

New Hampshire Department of Environmental Services  
Responses to Comments and Substantive and Minor Revisions  
Water Quality Certification No. 2022-FERC-001  
Errol Hydroelectric Project  
June 1, 2023

From April 20, 2023, to May 12, 2023, the New Hampshire Department of Environmental Services, Watershed Management Bureau (NHDES), posted for public comment a draft version of Water Quality Certification No. 2022-FERC-001 (Certification) for Brookfield White Pine Hydro, LLC's and Errol Hydro Co., LLC's (Applicant) proposed relicensing of the Errol Hydroelectric Project (Project) by the Federal Energy Regulatory Commission (FERC). The Project is 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 Certification is required under 33 U.S. Code § 1341 (section 401 of the federal Clean Water Act) and NH RSA 485-A:12, III to provide reasonable assurance that discharges to surface waters that may result from the Project will comply with New Hampshire surface water quality standards, which are specified under [New Hampshire RSA 485-A:8](#) and [New Hampshire Code of Administrative Rule Chapter Env-Wq 1700](#) (Surface Water Quality Standards). NHDES granted the Certification with conditions for FERC's relicensing of the Project.

During the public comment period, NHDES received comments from Friends of Lake Umbagog (FOLU), the Applicant, and the New Hampshire Fish and Game Department (NHFGD). In this document, NHDES lists the comments that NHDES received and provides responses to those comments. In some cases, NHDES has paraphrased the comments it received. NHDES shows comments it received using quotation marks and *italics* font and shows its responses in plain text. In addition, if NHDES revised the Certification because of comments on the draft Certification, NHDES describes those revisions under each comment that is relevant to the revisions. At the end of this document, NHDES also describes other substantive and minor revisions that NHDES made to the Certification after the public comment period.

To obtain a copy of the comments that were submitted to NHDES or a marked-up version of the draft Certification showing all revisions to the Certification, please contact James Tilley, Supervisor of the NHDES Water Quality Certification Program, at (603) 271-0699 or [james.w.tilley@des.nh.gov](mailto:james.w.tilley@des.nh.gov).

## Responses To Comments

### A. Comments from FOLU:<sup>1</sup>

#### 1. Comment A.1:

*"[...] The Licensee has consistently drawn the Lake and headwaters of the Androscoggin River down to **MUD** ever year from 2017 to 2021, as shown in the attached spreadsheet provided by the Federal Energy Regulatory Commission (FERC). Typically, this drawdown happens in the months of March and April. However, in 2021 the water was drawn down below 1243 in February and March and again in mid-September and October.*

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<sup>1</sup> According to a document that FOLU filed with FERC on June 1, 2022 for relicensing proceedings of the Project (FERC Document Accession No. [20220601-5227](#)), FOLU is an organization with 83 members who are residents of Maine and New Hampshire and own property along the shores of Umbagog Lake and the Magalloway River or enjoy the recreational activities provided by the lake and river. Of the 70 parcels that FOLU members own that include frontage on Umbagog Lake, at least half of the parcels are only accessible by water in the summer months or a frozen lake in the winter months.

The elevation on **September 10, 2021** was **1242.959961** per Satellite Pond Elevation (USGS gauge) at the Errol Dam. The water levels stayed at or below this elevation from September 10, 2021 through October 2, 2021.

The result of water levels below an elevation of 1243, left the head waters of the Androscoggin River drawn down to mud, as well as many sections of Lake Umbagog. **Shoreline was significantly receded and exposed during this period.**

Boats were stuck in the mud at their docks. The Androscoggin River was too low to launch a canoe, let alone fish or enjoy any other recreational activity. It was devastating to look at all the exposed portions of the Magalloway River, Lake Umbagog and the headwaters of the Androscoggin River.

Many phone calls and emails were made during this time (mid – September 2021), to representatives of Brookfield, the State of Maine, State of NH and Federal representatives for the State of NH expressing concern about the extraordinary low water levels. Only to be told ‘we are in a drought’.

However, the water levels south of the Errol Dam did not display the same muddy characteristics and receding shoreline as the low water levels north of the Errol Dam. The water levels along the Androscoggin River from Errol NH down to Berlin and Gorham seemed relatively high for mid-September, using the boom piers as a reference line for the water level.

NH DES has approved the Errol Dam project based upon reasonable assurance the project will meet the requirements of RSA 485-A:12. RSA 485 speaks to water quality regarding discharge from the project. This assertion I am not disputing. However, there are **other ‘water quality’ statutes** that are equally as important, that have been **omitted** from the Draft Water Quality Certification’. RSA 483 listed below, speaks to water management of NH rivers and Lakes.

#### **RSA 483:1 ‘Water Management and Projection’**

**483:1 Statement of Policy.** – New Hampshire's rivers and streams comprise one of its most important natural resources, historically vital to New Hampshire's commerce, industry, and tourism, and the quality of life of New Hampshire people. It is the policy of the state to ensure the continued viability of New Hampshire rivers as valued ecologic, economic, public health and safety, and social assets for the benefit of present and future generations. The state shall encourage and assist in the development of river corridor management plans and regulate the quantity and quality of instream flow along certain protected rivers or segments of rivers to conserve and protect outstanding characteristics including recreational, fisheries, wildlife, environmental, hydropower, cultural, historical, archaeological, scientific, ecological, aesthetic, community significance, agricultural, and public water supply so that these valued characteristics shall endure as part of the river uses to be enjoyed by New Hampshire people. If conflicts arise in the attempt to protect all valued characteristics within a river or stream, priority shall be given to those characteristics that are necessary to meet state water quality standards.

**483-A:1 Statement of Policy.** – New Hampshire's lakes are one of its most important natural resources; vital to wildlife, fisheries, recreation, tourism, and the quality of life of its citizens. It is the policy of the state to insure the continued vitality of New Hampshire lakes as key biological, social, and economic assets, while providing that public health is ensured for the benefit of present

*and future generations. The state shall encourage and assist in the development of management plans for the waters as well as the shoreland to conserve and protect valued characteristics, including recreational, aesthetic, and those of community significance, so that these valued characteristics shall endure as part of lake uses to be enjoyed by the citizens of New Hampshire. If conflicts arise in the attempt to protect the valued characteristics of a lake, priority shall be given to those characteristics that are necessary to meet state water quality standards.*

*NH DES should review the data provided in the excel spreadsheets and provide a 'not to go below' water level of at least 1243.50 for the Licensee to adhere to in order to have assurance to the water quality based upon the water quantity.*

***It is incumbent upon NH DES to provide a stated water level in their water quality certification. The water level should not to [sic] go below 1243.50 at all times throughout the year, to ensure there is enough water quantity to have water quality. Without a specified water level 'not to go below' there are no assurances as to the water quality or protection of the shoreline."***

**NHDES Response:** NHDES acknowledges and appreciates FOLU's comments and concerns regarding the historical low flows of the Androscoggin River and the low surface water elevation levels of Umbagog Lake, especially considering the low flows and levels that the Androscoggin River and Umbagog Lake experienced during drought conditions in 2021.

With NHDES' granting of the Certification, NHDES asserts that it has complied with the statement of policy under [RSA 483:1](#) by including conditions in the Certification that will help to ensure the continued viability of the Androscoggin River as a valued ecologic, economic, public health and safety, and social asset that will provide a benefit of present and future generations. The Androscoggin River has not been designated by the general court for inclusion in New Hampshire Rivers Management and Protection Program, which is required under [RSA 483:7](#), and, therefore, a River Corridor Management Plan that is specified under [RSA 483:10](#) is not required.

NHDES also asserts that it has complied with the state policy under [RSA 483-A:1](#) by ensuring the continued vitality of Umbagog Lake as key biological, social, and economic asset, while providing that public health is ensured for the benefit of present and future generations. NHDES has no record that a lake management and shoreland protection plan, as described under [RSA 483-A:7](#), was developed for Umbagog Lake.

Both [RSA 483:1](#) and [RSA 483-A:1](#) specify that if conflicts arise in the attempt to protect the valued characteristics of a lake or river, priority shall be given to those characteristics that are necessary to meet state water quality standards (i.e., the Surface Water Quality Standards). For example, Env-Wq 1703.01(d) of the Surface Water Quality Standards specifies that "[u]nless high or low flows are caused by naturally-occurring conditions, surface water quantity shall be maintained at levels that protect existing uses and designated uses; and Env-Wq 1708.03(a), under the antidegradation provisions of the Surface Water Quality Standards, specifies that "[a] proposed discharge or activity

shall not eliminate any existing uses or the water quality needed to maintain those uses.”<sup>2,3</sup> Therefore, NHDES is required to maintain surface water quantity at levels that protect existing uses and designated uses and is prohibited from including a condition in a certification that would eliminate, or even partially eliminate, an existing use.

NHDES complies with the policies of RSA 483:1 and RSA 483-A:1, and with Surface Water Quality Standards related to protecting existing uses and designed uses, with its Certification conditions, including Condition 8, which requires the Applicant to provide certain minimum flows downstream of the Project to maintain and protect aquatic life, and to operate the Project to strive to maintain certain impoundment water elevation levels to maintain and protect aquatic life, recreation, and wildlife of Umbagog Lake.

The U.S. Department of Interior through the U.S. Fish and Wildlife Service (USFWS) established the required downstream minimum flows using USFWS’ New England Aquatic Flow Policy, which approximates the unregulated median August flow in the Androscoggin River, so that flow conditions are suitable for the continued protection and propagation of aquatic life downstream of the Project.<sup>4</sup> During a review of USFWS’ Preliminary Mandatory Conditions (USFWS’s Mandatory Conditions) that USFWS filed with FERC on June 2, 2022 and pursuant to section 4(e) of the Federal Power Act,<sup>5</sup> NHDES determined that the impoundment water elevation levels in USFWS’s Mandatory Conditions are necessary to protect aquatic life, recreation, and wildlife. USFWS developed USFWS’s Mandatory Conditions through a review process that included consultation among biologists from USFWS, NHFWD, the Maine Department of Inland Fisheries and Wildlife, New Hampshire Audubon, and the Loon Preservation Committee, as well as through negotiations with the Applicant. During a review of USFWS’s Mandatory Conditions for the Project’s operations, NHDES agreed that those conditions would protect existing uses and designated uses, and would not eliminate existing uses (in whole or in part), upstream and downstream of the Project because the Applicant’s operation of the Project would not be substantially different from how the Applicant has operated the Project under the current FERC license, which became effective on August 1, 1983.<sup>6</sup> Moreover, the Conditions in the Certification would maintain historical existing uses in Lake Umbagog consistent with the historical physical, chemical, and biological parameters of water quality which have existed in the Lake from November 28, 1975 to date, including seasonal and annual variability resulting from precipitation.

NHDES generally incorporated USFWS’s Mandatory Conditions for the Project’s operation into Condition 8.ii.(1), Condition 8.ii.(2), and Condition 8.ii.(3) of the Certification. However, NHDES also included Condition 8.ii.(4) to help ensure that the Applicant will strive to manage the impoundment surface water elevation from October 1<sup>st</sup> to March 4<sup>th</sup> so that the Applicant may more easily achieve the target surface water elevations and associated buffer zone elevations from May 15<sup>th</sup> to September

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<sup>2</sup> Env-Wq 1702.22 defines “existing uses” as “those uses, other than assimilation or waste transport, that actually occurred in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards.”

<sup>3</sup> Env-Wq 1702.17 generally defines “designated uses” as those uses specified in water quality standards for each surface water whether or not such uses are presently occurring and include the following uses: swimming and other recreation in and on the water; fish consumption; shellfish consumption; aquatic life integrity; wildlife; and potential drinking water supply.

<sup>4</sup> Lang, Vernon. U.S. Fish and Wildlife Service (1999). Questions and Answers on the New England Flow Policy. Accessed on May 22, 2023 at

<https://southeastaquatics.net/resources/pdfs/NE%20Streamflow%20Policy%20by%20USFWS.pdf>.

<sup>5</sup> FERC Document Accession No. [20220602-5102](https://www.ferc.gov/document-accession-no-20220602-5102).

<sup>6</sup> FERC Document Accession No. [19830831-0476](https://www.ferc.gov/document-accession-no-19830831-0476).

30<sup>th</sup> as specified by USFWS's Mandatory Conditions and the Certification. Please see NHDES' response to Comment B.4., below, for a further discussion about Condition 8.ii.(1), Condition 8.ii.(2), and Condition 8.ii.(3). Please see NHDES' response to Comment B.5., below, for a further discussion about Condition 8.ii.(4).

To help ensure compliance with Condition 8, Condition 9 of the Certification requires the Applicant to provide notifications and submit reports of certain deviations of Condition 8 to NHDES and other regulatory agencies. NHDES determined that those notification and reporting conditions would allow NHDES and others to know whether the Applicant is complying with certain flow and impoundment management requirements that ensure compliance with Surface Water Quality Standards, including during periods of drought. Please see NHDES' response to Comment B.6., below, for further discussion about Condition 9.

If NHDES determines that the Project is causing or contributing to a violation of Surface Water Quality Standards, then the Applicant would be required to submit a Water Quality Improvement Plan as required in Condition 11 of the Certification.

**Revisions Made:** None

**B. Comments from the Applicant:**

**1. Comment B.1:**

***"Section A. Introduction: Licensee***

*The first sentence reads 'Brookfield White Pine Hydro, LLC and Errol Hydro Co., LLC Associates L.P. (the Applicant)...'. Note that the Applicant is Brookfield White Pine Hydro, LLC and Errol Hydro Co., LLC. Please delete Associates L.P.."*

**NHDES Response:** Agreed

**Revisions Made:** NHDES deleted "Associates L.P.".

**2. Comment B.2:**

***"Condition 5. Transfer of Certification***

*This condition requires the Licensee to notify NHDES if it plans to transfer or consolidate responsibility of the Project to another person. Please note that the Licensee will file the correct information with the Federal Energy Regulatory Commission (FERC) and the NHDES upon license expiration; but the Project currently is co-licensed by Brookfield White Pine Hydro, LLC and Errol Hydro Co., LLC. The generating facility is owned by Errol Hydro Co., LLC and the lands are leased from Brookfield White Pine Hydro, LLC through an indenture. Errol Hydro Co., LLC will no longer be a co-licensee under the new license; Brookfield White Pine Hydro, LLC will be the sole Licensee."*

**NHDES Response:** NHDES acknowledges and appreciates the descriptions of the ownership of the generating facility and lands associated with the Project. Since NHDES has granted the Certification with this condition, the Applicant should notify NHDES of its plan to consolidate a forthcoming FERC license to Brookfield White Pine Hydro, LLC, as it did with this comment, to comply with this condition.

**Revisions Made:** None

3. **Comment B.3:**

**“Condition 7. NHDES Water Conservation**

*In the Licensees’ 401 Water Quality Certification Application it requested a waiver of Env-Wq 2102.05(f) and Env-Wq 2101.24(a)(5). NHDES notified the Licensee via letter on March 29, 2023 that ‘In accordance with Env-Wq 2101.23, the waiver shall be valid for no more than four years from the date of this approval. Prior to the expiration of the waiver, the same waiver may be requested in order to be considered an extension of the original waiver approval.’ The Licensee will submit a new waiver request no more than 4 years from March 29, 2023.”*

**NHDES Response:** NHDES acknowledges and appreciates the Applicant’s commitment to submit a new waiver request to NHDES to waive relevant requirements of Part Env-Wq 2101 – *Water Conservation* for the Project. NHDES recommends that the licensee of the Project submit the waiver request to the NHDES Water Conservation Program at least 30 days prior to the expiration date of the existing waiver so that NHDES has sufficient time to process the waiver request prior to expiration of the existing waiver.

**Revisions Made:** None

4. **Comment B.4:**

**“Condition 8. Flow/Impoundment Management, ii. Impoundment Water Elevation Level**

*This condition states: ‘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 (sic) 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.’*

*In Section 2.2.3 of the Final License Application (FLA), the Licensee proposed the following ‘The Licensee shall strive to manage Umbagog Lake levels, as measured at the Errol Dam, to +/- 0.25 feet 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 levels at all times.’*

*The Licensee wants to emphasize that it cannot manage the lake levels to the exact target elevations for various reasons, as described in more detail in our comments to Condition 9 and would prefer the language in the FLA that it will strive to manage the lake levels to the target elevations.*

**Condition 8. Flow/Impoundment Management, ii. Impoundment Water Elevation Level, (1), (a)-(g)**

*This condition describes, in words, the target elevations shown on Figure 2.2.3-1 of the FLA from May 15 to September 30. The Licensee has no issue with the description but wants to emphasize that it cannot maintain water levels, as measured at the dam, precisely to the target elevations due to variability in rainfall, runoff, the volume of Umbagog Lake storage, and a natural constriction in the Androscoggin River above the dam. We expand on this further in our comments*

to Condition 9. This same comment applies to (2), (a)-(d) Upper Operating Band and (3), (a)-(b), Lower Operating Band.

**Condition 8. Flow/Impoundment Management, ii. Impoundment Water Elevation Level, (2), Upper Operating Band**

*This condition states: ‘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 (sic) downstream of the Project dam or decreasing inflow into the Impoundment of the Project:.’*

*Similar to the comment above, the Licensee wants to emphasize that it cannot manage the lake levels to the exact target elevations or Upper Operating Band for various reasons and would prefer language in the FLA that it will strive to manage the lake levels so that the elevation is at or below the Upper Operating Band.*

*In the FLA, the Licensee proposed to decrease the inflow into Umbagog Lake and increase Project discharges to lower water levels to be within the buffer zone provided that Project discharges do not contribute to downstream flooding conditions (page E-33 of FLA). This language is currently missing from Condition 8, but the Licensee believes it is important to retain it.*

*Based on years of on-the-ground experience, Umbagog Lake levels can rise quickly due to heavy or long duration rainfall events which can cause flooding downstream. As noted in the FLA (page E-159), the Licensee manages ‘Errol Dam discharges to limit flows in the vicinity of the Androscoggin River USGS Gage in Cambridge, NH to prevent flooding when flows are near 4,500 cfs in this area.’ The unregulated drainage area difference between the dam and the Cambridge United States Geological Survey (USGS) gage (Gage No. 01053600) is approximately 132 square miles. To put the importance of reducing flood flows into perspective, based on a flow duration analysis of Androscoggin River flows at the Cambridge USGS gage for the period May 15 to July 31 (2009-2022), a flow of 4,500 cfs is equaled or exceeded approximately 9% of the time. Although flooding of this magnitude is rare from May 15 to July 31, the Licensee would like to retain the ability to reduce Project discharges, if needed, to reduce downstream flooding while also striving to balance Umbagog Lake levels for other purposes.”*

**NHDES Response:** NHDES acknowledges that the Applicant (i.e., licensee) cannot manage the exact target elevations all of the time for various reasons. In section 2.2.3 of Exhibit A of the Final License Application (FLA) for the Project, it is NHDES’ understanding that the Applicant proposed to strive to manage Umbagog Lake levels “[..] to +/- 0.25 feet of the target elevations [...]” because of the Applicant’s inability to manage the exact target elevations.<sup>7</sup> In Condition 8.ii.(1) of the Certification, NHDES requires the Applicant to strive to manage the impoundment surface water elevation to within 0.25 feet above or below the target elevations, which NHDES defined as “Buffer Zone Elevations”, which is consistent with the Applicant’s preference.

In section 2.2.3 of Exhibit A of the FLA, the Applicant stated the following: “The Licensee has consulted with the Umbagog National Wildlife Refuge (the Refuge), which was established in 1992 and is administered by the United States Fish and Wildlife Service (USFWS), to assist in developing its proposed operation as well as some of its Protection, Mitigation and Enhancement (PM&E) measures [...]” Based on meetings between NHDES and USFWS about the development of the proposed

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<sup>7</sup> FERC Document Accession Number [20210730-5069](https://www.ferc.gov/document-accession-number/20210730-5069)

operation, it is NHDES' understanding that USFWS's Mandatory Conditions for the Project's operation require the Applicant to manage the impoundment surface water elevation so that the elevation would not exceed the Upper Operating Band to, among other things, protect waterfowl nests and eggs, particularly of loons, provided that Project discharges do not contribute to flooding downstream of the Project. Please see NHDES' response to Comment A.1., above, for a further discussion about USFWS's Mandatory Conditions for the Project's operations.

In Condition 8.ii.(3) of the Certification, NHDES requires the Applicant to strive to manage the impoundment surface water elevation so that the elevation is at or above the Lower Operating Band, which is consistent with the Applicant's preference.

In the first paragraph of Condition 8 of the Certification, NHDES specifies that the flow and impoundment management requirements, "[...] 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." NHDES added examples, "such as flooding or drought", to this condition to, in part, address the Applicant's comment and illustrate that the Applicant can describe temporary modifications to the impoundment surface water level elevation requirements that result from operating emergencies beyond the control of the Applicant. If impoundment surface water elevations are not within the Buffer Zone Elevations, Upper Operating Band, or Lower Operating Band because of relatively rare precipitation events, snow or ice melt, or drought, then the Applicant would remain in compliance as long as the Applicant adequately describes those emergency conditions in a "Flow / Impoundment – Compliance Monitoring Plan" required under Condition 10.

In the first paragraph of Condition 8.ii of the Certification, NHDES specifies that "[t]he 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." The Applicant's references to not contributing to or reducing downstream flooding in section 2.2.3 of Exhibit A were not modified by the Certification and, therefore, that portion of Project operation is unaffected by the Certification. However, NHDES added the following language to Condition 8.ii.(1) and Condition 8.ii.(2) to address the Applicant's comment: "[...], provided that Project discharges do not contribute to downstream flooding conditions, [...]."

#### **Revisions Made:**

NHDES made the following revisions (shown in **bold**) to the first paragraph of Condition 8 of the Certification:

"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."

NHDES made the following revisions (shown in **bold**) to the paragraph of Condition 8.ii.(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:”

NHDES made the following revisions (shown in **bold**) to the paragraph of Condition 8.ii.(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:

5. **Comment B.5:**

**“Condition 8. Flow/Impoundment Management, ii. Impoundment Water Elevation Level, (4), Operating Conditions from October 1 to May 14**

*This condition states: ‘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 achieve the elevations described in Condition 8.ii.(1), 8.ii.(2), and 8.ii.(3) of this certification.’*

*Condition 8.ii.(1) pertains to maintaining a year-round minimum flow of 522 cfs, or inflow, whichever is less below the dam which applies during the period October 1 to May 14. However, Condition 8.ii.(2) and Condition 8.ii.(3) pertain to the Upper and Lower Operating Bands, respectively, for the period May 15 to July 31, thus is unclear why this is included for the period October 1 to May 14.*

*In the FLA, it states ‘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 by reducing water levels over the winter and refilling in the spring. The Licensee shall manage 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.’*

*Please note that while May 14 is listed in Condition 8, the timing of the spring refill will vary pending the timing of rainfall, increased air temperatures, snowmelt and runoff.*

*The Licensee also wants to clarify that it did not propose a buffer zone around the target elevation from October 1 to May 14, an Upper Operating Band from August 1 to May 14, or a Lower Operating Band from August 1 to May 31.”*

**NHDES Response:** NHDES notes that Condition 8.i of the Certification pertains to maintaining a year-round minimum flow of 522 cfs for inflow, whichever is less below the dam of the Project, not Condition 8.ii.(1) as the Applicant asserts in its comment.

In section 2.2.3 of Exhibit A of the FLA, the Applicant states the following: “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.” A purpose of Condition 8.ii.(4) is to require the Applicant to strive to manage the Project’s impoundment surface water elevation from October 1<sup>st</sup> to May 14<sup>th</sup> so that the Applicant can more readily achieve the impoundment surface water elevation requirements in Condition 8.ii.(1), 8.ii.(2), and 8.ii.(3) of the Certification. If NHDES did not include this condition, NHDES understands that the Applicant is proposing operation that could result in lowering the impoundment surface water elevation to 1,240 feet to reduce downstream flood flows and optimize downstream hydropower generation until May 14<sup>th</sup> and then, only starting on May 15<sup>th</sup>, begin to strive to manage the impoundment surface water elevation of the Project to achieve the target elevations described in section 2.2.3 of Exhibit A of the FLA and depicted in Figure 2.2.3-1 of the FLA. This proposed operation of the Project may delay or eliminate the Applicant’s ability to achieve the target elevations or stay within the Buffer Zone Elevations, Upper Operating Band, and Lowering Operating Band, which may cause violations of Surface Water Quality Standards.

Condition 8.ii.(4) does not require the Applicant to strive to manage the impoundment surface water elevation to achieve certain elevations from October 1<sup>st</sup> to May 14<sup>th</sup>. Instead, Condition 8.ii.(4) requires the Applicant to be more prepared to achieve the elevations and elevation ranges described in Condition 8.ii.(1), 8.ii.(2), and 8.ii.(3) of the Certification. NHDES made revisions to this condition to clarify the requirement.

NHDES acknowledges that the timing of spring refill of the Project’s impoundment will vary pending the timing of rainfall, increased air temperatures, snowmelt and runoff. Because of the variability of the timing of spring refill, and the lack of definition for the term “spring refill”, NHDES used the date range of October 1<sup>st</sup> to May 14<sup>th</sup> to specify the period when Condition 8.ii.(4) is applicable.

#### **Revisions Made:**

NHDES made the following revisions (shown in **bold**) to the paragraph of Condition 8.ii.(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.”

#### **6. Comment B.6:**

##### ***“Condition 9 Flow/Impoundment- Notification and Reporting, ii-iii***

*This condition states ‘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 downstream minimum flow, Buffer Zone Elevations, Upper Operating Band, Lowering Operating Band, or impoundment drawdown and management procedures that are specified in Condition 8 of this certification, the Applicant shall notify NHDES of the deviation by telephone or e-mail within 24 hours after discovery of the deviation.’*

*This condition also states: ‘Within 10 days after discovery of each deviation, the Applicant shall submit to NHDES, and file with FERC, a written report that includes the following information, to the extent possible: 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 taken 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.’*

*The Licensee is concerned with having to file documentation any time there is a deviation from the target elevation from May 15 to July 31 including the buffer zone (+/-0.25 feet from the target elevation), and Upper/Lower Operating Bands, as it is not possible to manage water levels to this level of precision. Based on the Licensee’s historic operating experience of the Project, there would be frequent and prolonged deviations from the target levels under Condition 9 as currently written. This would result in numerous, unnecessary agency and FERC reporting due to uncontrollable environmental precipitation/watershed events.*

*The best way to explain the difficulty of striving to manage lake levels to this level of precision is reviewing historical operations when the 1998 Water Level Management Plan for Nesting Common Loon on Lake Umbagog (1998 Plan) was in effect, as the 1998 Plan has target elevations, similar to the Licensee’s proposal. The 1998 Plan calls for maintaining certain water level operations from June 1 to July 20 as summarized below.*

- *The water level on June 1 should be at or near El. 1246.0 ft and should be maintained at the June 1st water level (as constant as possible) until 75% of the territorial loon pairs have established their nests, or no later than June 20.*
- *Once nests are established, or no later than June 20, the water level is 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—typically it is held constant starting on July 1 and remains constant until July 20.*

*Attached are graphs showing the target elevations under the 1998 Plan, the observed elevations, and the precipitation (inches) as measured at a gauging station in Rangeley, ME near the Project. The graphs include hypothetical buffer zones of +/-0.25 feet from the target elevation, which were added to illustrate the difficulty of maintaining the target water levels. The graphs<sup>1</sup> cover the period June 1 to July 20 for years 2014 to 2019, which are the years the Licensee operated the Project. As the figures show, there are times when high magnitude and/or long duration rainfall events occur, resulting in lake levels deviating from the hypothetical +/- 0.25 buffer zones. In some cases, the deviation lasted for several days, pending the magnitude and duration of the rainfall event. Typically, operators have greater control of not going too far below the target elevation when there is minimal rain activity. However, high magnitude or long duration rainfall events make it considerably more difficult to control rising water levels. If the hypothetical buffer zones were implemented, based on the attached graphs, the Licensee would be notifying NHDES and filing daily reports frequently under Condition 9.*

*The Licensee does control, to a certain extent, inflow into Umbagog Lake as it controls discharges from the two upstream storage reservoirs, including Middle Dam and Aziscohos Dam, which also*

have FERC licenses. The drainage areas at Aziscohos, Middle and Errol Dams are 214, 472 and 1,045 square miles, respectively. Thus, there is 359 square miles of unregulated drainage emptying into Umbagog Lake. Note that the Middle and Aziscohos Dam FERC licenses require minimum flows releases and water level operations thus the Licensee strives to balance many competing resources at all of its storage reservoirs, including at the Project. In addition, as noted above, the Licensee also strives to balance rising water levels during high rainfall events with reducing downstream flooding.

The acceleration of climate change is increasing the volatility of storm events and duration of drought events, making it more difficult to maintain precise water levels. The Licensees' operator continually strives to balance many competing resources, particularly during storm events. Also note that during the loon nesting season described above, the Licensees' operator is in regular communication with the United States Fish and Wildlife Service Umbagog National Wildlife Refuge staff relative to managing water levels for the loons, and explaining why water levels may deviate from the 1998 Loon Plan.

Other factors to consider when striving to maintain the target water levels is Umbagog Lake's storage capacity relative to the magnitude of the Project discharge, and the ability to increase Project discharges given that there is a natural hydraulic constriction between the dam and outlet of Umbagog Lake which limits its discharge capacity under certain conditions as described below.

#### **Storage Capacity vs Project Discharge Capacity**

The Project has one turbine with a maximum capacity of 2,600 cfs. As proposed and echoed in the Draft 401, the target elevation on June 1 is El. 1245.5 feet. Assume there is a rain event causing the water level to rise to El. 1245.75 feet, an increase of 0.25 ft (the upper buffer zone elevation). The volume of storage in Umbagog Lake in this 0.25 feet of storage is equivalent to 2,113 acre-feet, or 25,564 cfs-hours. Assuming there was 0 cfs inflow (obviously not realistic, but used for illustration purposes) to Umbagog Lake, and the Errol Project discharge was 2,600 cfs (the turbine capacity), it would take approximately 9.8 hours to reduce the water level by 0.25 feet. The dam gates could also be opened to help lower water levels, but there is concern of increased downstream flooding. The point here is that the ability to reduce water levels quickly, given the volume of Umbagog Lake and natural hydraulic restriction without causing downstream flooding, is extremely difficult.

#### **Natural Hydraulic Restriction**

Under certain high flow conditions and Umbagog Lake levels, a natural hydraulic restriction in the Androscoggin River between the dam and the outlet of Umbagog Lake limits how much water the Project can discharge. In some cases, there is water level gradient or slope between the water level at the dam and the water level immediately above the natural constriction. The operators could have the turbine at full capacity and gates opened to increase Project discharges, but the natural hydraulic constriction limits the Licensee's ability to reduce water levels in Umbagog Lake rapidly.

#### **Recommendation**

Given the above, the Licensee proposes changes to Condition 9i, and ii as follows:

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 Upper Operating Band from May 15 to July 31 or Lowering Operating Band from June 1 to July 31, as specified in Condition 8 of this certification, the Applicant shall notify the NHDES Water Quality Certificate Coordinator of the deviation by telephone or e-mail within 24 hours after discovery of the deviation. 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 an estimate of how long it will take until the Upper or Lower Operating Band deviation is corrected.*
  
- ii. *On June 15 (for the period May 15-31), July 15 (for the period June 1-30) and August 15 (for the period July 1-31), the Applicant shall submit to the NHDES Water Quality Certificate Coordinator and Umbagog National Wildlife Refuge Manager, and file with FERC, a written report that includes the following information, to the extent possible: a description of the deviation from the Upper and/or Lower Operating Bands, 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; corrective actions taken to address the deviation; preventative actions or measures taken 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. *By March 1st of each year (beginning the first April after the date the FERC license is reissued), the Applicant shall submit to NHDES, NHFGD, Umbagog National Wildlife Refuge and FERC a Water Level and Flow Monitoring report for the period May 15 to September 30 with appropriate tables, graphs, text and supporting documentation that demonstrates compliance with the flow/ impoundment management requirements in Condition 8. Where deviations from the Upper and Lower Operating Bands occurred, the summary shall indicate when the deviation occurred, the duration of the excursion and a description of corrective actions taken to prevent such deviations from reoccurring."*

**NHDES Response:** In the Applicant's proposed language for Condition 9.i. of the Certification, the Applicant only included notification requirements for deviations of the Upper Operating Band and Lower Operating Band, and included the date ranges when those bands are applicable. Although NHDES believes inclusion of the dates in this condition is unnecessary because NHDES provides those dates in Condition 8.ii.(2) and Condition 8.ii.(3), the Applicant implied that inclusion of dates for impoundment level-related conditions would clarify the notification and reporting requirements. Therefore, NHDES includes dates for flow and impoundment level-related conditions in Condition 9.i.

The Applicant proposed removing the requirement to notify NHDES if the Project causes a deviation of the downstream minimum flow and impoundment drawdown procedures that NHDES specifies under Condition 8.i, Condition 8.ii.(1), and Condition 8.iii. Since the Applicant did not provide any rationale for removing the notification requirements for the downstream minimum flow or impoundment drawdown procedures, and NHDES asserts that those notification requirements are necessary to 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, NHDES did not make those proposed revisions to notification requirements of Condition 9.i.

Although NHDES understands and appreciates the challenges of maintaining the impoundment level within the Buffer Zone Elevations, NHDES continues to assert that submitting notifications of deviations of the Buffer Zone Elevations to NHDES are necessary to 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. Considering this necessity, the Applicant's comments, and consultation with USFWS, NHDES revised the Buffer Zone Elevations notification requirement to specify that the Applicant would need to submit notifications only when Buffer Zone Elevations deviations occur for more than 72 consecutive hours.

In the Applicant's proposed language for Condition 9.i. and Condition 9.ii., the Applicant changed a notification and reporting destination from "NHDES" to "the NHDES Water Quality Certificate Coordinator." Since NHDES specifies how to notify and submit reports to NHDES in section F. *NHDES Contact* of the Certification, NHDES did not make those proposed revisions to Condition 9.i. and Condition 9.ii because they were unnecessary. However, NHDES did revise Section F. to include "notifications" in its procedures for submitting items to NHDES.

In the Applicant's proposed language for Condition 9.ii., the Applicant proposed changing the deviation reporting frequency from within 10 days after discovery of each deviation to the following: "On June 15 (for the period May 15-31), July 15 (for the period June 1-30) and August 15 (for the period July 1-31) [...]." The Applicant proposed this change because the Applicant also proposed only reporting deviations of the Upper Operating Band and Lowering Operating Band for Condition 9.i. Since NHDES asserts that notification of deviations of the Buffer Zone Elevations, downstream minimum flow, and impoundment drawdown procedures are necessary and occur outside the reporting dates proposed by the Applicant, NHDES did not accept the Applicant's proposed change. However, NHDES agrees that monthly reporting of deviations would still 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. Therefore, NHDES revised Condition 9.ii. and added Condition 9.iii. to require the Applicant to submit to NHDES, NHFGD, and the USFWS Umbagog National Wildlife Refuge Manager, and file with FERC, a written report, on the 15<sup>th</sup> of each month from June to October, and of each month from November to May after which a deviation occurred in the prior month that requires notification to NHDES and NHFGD under Condition 9.i., that describes the deviations of the prior month. These reports will provide certain information about each deviation that requires notification under Condition 9.i. The Applicant is not required to submit a written deviation reports during any month from November through May after which a deviation did not occur during the prior month.

In language for Condition 9.ii., NHDES clarified that the condition only requires deviation reports for deviations that require notification to NHDES and NHFGD under Condition 9.i because this was NHDES' original intent.

In the Applicant's proposed language for Condition 9.ii. and Condition 9.iii., the Applicant proposed adding the Umbagog National Wildlife Refuge Manager as a recipient of deviation reports and an annual report. After consultation with the USFWS Manager of the Umbagog National Wildlife Refuge, NHDES revised Condition 9.ii. and Condition 9.iii, which NHDES renumbered as Condition 9.iv., to require the Applicant to also submit those reports to the USFWS Manager.

In the Applicant's proposed language for Condition 9.iii., the Applicant proposed to limit the scope of the annual report to period from May 15<sup>th</sup> to September 30<sup>th</sup> instead of the entire year and to only summarize deviations from the Upper Operating Band and Lower Operating Band. The Applicant also proposed to title the report as the "Water Level and Flow Monitoring Report". Since Condition 8.i., Condition 8.ii.(4), and Condition 8.iii are applicable to periods of a year outside of May 15<sup>th</sup> to September 30<sup>th</sup>, and NHDES required notification and reporting of deviations for items other than the Upper Operating Band and Lower Operating Band in Condition 9.i and Condition 9.ii, NHDES does not agree with the Applicant's proposed reduction of scope of the annual report. In addition, NHDES did not include a title to the annual report because FERC or another agency may require other similar annual reports, which may be titled by the agency, and NHDES does not think it necessary to constrain the name of the report in the Certification.

#### Revisions Made:

NHDES made the following revisions (shown in **bold**) to the paragraph of Condition 9.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 15<sup>th</sup> to September 30<sup>th</sup>; the Upper Operating Band from May 15<sup>th</sup> to July 31<sup>st</sup>; the Lowering Operating Band from June 1<sup>st</sup> to July 31<sup>st</sup>; or the impoundment drawdown and management procedures at any time.** ~~that are specified in Condition 8 of this certification, the Applicant shall notify NHDES of the deviation by telephone or e-mail within 24 hours after discovery of the deviation.~~ 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."

NHDES made the following revisions (shown in **bold**) to the paragraph of Condition 9.ii:

~~"Within 10 days after discovery of each deviation~~ **On the 15<sup>th</sup> 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** includes 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."

NHDES added the following paragraph (shown in **bold**) as Condition 9.iii:

**“On the 15th of each month from November to May, if any deviation(s) that required 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.”**

NHDES made the following revisions (shown in **bold**) to the paragraph of Condition 9.iii, which NHDES renumbered as Condition 9.iv.:

“By March 1<sup>st</sup> of each year (beginning the first ~~April~~ **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 ~~excursion~~ **deviation**, and a description of corrective actions taken to prevent such deviations from reoccurring.”

NHDES revised Section F. of the Certification to further specify how the Applicant should submit notifications to NHDES.

#### **C. Comments from NHFGD**

1. **Comment C.1:** NHFGD informed NHDES that NHFGD would like the Certification to require the Applicant to notify NHFGD of all deviations of requirements that the Applicant would provide to NHDES, including notifications required under Condition 9.i. for deviations of the Buffer Zone Elevations, the Upper Operating Band, the Lower Operating Band, the downstream minimum flow requirements, and the impoundment drawdown procedures.

**NHDES Response and Revisions Made:** NHDES agreed and added a requirement for the Applicant to notify NHFGD of such deviations.

2. **Comment C.2:** NHFGD informed NHDES that NHFGD would like the Applicant to submit to NHFGD a copy of the deviation and annual reports that the Applicant would submit to NHDES and other agencies as required under Condition 9.ii., Condition 9.iii., and Condition 9.iv. of the Certification.

**NHDES Response and Revisions Made:** NHDES agreed and added a requirement for the Applicant to submit deviation and annual reports to NHFGD to Condition 9.ii., Condition 9.iii., and Condition 9.iv. of the Certification.

3. **Comment C.3:** NHFGD informed NHDES that NHFGD would like to be consulted by the Applicant on the development of the required Flow / Impoundment – Compliance Monitoring Plan for the Project as required under Condition 10 of the Certification.

**NHDES Response:** NHDES agreed but NHDES had already required the Applicant to consult NHFGD on the Flow / Impoundment – Compliance Monitoring Plan in Condition 10 of the draft Certification.



**Revisions Made:** None

### **Substantive Revision to the Certification**

NHDES added the following paragraph to Section C of the Certification to include a portion of the Applicant's description of the Project's impacts on water quantity to illustrate the differences between the historical and proposed operation of the Project.

"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."

### **Minor Revisions to the Certification**

In addition to the revisions noted in the above, NHDES made other minor revisions not considered substantive to the Certification after the draft Certification was published for a public comment period. Examples include minor format revisions, grammatical and spelling corrections, revisions to the list of "ec" (i.e., electronic copy) recipients, and removing the word "DRAFT" in the header and watermark.