with the Surface Water Quality Standards. This certification is based on the Project's proposed operation as described in the Application and the Applicant's request for certification for the Project, as modified by conditions of this certification. Additional, proposed modifications to the Project may require amendment of the associated FERC license, a new or additional water quality certification, or compliance with New Hampshire's antidegradation requirements of the Surface Water Quality Standards before the modifications are implemented. Therefore, the Applicant must notify NHDES of proposed modifications to Project so that NHDES can determine the applicability of certain laws and rules implemented by NHDES.

b. Citations that authorize this condition: section 401 of the CWA; 40 CFR § 121.1; RSA 485-A:12, III; and Env-Wq 1708.

3. **Compliance Inspections:** The Applicant shall allow NHDES to inspect the Project and have access to inspect any records and monitoring equipment at reasonable times to determine compliance with the conditions of this certification.

   a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because NHDES' inspections would help ensure compliance with and enforcement of the conditions of this certification.

   b. Citations that authorize this condition: section 401(a)(4) of the CWA; 40 CFR § 121.11(a); RSA 485-A:12, III; and RSA 485-A:18.

4. **Submittal of Information**: The Applicant shall provide to NHDES such information pertaining to discharges into surface waters of the Project upon written request of the NHDES within 5 days of the request or other time period mutually agreeable to the Applicant and NHDES.

   a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because NHDES' evaluation of the requested information would help ensure compliance with and enforcement of conditions of this certification.

   b. Citations that authorize this condition: section 401 of the CWA; RSA 485-A:12, III; and RSA 485-A:18.

5. **Transfer of Certification:** If the Applicant plans to transfer or consolidate responsibility of the Project to another person (i.e., any municipality, governmental subdivision, public or private corporation, individual, partnership, or other entity), the Applicant shall provide the contact information of the new person, including the name, mailing address, phone number, and email address of the person, in writing to NHDES prior to the transfer.

   a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because NHDES and other persons must be able to know who is responsible for the Project, and so NHDES may appropriately target inspection and enforcement of certification conditions, as necessary, to ensure compliance

with and enforcement of conditions of this certification.

b. Citations that authorize this condition: section 401 of the CWA; RSA 485-A:12, III; and RSA 485-A:18.

6. **NHDES Water Use Registration and Reporting:** The Applicant shall measure all withdrawals and discharges of the Project and report them to the NHDES Water Use Registration and Reporting Program, in accordance with RSA 488:3, and the New Hampshire Code of Administrative Rules Env-Wq 2102 – Water Use Registration and Reporting.

   a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because water use data is necessary to understand the effects of cumulative uses, transfers, discharges, and consumptive water losses in aquifers and watersheds in the state. Water use data is also necessary for verifying compliance with Surface Water Quality Standards related to quantity of surface waters.

   b. Citations that authorize this condition: section 401(a) of the CWA; RSA 485-A:12, III; RSA 488; Env-Wq 2102; Env-Wq 1703.01(d); Env-Wq 1705.01(a); and Env-Wq 1708.09(a).

7. **NHDES Water Conservation**: The Applicant shall either comply with the rules for water conservation under New Hampshire Code of Administrative Rules Env-Wq 2101 – Water Conservation, which NHDES adopted in accordance with RSA 485:61, that are relevant to the Project, or hold a waiver to those rules from NHDES.

   a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because the water conservation requirements 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, including existing uses, designated uses, and best management practices specified under the Surface Water Quality Standards.

   b. Citations that authorize this condition: section 401(a) of the CWA; RSA 485-A:12, III; RSA 485:61; and Env-Wq 2101.

8. **Flow / Impoundment Management:** The Applicant shall operate the Project in accordance with the following requirements, which may be temporarily modified if required by operating emergencies beyond the control of the Applicant, such as flooding or drought, and as specified in a flow and impoundment compliance monitoring plan required in Condition 10 of this certification. The Applicant shall determine surface water flows and elevation levels based on measurement data that is collected no less frequently than hourly.

   This certification does not require the Applicant to comply with the following requirements during an “emergency condition”, which is defined under Env-Wr 101.15 as: “(a) A situation has arisen at a dam which could jeopardize the integrity of the dam; or (b) Failure of the dam is imminent or has occurred.”

i. **Downstream Minimum Flow:** The Applicant shall discharge continuous minimum flow of no less than 522 cfs, or inflow to the Project, whichever is less, to the Androscoggin River downstream of the Project's Dam as flow through the powerhouse, through the gated section of the dam, or some combination of both. This condition may be temporarily modified for fishery management purposes upon mutual agreement between NHDES, NHFGD, USFWS, FERC, and the Applicant.

ii. **Impoundment Water Elevation Level:** The Applicant shall operate the Project so that the impoundment elevation level of the Project and surface water elevation level of Umbagog Lake, as measured at the dam of the Project using the NGVD29 reference datum and based on a daily average, is managed as described in section 2.2.3 of Exhibit A of the FLA, depicted in Figure 2.2.3-1 of the FLA, as modified by NHDES below.

(1) From May 15 to September 30, the Applicant shall strive to manage the impoundment surface water elevation to within 0.25 feet above or below the following target elevations (Buffer Zone Elevations), provided that Project discharges do not contribute to downstream flooding conditions, by using the Applicant's established actions:

(a) From May 15th to June 1st, an elevation of 1,246.00 feet at the start of May 15th that is gradually lowered to an elevation of 1,245.50 feet by the end of June 1st;

(b) From June 2nd to end of June 19th, an elevation of 1,245.50 feet;

(c) From June 20th to June 30th, an elevation of 1,245.50 feet at the start of June 20th that is gradually lowered to an elevation of 1,245.00 feet by the end of June 30th;

(d) From July 1st to July 31st, an elevation of 1,245.00 feet at the start of July 1st that is gradually lowered to an elevation of 1,244.50 feet by the end of July 31st;

(e) From August 1st to the day before the first Monday in September (i.e., Labor Day in the United States), an elevation of 1,244.50 feet;

(f) From the first Monday in September (i.e., Labor Day in the United States) to the following Sunday in September (i.e., one week after Labor Day in the United States), an elevation of 1,244.50 feet that is gradually lowered to an elevation of 1,244.00 feet by the end of the end of the following Sunday in September; and

(g) From the second Monday in September to September 30th, an elevation of 1,244.00 feet.

(2) From May 15th to July 31st, the Applicant shall manage the impoundment surface water elevation so that the elevation is at or below the following upper operating band (Upper Operating Band) by increasing discharges downstream of the Project dam, provided that Project discharges do not contribute to downstream flooding

conditions, or decreasing inflow into the Impoundment of the Project:

(a) From May 15th to June 1st, an elevation of 1,247.00 feet at the start of May 15th that is gradually lowered to an elevation of 1,246.00 feet by the end of June 1st;

(b) From June 2nd to end of June 19th, an elevation of 1246.00 feet;

(c) From June 20th to June 30th, an elevation of 1,246.00 feet at the start of June 20th that is gradually lowered to an elevation of 1,245.50 feet by the end of June 30th; and

(d) From July 1st to July 31st, an elevation of 1,245.50 feet at the start of July 1st that is gradually lowered to an elevation of 1,245.00 feet by the end of July 31st.

(3) From May 15th to July 31st, the Applicant shall strive to manage the impoundment surface water elevation so that the elevation is at or above the following lower operating band (Lower Operating Band) by decreasing discharges downstream of the Project dam, notwithstanding minimum flows required under Condition 8.i. of this certification, or decreasing inflow into the impoundment of the Project:

(a) From June 1st to July 20th, an elevation of 1,244.50 feet; and

(b) From July 21st to July 31st, an elevation of 1,244.50 feet at the start of July 21st that is gradually lowered to an elevation of 1,244.00 feet by the end of July 31st.

(4) From October 1st to May 14th, the Applicant shall, in addition to the management purposes described in the FLA for October 1st to spring refill, strive to manage the impoundment surface water elevation to be able to achieve the elevations and elevation ranges during the applicable time periods that are described in Condition 8.ii.(1), 8.ii.(2), and 8.ii.(3) of this certification.

iii. **Impoundment Drawdown Procedure for Scheduled Maintenance or Repairs:** When drawing the water level in the impoundment down for scheduled maintenance or repairs, the Applicant shall lower the impoundment water level no more than six inches per 24-hour period. This drawdown procedure may be modified upon mutual agreement between NHDES and NHFGD.

a. These conditions are necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because minimum flows downstream of the Project' dam and management of the surface water elevation level of Umbagaog Lake will maintain and protect existing uses and designated uses of the Androscoggin River and Umbagog Lake.

Designated uses of surface waters, both upstream and downstream of the Project, that are impacted by the Project include the following:

- Aquatic life integrity, meaning the surface water must support aquatic life, including a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of the region. Examples of aquatic life integrity that may be impacted by the Project include wetland vegetation and habitat for loons and other birds; benthic macroinvertebrates; odonates; mammals; bats; fish; mussels; reptiles; and amphibians.

- Wildlife, meaning the surface water can provide habitat capable of supporting any life stage or activity of undomesticated fauna on a regular or periodic basis. Examples of wildlife that may be impacted by the Project include loons and other birds; benthic macroinvertebrates; odonates; mammals; bats; fish; mussels; reptiles; and amphibians.

- Swimming and other recreation in and on the water, meaning the surface water must be suitable for swimming, wading, boating of all types, fishing, and similar activities. Examples of recreation that may be impacted by the Project include fishing; hunting; boating; swimming; and waterfront camping.

Existing uses of surface waters, both upstream and downstream of the Project, that are impacted by the Project include, but are not limited to, the following: residences; marinas; hydropower; flood storage and control; withdrawals for industry; and withdrawals for drinking water.

These conditions will restore and protect the designated uses and existing uses in and on surface waters impacted by the Project, and maintain the chemical, physical, and biological integrity of those surface waters. These requirements will 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 the region; and ensure that existing uses and designated uses, and the water quality needed to maintain and protected those uses, are not eliminated.

The downstream minimum flow condition will maintain and protect aquatic life integrity and wildlife downstream of the Project dam by providing sufficient surface water flow and volume.

The impoundment water level conditions will maintain and protect aquatic life integrity, wildlife, and recreation upstream of the Project dam by promoting successful nesting of waterfowl, including loons; providing improved emergent vegetation growth and expanded foraging conditions; levels need to protect aquatic life integrity and wildlife; levels needed to maintain and protect recreation uses, such as safe dock placement; levels to maintain and protect existing uses of lakefront property owners, business owners, a national wildlife refuge and state park. Based on historical data provided in the FLA for Androscoggin River flows and surface water elevation levels of Umbagog Lake, the impoundment water level conditions will have minimal impacts on downstream existing and designated uses and, therefore, will also maintain and protect uses of hydropower, flood storage and control, drinking water, and industry.

b. Citations that authorize this condition: section 401 of the CWA; RSA 485-A:8; RSA 485-A:12, III; Env-Wq 1703.01; Env-Wq 1703.19; Env-Wq 1705.01(a); and Env-Wq 1708.03(a).

9. **Flow / Impoundment – Notification and Reporting:** The Applicant shall comply with the notification and reporting requirements specified in items 9.i through 9.iii, below.

i. If the Applicant fails to maintain Surface Water Quality Standards as specified in Condition 1 of this certification, or the Project causes a deviation of the following items, as specified in Condition 8 of this certification, the Applicant shall notify NHDES and NHFGD of the deviation by telephone or email within 24 hours after discovery of the deviation: the downstream minimum flow at any time; the Buffer Zone Elevations by more than 72 consecutive hours from May 15th to September 30th; the Upper Operating Band from May 15th to July 31st; the Lowering Operating Band from June 1st to July 31st; or the impoundment drawdown and management procedures at any time. The Applicant shall include the following information in the notification, to the extent known: a description of the deviation; the probable cause of the deviation; any corrective actions taken or will be taken to address the deviation; and how long it will take until the deviation is corrected.

ii. On the 15th of each month from June to October, the Applicant shall submit to NHDES, NHFGD, and the USFWS Umbagog National Wildlife Refuge Manager, and file with FERC, a written report that describes whether any deviation(s) that require notification under Condition 9.i. occurred during the prior month. The written reports shall include the following information, to the extent possible, for such deviation(s): a description of the deviation, including relevant data; the date and time of discovery of the deviation; the actual date and time of the deviation; the duration of the deviation; if the deviation is still ongoing, how long it will take until the deviation is corrected; the probable cause of the deviation; any corrective actions taken or will be taken to address the deviation; preventative actions or measures take to prevent future deviations; and any observed or reported adverse impacts to Surface Water Quality Standards that resulted from the deviation, including impacts to existing and designated uses upstream and downstream of the Project's dam.

iii. On the 15th of each month from November to May, if any deviation(s) that require notification under Condition 9.i. occurred during the prior month, then the Applicant shall submit to NHDES, NHFGD, and the USFWS Umbagog National Wildlife Refuge Manager, and file with FERC, a written report of such deviation(s) that includes the information required under Condition 9.ii.

iv. By March 1st of each year (beginning the first March after the date the FERC license is reissued), the Applicant shall submit to NHDES, NHFGD, and the USFWS Umbagog National Wildlife Refuge Manager, and file with FERC, a summary report for the previous calendar year with appropriate tables, graphs, text and supporting documentation that demonstrates compliance with the flow and impoundment management requirements in Condition 8. Where deviations that require notification to NHDES and NHFGD under Condition 9.i. occurred, the summary shall indicate when

the deviation occurred, the duration of the deviation, and a description of corrective actions taken to prevent such deviations from reoccurring.

a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because reporting compliance or deviations of requirements of Condition 8 will allow NHDES and other persons to know whether the Applicant is complying with certain flow and impoundment management requirements that ensure compliance with Surface Water Quality Standards. If the reports identify noncompliance with Surface Water Quality Standards, NHDES and other persons may respond to help ensure compliance with Surface Water Quality Standards, mitigate unauthorized degradation of surface water quality, or restore and maintain the chemical, physical, and biological integrity of surface waters through enforcement or other mechanisms.

b. Citations that authorize this condition: section 401 of the CWA; RSA 485-A:8; RSA 485-A:12, III; RSA 485-A:18; Env-Wq 1703.01; Env-Wq 1703.19; Env-Wq 1705.01(a); and Env-Wq 1708.03(a).

10. **Flow / Impoundment – Compliance Monitoring Plan (FICMP):** Within 120 days of license issuance or other time period mutually agreeable to the Applicant and NHDES, the Applicant shall develop, file with FERC, and implement a flow and impoundment level monitoring and compliance plan (FICMP) that includes, at a minimum, the items specified in 10.i through 10.viii, below.

    The FICMP, including any proposed revisions, shall be developed in consultation with NHDES and NHFGD, and submitted to NHDES for review and approval. The FICMP shall be kept up-to-date so that it reflects current operation of the Project. When revisions are made, the Applicant shall submit the updated FICMP to NHDES for approval within 10 days, or other time period mutually agreeable to the Applicant and NHDES, of making the revisions. If NHDES requests the FICMP to be updated, the Applicant shall submit the updated FICMP to NHDES for approval within 30 days, or other time period mutually agreeable to the Applicant and NHDES, of receiving a written request from NHDES to update the FICMP. Notwithstanding any required approvals from FERC or resource agencies, the Applicant shall implement the approved FICMP. The FICMP shall include, but not be limited to, the following:

    i. A description of the type of manual and automatic operation of the Project, including on-site and remote operation;

    ii. A detailed description of how the Project 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 flow and impoundment level management requirements in Condition 8, including the actions and measures the Applicant will use to maintain Buffer Zone Elevations, the Upper Operating Band, and the Lower Operating Band;

    iii. A description that includes calculations of how the downstream minimum flow will be maintained during scheduled drawdowns and the minimum impoundment level that will pass the downstream minimum flow;

iv. 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, including how the Applicant will measure and monitor increased discharges downstream of the Project dam or decreased regulated inflow to the Project impoundment as necessary to comply with conditions of this certification;

v. Set point elevations for turning the turbine on and off;

vi. Procedures for maintaining and calibrating monitoring equipment;

vii. Rating curves and calculations for all methods of releasing flow downstream of the Project dam, and regulated inflow to Project, that includes a working Microsoft Excel spreadsheet; and

viii. Procedures for collecting and recording continuous data (i.e., no less frequent than hourly) on inflow, flow releases at the Project (i.e., downstream minimum flow, spillage, and turbine discharge), and impoundment levels.

a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because the development and implementation of a FICMP describing how flow and impoundment water level will be managed, monitored, and reported will document and facilitate the Applicant's execution of the Project in accordance with conditions of this certification. In addition, a FICMP is necessary because it will provide NHDES with the methods that the Applicant will employ to comply with conditions of this certification so that NHDES can determine compliance with and enforce the conditions, as necessary, to help ensure compliance with Surface Water Quality Standards.

b. Citations that authorize this condition: section 401(a) of the CWA; RSA 485-A:8; RSA 485-A:12, III; RSA 485-A:18; Env-Wq 1703.01; Env-Wq 1703.19; Env-Wq 1705.01(a); and Env-Wq 1708.03(a).

11. **Water Quality Improvement Plan (WQIP):** If NHDES determines that the Project is causing or contributing to a violation of Surface Water Quality Standards at a magnitude, duration, and frequency that contributes to an impaired designated use, or is not protecting or maintaining an existing use, then NHDES shall notify the Applicant in writing, and the Applicant shall submit a WQIP to NHDES for approval within 120 days of the notification or other time period mutually agreeable to the Applicant and NHDES.

    The purpose of the WQIP is to restore surface waters to meet surface Water Quality Standards, in accordance with Env-Wq 1703.01(b), for parameters that are influenced by the Project. If the riverine segments immediately upstream and beyond the influence of the Project impoundment are not meeting Surface Water Quality Standards, then the purpose of the WQIP is to restore surface waters so that the parameters of water quality that are influenced by the Project are not

any worse than in the upstream riverine segment. Parameters that may be influenced by the Project include, but are not limited to, dissolved oxygen, temperature, pH, nutrients, chlorophyll-a, secchi disk (i.e., turbidity), and water quantity (i.e., flow and volume of surface water, including surface water elevation levels). The WQIP shall include measures to achieve the purpose of the WQIP; a schedule for implementing the measures; water quality monitoring and reporting to determine the effectiveness of the implemented measures; and recommendations for next steps. The Applicant shall include in the WQIP the monitoring and reporting specified in Condition 12 if there is violation of Surface Water Quality Standards for dissolved oxygen, pH, or temperature. The Applicant shall implement the approved WQIP upon NHDES approval of the plan. If the monitoring shows that properly implemented measures of the WQIP are not effective to achieve the purpose of the WQIP within 5 years from implementation of the measures, NHDES may request an amendment to the WQIP. In such cases, NHDES shall notify the Applicant in writing, and the Applicant shall submit an amendment to the WQIP to NHDES for approval within 120 days of the request or other time period mutually agreeable to the Applicant and NHDES. The Applicant shall incorporate any changes to Project operation included in the approved WQIP, in the FICMP and submit the updated FICMP to NHDES for approval as specified in Condition 10. This condition shall no longer apply once NHDES notifies the Applicant in writing that NHDES has determined that the Applicant has achieved the purpose of the WQIP.

a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because it would be necessary to address any violations of Surface Water Quality Standards caused by the Project that may arise in the future at a magnitude, duration, and frequency that contributes to an impaired designated use, or failure to maintain and protect an existing use, in the Project influenced waters.

b. Citations that authorize this condition: section 401(a) of the CWA; RSA 485-A:8; RSA 485-A:12, III; Chapter Env-Wq 1700.

12. **Dissolved Oxygen, Temperature, and pH Water Quality Monitoring and Reporting:** In the event that Condition 11 is triggered by a violation of Surface Water Quality Standards at a magnitude, duration, and frequency that contributes to an impaired designated use related to dissolved oxygen, pH, or temperature, and NHDES requests a WQIP, then the Applicant shall include in the WQIP a schedule to conduct water quality monitoring within the Project boundary at least every five years to: 1) determine the effects of Project operation, both spatially and temporally (in terms of flow, impoundment elevation, and power generation) on water temperature, pH, and dissolved oxygen (i.e., dissolved oxygen concentration and dissolved oxygen percent saturation); 2) to compare results to Surface Water Quality Standards; and 3) to determine if additional changes in Project operation or the WQIP are necessary to comply with Surface Water Quality Standards.

    In the WQIP specified in Condition 11, the Applicant shall specify that it will submit a monitoring and reporting plan that describes, in detail, how, when and where monitoring will be conducted, and results reported. Unless otherwise authorized or directed by NHDES, the plan shall specify that monitoring that year shall last for at least five weeks and include periods of relatively low flows and high temperatures as well as at times when the Project is, and is not, generating power. Continuous (i.e., every 15 minutes) monitoring of temperature, pH, and dissolved oxygen (i.e., dissolved oxygen concentration and dissolved oxygen percent saturation) shall be conducted in

the riverine reaches just upstream of the Project impoundment, at the deep spot of the Project impoundment, and below the dam of the Project and the Project tailrace, and vertical profiles for temperature and dissolved oxygen shall be conducted each week at the deep spot of the impoundment. Continuous (i.e., every 15 minutes) estimates of impoundment elevation, inflow, tailrace flow, and generation shall also be provided.

By December 31st of each year that monitoring is conducted, the Applicant shall submit a report and supplemental information that clearly demonstrates via text, tables and plots, the spatial and temporal effect of Project operation on surface water quality and if Surface Water Quality Standards are met. Results of quality assurance/quality control checks (calibration, hand-held meter checks, duplicates, etc.) and identification of any deviations from the monitoring and reporting plan shall be clearly identified. In addition to the report, water quality (including uncorrected and any corrected data), continuous impoundment elevation, and continuous flow data (including calculations) should be provided in a working Microsoft Office Excel workbook or other database acceptable to NHDES. The Applicant shall also enter all data into the NHDES Environmental Monitoring Database (EMD) within 120 days of when monitoring is completed in each year monitoring is conducted.

Should monitoring indicate that violations of Surface Water Quality Standards for dissolved oxygen, pH, or temperature persist, the Applicant shall consult with NHDES and, if requested by NHDES in writing, submit an amended WQIP in accordance with Condition 11.

a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because dissolved oxygen, pH, and temperature are among the Surface Water Quality Standards to be impacted by the Project. If a violation of a Surface Water Quality Standard for dissolved oxygen, pH, or temperature arises in the future at a magnitude, duration, and frequency that contributes to an impaired designated use, additional monitoring would be necessary during the term of the license. This is because FERC licenses are typically issued for 30 to 50 years and, during that time, conditions in the watershed that could affect water quality in the Project impoundment and Project discharges to the tailrace and bypass reach, can change. For example, an increase in the frequency and magnitude of lower river flows and higher temperatures caused by climate change could result in an increase in the frequency and magnitude of dissolved oxygen and pH excursions and higher water temperatures. If a WQIP becomes necessary, as described in Condition 11, because of a violation of a Surface Water Quality Standard for dissolved oxygen, pH, or temperature, additional monitoring would be necessary.

b. Citations that authorize this condition: section 401 of the CWA; RSA 485-A:8, II; RSA 485-A:12, III; Env-Wq 1703.07; Env-Wq 1703.13; and Env-Wq 1703.18.

13. **Mandatory Conditions of the U.S. Department of Interior:** Subject to the more stringent conditions for the Project's operations under Condition 8 of this certification, the Applicant shall implement the mandatory conditions that the U.S. Department of Interior (USDOI) develops for the Project in accordance with section 4(e) of the Federal Power Act, provided those conditions are substantially equivalent to the preliminary mandatory conditions that USDOI filed with FERC

on June 2, 2022.[5] The preliminary mandatory conditions included the following:

i. Project Operations;

ii. Water Level and Flow Annual Monitoring Report;

iii. Annual Meetings/Conference Calls;

iv. Adaptive Management; and

v. Recreation Management Plan.

For the Umbagog Lake Wildlife Monitoring Plan and the Umbagog Lake Shoreline Vegetation Monitoring Plan for the Water Level and Flow Annual Monitoring Report under Condition 13.ii. of this certification, the Applicant shall provide copies of those reports to NHDES by March 1st of the following year that data were collected. For recreation management plan under Condition 13.v. of this certification, the Applicant shall also consult with NHDES about the plan and provide NHDES a minimum of 30 days to comment on the plan.

a. This condition is necessary to assure that the discharges from the proposed Project will comply with the Surface Water Quality Standards because the plans, reports, meetings, and adaptive management will help evaluate the effects of the Applicant's management of the surface water elevation level of Umbagog Lake on wildlife, wetland communities, and recreation, and allow NHDES to determine whether the Project's operations will continue to maintain and protect existing uses and designated uses of Umbagog Lake.

b. Citations that authorize this condition: section 401 of the CWA; RSA 485-A:8; RSA 485-A:12, III; Env-Wq 1703.01; Env-Wq 1703.19; Env-Wq 1705.01(a); and Env-Wq 1708.03(a).

## F. NHDES CONTACT

Notifications, reports, and other items that must be submitted to NHDES under a condition of this certification should be sent to the NHDES Water Quality Certification Supervisor and to the following NHDES email address: wqc@des.nh.gov. On the date this certification is granted, James Tilley is the NHDES Water Quality Certification Supervisor and can be reached at james.w.tilley@des.nh.gov or (603) 271-0699. If you have questions regarding this certification, please contact James Tilley. If you are unable reach the NHDES Water Quality Certification Supervisor, please contact NHDES at (603) 271-3503.

## G. ENFORCEMENT

Certification conditions are subject to enforcement mechanisms available to the federal licensing or permitting agency and to the state of New Hampshire, including those provided under RSA 485-A:12, I RSA 485-A:12, III, and 33 U.S.C. § 1365.

[5] FERC Document Accession Number 20220602-5102.

## H. APPEAL PROCESS

Any person aggrieved by this decision may appeal to the N.H. Water Council ("Council"). An Environmental Fact Sheet with information on appealing a decision of the N.H. Department of Environmental Services can be found at the following link: CO-7 (nh.gov). A link to the Council's rules, is available on the New Hampshire Environmental Council website (or more directly at the Water Council page). Copies of the rules also are available from the NHDES Public Information Center at (603) 271-2975.

## I. SIGNATURE AND DATE

Rene J. Pelletier, P.G., Director
NHDES Water Division

5/31/23
Date

ec: Town of Errol, Board of Selectmen
Kyle Olcott (Maine Department of Environmental Protection)
Amanda Cross (USFWS)
Julianne Rosset (USFWS)
Sean Flint (USFWS)
Paul Casey (USFWS)
Michael Housman (New Hampshire State Parks)
Johanna Lyons (New Hampshire State Parks)
Michael Dionne (NHFGD)
Erin Holmes (NHDES)
Judith Sears Houston (NHDES)
Kelsey Vaughn (NHDES)
Christina Rambo (NHDES)
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Rachel Croy (EPA)
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FERC E-File