ATTACHMENT 1
WATER QUALITY CERTIFICATION
APPLICATION ADDENDUM

WATER QUALITY CERTIFICATION APPLICATION
ELLSWORTH HYDROELECTRIC PROJECT (FERC No. 2727)
ATTACHMENT 1

Name of Applicant: Black Bear Hydro Partners, LLC
Name of Project: Ellsworth Hydroelectric Project
Name of Waterbody Affected: Union River, Lake Leonard, Graham Lake

Background

On December 30, 2015, the Licensee for the Ellsworth Hydroelectric Project (Black Bear Hydro Partners, LLC) filed an Application for New License (Final License Application or FLA) with the Federal Energy Regulatory Commission (FERC). On April 9, 2018, the Licensee filed an initial Application for Water Quality Certification (WQC) with the Maine Department of Environmental Protection (MDEP). On September 28, 2018 the Licensee filed its Draft Biological Assessment and Species Protection Plan (SPP) with FERC. On November 21, 2018, FERC issued a Draft Environmental Assessment (DEA) for the Ellsworth Project relicensing. The DEA contains information regarding 1) comments and information that were filed with FERC in response to the FLA; 2) FERC staff's environmental review of the Project as proposed by the Licensee; 3) a review of alternative proposals submitted by resource agencies and other stakeholders; and 4) FERC staff's recommendations for the continued operation of the Project.

The Licensee carefully reviewed the DEA, and the supporting information referenced therein, and filed comments on the DEA with FERC on January 21, 2019. In response to the information provided in the DEA, along with comments filed by resource agencies and others in response to the DEA, the Licensee is filing a new application for WQC to reflect new proposals being made by the Licensee for the operation of the Ellsworth Hydroelectric Project. This attachment includes additional information regarding the Licensee's new proposals and the effects of the proposals on Project-related resources, arranged by MDEP Water Quality Certification application section, as appropriate.

Section 1 – Nature of Activity – See references on application form.

Section 2 – Existing Environment - A detailed description of the existing environment can be found in the FLA Exhibit E Sections 1.0, 4.1 and 4.4 and DEA Sections 3.1, 3.3.1 through 3.3.3, 3.3.4 and 3.3.5.

Section 3 – Project Description – See references on application form.

Section 4 – Project Operation

The Licensee is proposing changes to Ellsworth Project operations that are materially different than the proposals included in the December 2015 FLA or the April 2018 WQC Application.

1) The Licensee is proposing to modify its operation of Graham Lake, to reduce the operating range of the storage reservoir from a current range of elevation 104.2' to 93.4' (10.8 ft annual drawdown limit) to an operating range of elevation 104.2' to 98.5' (5.7 ft annual drawdown limit). The winter drawdown limit of el. 98.5' (5.7 ft) would be in effect unless Snowpack Conditions exist, as defined. [1] If such Snowpack Conditions exist, the reservoir may be drawn down to elevation 95.0' for flood control purposes, as determined through consultation with the Maine Emergency Management Agency (MEMA).

2) The Licensee is proposing to increase its proposed seasonal minimum flow from Graham Lake and Ellsworth Dam as follows:

   - From January 1 to March 31, release 105 cfs;
   - From April 1 to April 30, release 125 cfs;
   - From May 1 to June 30, release 250 cfs; and
   - From July 1 to December 31, or ice in, release 125 cfs.

   A minimum flow requirement of 125 cfs from April 1 to April 30 and from July 1 to December 31 represents an increase of 20 cfs from the existing seasonal minimum flow of 105 cfs.

These two changes are proposed in response to FERC's analysis in the DEA of Graham Lake operations and minimum flows, and as outlined by resource agencies in comment letters on the DEA.[2] As discussed in Section 8 below, the new minimum flow schedule is expected to enhance downstream fish passage, and, in combination with the proposed narrowing of the Graham Lake operating range will enhance downstream aquatic habitat and allow the Project to meet state water quality standards. The Licensee expects an annual loss of potential generation of approximately 800 MWh's due to the restrictions to the management of Graham Lake storage.

Other than these specific revised proposals, the proposed operation of the Ellsworth Project remains the same as outlined in the FLA Exhibit B, Section 1.0 and Exhibit E Section 3.0.

Section 5 – Project Plans – See references on application form. The Exhibit F drawings contain Critical Energy Infrastructure Information (CEII), instead see Exhibit G Sheets 1-3 for information regarding the location of Project structures.

Section 6 – Project Maps – See references on application form.

[1] "Snowpack Conditions" means that the water content observed in the snowpack is significantly greater than normal during early-mid March.

[2] FERC's DEA also included a recommendation for lowering the normal full pond elevation by 1.2 ft but that recommendation is not adopted herein.

Section 7 – Title, Right or Interest – See references on application form.

Section 8 – Water Quality

A) A description of applicable water quality standards and stream segment classification for the project impoundment and downstream waters, including a description of designated uses. - See references on application form.

B) A description of existing water quality in the project impoundment and downstream waters affected by the project, including a description of existing instream water uses. - See references on application form and discussion in 8(C), below.

C) A statement of the existing measures to be continued and new measures proposed for the purpose of protecting and improving water quality, including measures for the mitigation of project impacts on the designated uses of project waters.

Existing Measures to be Continued

Other than these specific revised proposals, the proposed operation of the Project remains as outlined in the FLA, Exhibit B Section 1.0 and Exhibit E Section 3. In addition, a description of the existing measures to be continued can be found in the FLA Exhibits identified in the corresponding section of the WQC application form.

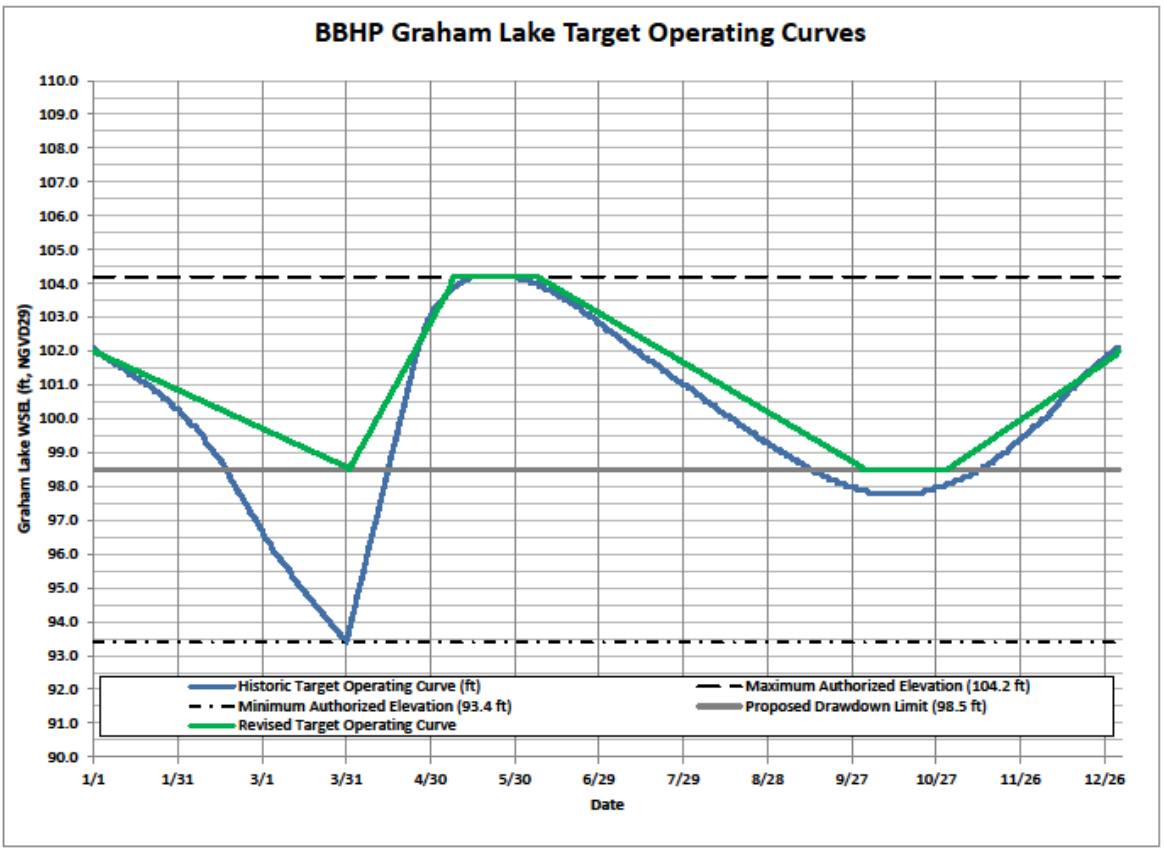
Proposed Changes to Project Operations

As detailed in Section 4 of this application, the Licensee is proposing to modify its operation of Graham Lake, to target an operating range of elevation 104.2' to 98.5' (5.7 ft annual drawdown limit), see Figure 1. The Licensee is also proposing to increase its seasonal minimum flow from Graham Lake and Ellsworth Dam as follows:

- From January 1 to March 31, release 105 cfs;
- From April 1 to April 30, release 125 cfs;
- From May 1 to June 30, release 250 cfs; and
- From July 1 to December 31, or ice in, release 125 cfs.

The Licensee is making these proposals in part to address issues raised and discussed in the FERC DEA regarding the effects of the current Graham Lake operating regime on resources, and the comments of resource agencies on the DEA. As discussed in Section 8(D) below, these proposals are expected to result in water quality improvements and further protection of aquatic habitat and will allow the Project to meet state water quality standards.

Figure 1. Historic and Proposed Graham Lake Operating Ranges



Other than these specific revised proposals, the proposed operation of the Ellsworth Project remains the same as outlined in the FLA Exhibit B Section 1.0 And Exhibit E Section 3.0.

Other New Measures Proposed

Additionally, the Licensee has previously proposed several measures to protect or enhance Project area resources and protect the State's designated uses such as recreation, and fish and aquatic life (including proposed improvements to fish passage) and are unchanged as described in the FLA and subsequently filed Species Protection Plan (See Attachment 5).

D) A description of any anticipated continuing impact on water quality from the continued operation of the project, including impacts on the designated uses of project waters.

Proposed Modification to Graham Lake Operations

The Licensee is proposing to modify its operation of Graham Lake to reduce the annual operating range of the storage reservoir from a current range of 10.8 ft to a far more limited operating range of 5.7 ft. The effects of the proposed modification on applicable designated uses is discussed below.

Habitat for Fish and Other Aquatic Life

As shown in Table 1, raising the lower reservoir elevation from elevation 93.4' to 98.5' will ensure 84% of the reservoir surface area is maintained and would keep 1,187 acres of littoral zone habitat permanently inundated. This represents an increase in the minimum reservoir surface area of 11% over current operations and an additional 1,046 acres of littoral habitat that, under current operations, becomes exposed at low pond.

Table 1. Graham Lake Surface Area at Different Elevations (as reported in DEA)

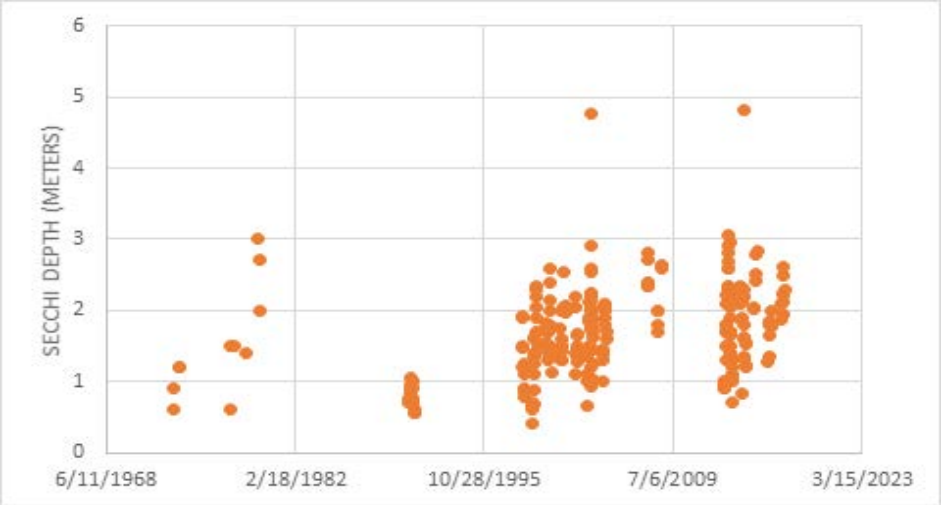
Reservoir Elevation (feet)	Description	Surface Area (acres)	% of Reservoir Inundated	Acres of Littoral Zone Maintained
104.2'	Normal full pool	10,042	100%	2,810
98.5'	Proposed minimum pool	8,419	84%	1,187
93.4'	Current minimum pool	7,374	73%	141
92.6' *	Bottom of littoral zone	7,232	72%	0

*As estimated in the FLA.

In addition to maintaining more reservoir surface area and littoral zone, the Licensee's proposal may also have a beneficial effect on water clarity. A comparison of Secchi depth data from 1990 to data collected in recent years demonstrates that water clarity was lower thirty years ago than it is today (Figure 2, below). This suggests that over time, water clarity is improving in the reservoir, and provides support for a 1990[3] report that concluded that water clarity is improving as the reservoir reaches a new equilibrium with its shoreline. Because the Licensee is proposing no change in the maximum reservoir elevation and will maintain the maximum elevation at the current 104.2', there will be no disruption to the continued stabilization of the reservoir shoreline, and, as a result, improvements in water clarity are expected to continue occur over time.

[3] Northrup, Devine and Tarbell, 1990. Graham Lake Study of the Effectiveness of Water Elevation Management Plan.

Figure 2. Secchi Depths in Graham Lake Over Time (1973-2016)



Some improvement in water clarity may also result from reducing the operating range of the reservoir from the current 10.8 ft to 5.7 ft. In the DEA, FERC staff argues that shallow Secchi depth readings in Graham Lake are due to suspended sediment rather than phytoplankton, and that changing water levels lead to decreased water clarity due to the resuspension of sediments as water moves over mudflats when the reservoir is refilled or drawn down. While the DEA does not demonstrate a statistically significant relationship between reservoir elevation and Secchi depth, to the extent that less reservoir substrate will be exposed under the Licensee's proposed drawdown limit of 5.7 feet, some additional improvements in water clarity may result. However, the Licensee would note that water color also can reduce Secchi depth readings. In fact, water color is likely a significant contributing factor to the more limited Secchi depth readings at Graham Lake, since the area inundated by the reservoir is largely comprised of peat bogs and wetlands. Water color data collected at Graham Lake during the relicensing studies demonstrates that the reservoir's waters are very strongly colored (naturally). These color values are unrelated to turbidity and sediments and are not a result of Graham Lake operations or water levels. Rather they are a natural feature of the waters in this area, due to tannins from bogs and wetlands.

Wetland and Waterfowl Habitat

The Licensee's proposal to maintain the current full pond level with a 5.7 ft limited drawdown will maintain and provide benefits to wetlands and waterfowl. There are nine (9) Inland Waterfowl and Wading Bird Habitat (IWWH) areas that have been identified on Graham Lake, five (5) of which provide high value habitat.[4] The proposal to maintain

[4] DEA Section 3.3.3.1, pg 180.

the reservoir at or above elevation 98.5' will ensure that an additional 1,046 acres of reservoir bottom will remain wetted year round, as compared to current operations, and may allow additional wetland vegetation to develop in some locations.

Table 2. Graham Lake Surface Area and Exposed Lake Bottom at Different Elevations

Reservoir Elevation (ft)	Description	Surface Area (acres)	Exposed Area (acres) from Full
104.2'	Normal full pool	10,042	0
98.5'	Proposed minimum pool	8,419	1,623
93.4'	Current minimum pool	7,374	2,669

Recreation in and on the Water and Fishing

As the Maine Department of Inland Fisheries and Wildlife noted in their comments on the DEA in a letter dated January 22, 2019, raising the minimum reservoir level is also expected to enhance winter ice fishing and reduce impacts to angler access and navigation during the open water season. FERC too discussed a number of potential benefits suggested by property owners of raising the minimum pond level in the DEA, including improved aesthetics, better ice fishing access, improved boat access resulting from less of the reservoir bottom being exposed, and improved boat access in areas having stumps and boulders that may be exposed at lower lake levels. In the DEA FERC further noted:

> The effects of the seasonal reservoir drawdowns on recreation access and the aesthetic value of the project vicinity are more pronounced at lower elevations. ...Reducing the seasonal reservoir drawdown by increasing the minimum water level elevation, as suggested by landowners and other stakeholders, would improve recreation access to Graham Lake by increasing accessibility to private and public boat ramps and docks relative to the existing minimum elevation level of 93.4 feet msl. Reducing the extent of seasonal drawdowns would also reduce the size of the mudflats that are exposed on a seasonal basis, which could allow for easier access to the lake from the shoreline and improve the aesthetic quality of the lake.

Thus, raising the minimum pond level by more than 5 feet will result in benefits for aesthetics, ice fishing access, boat access, and recreation in general.

Proposed Minimum Flow from Graham Lake and Ellsworth Dam

Article 401 of the existing license specifies a continuous minimum flow release of 105 cfs from the Graham Lake Dam and the Ellsworth Dam from July 1 through April 30 and a continuous minimum flow release of 250 cfs from May 1 through June 30 for the protection of fishery resources (FERC 1987)[5] (Table 3). Based on FERC's Staff Alternative and analysis related to minimum flows proposed in the DEA, and corresponding support of FERC's proposal by resource agencies presented in comment letters on the DEA, the Licensee is proposing to modify its proposed minimum flow releases from Graham Lake and the Ellsworth Dam from 105 cfs to 125 cfs from April 1 to April 30 and July 1 to December 31 or ice in (Table 3).

Table 3. Minimum flows proposed for the Ellsworth Project

Period	Flow (cfs)		
	FLA	FERC - DEA	Licensee current proposal
January 1 to March 31	105	105	105
April 1 to April 30		123	125
May 1 to June 30	250	250	250
July 1 to December 31, or ice in	105	123	125

These flows are expected to enhance downstream fish passage and, in combination with the proposed narrowing of the Graham Lake operating range, are expected to enhance downstream aquatic habitat and allow the Project to meet state water quality standards.

Habitat for Fish and Other Aquatic Life

In their Section 18 prescriptions, USFWS and NMFS recommended that the attraction flow for downstream passage facilities should be 5 percent of station capacity. NMFS described the downstream fish passage as occurring from April 1 through December 31, or ice in. The Licensee estimates the Project's maximum hydraulic capacity is 2,460 cfs, of which 5 percent would be 123 cfs, which the Licensee has rounded to 125 cfs. The proposed minimum flow would therefore meet the fishery agencies' objectives for improving fish passage at the Project which, in turn, enhances Project habitat as a migratory corridor for fish.

[5] Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the Licensee, the Maine DEP, and appropriate state and/or federal fisheries management agencies.

Section 9 – Public Notice

In accordance with MDEP regulations the following Notice was provided to the public:

1) A Notice of Intent to File was published in the Ellsworth American on March 21, 2019. A copy is attached as Attachment 3.
2) A completed copy of the Notice of Intent to File was sent by certified mail to landowners abutting the Project, a copy of the transmittal letter attached as Attachment 3.
3) A copy of the Notice of Intent to File and a duplicate of this application was sent by certified mail to the City of Ellsworth and Towns of Mariaville, Waltham, and Fletchers Landing (via the Land Use Planning Commission) on March 22, 2019.