

**Vermont Department of Environmental Conservation**

Watershed Management Division

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<https://dec.vermont.gov/watershed>*Agency of Natural Resources*

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March 22, 2022

Low Impact Hydropower Institute Office

329 Massachusetts Ave, Suite 6

Lexington, MA 02420

Re: Fifteen Mile Falls Hydroelectric Project (FERC No. 2077)  
Comments on Low Impact Hydropower Certification #39

Dear LIHI Governing Board,

On January 21, 2022 the Low Impact Hydropower Institute (LIHI) noticed a complete application (Application) for the recertification of the Fifteen Mile Falls Hydroelectric Project (Project) by Great River Hydro (GRH). The notice asked that comments be submitted by March 22, 2022 and that they specifically address LIHI's new criteria in the 2<sup>nd</sup> edition handbook. Based on our review, the Vermont Agency of Natural Resources (Agency) has concerns with the Project's ability to meet the LIHI criteria, which focuses on science-based agency recommendations. However, the Agency believes that with additional information and actions, operations could be better guided by science-based decisions for applicable Project activities. The Agency provides its comments, herein.

**Background**

The Fifteen Mile Falls Project is made up of three facilities located on the upper Connecticut River. Those three facilities, from upstream to downstream, include Moore, Comerford, and McIndoes. The Projects currently operate under the 2002 FERC license. At the time, the licensee undertook an Alternative Licensing Process (ALP) in collaboration with New Hampshire Department of Environmental Services, New Hampshire Fish and Game Department, Vermont Agency of Natural Resources, U.S. Fish and Wildlife Service, Environmental Protection Agency, National Park Service, regional planning agencies, and non-governmental organizations. The Alternative Licensing Process and negotiations between parties resulted in a settlement agreement (SA), that balanced both non-power and power interests. The terms and conditions laid out in the SA were filed with FERC in the license application. Those terms and conditions are how the three facilities currently operate.

The Application notes that four studies were conducted as part of the ALP<sup>1</sup>. While GRH notes that these studies occurred, they do not include information as to how these studies were incorporated into the SA and license conditions, nor are these studies included in the Application for review. The Project has not undergone LIHI recertification under the 2<sup>nd</sup> edition of the LIHI handbook. The most recent handbook

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<sup>1</sup> (1) Draft Riverine Habitat Mapping Report (Gomez and Sullivan 1997a); (2) Demonstration Flow Study for the Nine Islands Reach of the Connecticut River (Gomez and Sullivan 1997b); (3) Flow Effects on Riverine Habitat in the Main Stem of the Connecticut River (Gomez and Sullivan 1998); and (4) Final Riverine Habitat Report (USGenNE 1999).

includes language “a new emphasis on the need for a *scientific basis for agency recommendations* and mitigation” (emphasis added). In the Application GRH notes that some license conditions are informed by scientific data for example the aquatic New England baseflows make up the minimum flows for two of the three facilities and limiting drawdowns within the impoundment for spring spawners. However, some portions of the SA, such as the reservoir drawdown after the spring season and peaking flows do not appear to be based on scientific evidence but instead on the balancing of power and non-power interests. Flow fluctuations from hydropeaking facilities have been shown to cause adverse effects on downstream, aquatic habitat and biota<sup>2</sup>.

As such the Agency has limited its comments and recommended conditions to those areas where scientific data can better inform current practices without being overly burdensome. Additionally, some of the recommended conditions include updating practices based on our current scientific understanding of natural resources.

### **Ecological Flow Regime**

The Application notes that the Moore and McIndoes dams have specified minimum flows year-round, and also includes the phrase or “inflow if less”. Comerford, on the other hand, has guaranteed minimum flows from reservoir storage. Comerford minimum flows vary by season and are based on the New England Aquatic Base Flows developed by the U.S. Fish and Wildlife Service. These flows, which are calculated based on the watershed size, are generally accepted as meeting aquatic habitat needs.

In recent years, the Applicant has experienced scenarios where minimum flows out of Comerford begin to conflict with the impoundment water levels. In such cases the Applicant proactively reached out to the Vermont Department of Environmental Conservation in addition to other parties to discuss reducing minimum flows out of the Comerford facility and/or continuing to drawdown the impoundment. Under these circumstances, the Applicant and parties have been able to come to resolution, however, it would be beneficial to have site specific aquatic habitat data in the reach below the facility to help better guide these conversations during low water years.

As such the Agency is recommending the following condition as part of the LIHI certification:

- A- The applicant shall within 1 year develop a site-specific flow aquatic habitat study plan for the critical areas in the reach below the Comerford facility. This plan shall be developed in consultation with the Vermont Agency of Natural Resources and other applicable parties. The objective of this study will be to determine available aquatic habitat for target species under various flows. GRH shall then conduct the study the following year and supply the data results to the applicable parties.

### **Water Quality**

Great River Hydro collects fish tissue from the Moore and Comerford reservoirs and tests these tissues for methyl-mercury. The Application notes that airborne mercury that is then converted by bacteria, which can contribute to elevated levels of the toxic form of mercury. However, the Applicant fails to mention

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<sup>2</sup> Cushman, R.M. 1985. Review of ecological effects of rapidly varying flows downstream of hydroelectric facilities. North American Journal of Fisheries Management 5:330-339.

Freeman, M.C., Z.H. Bowen, K.D. Bovee and E.R. Irwin. 2001. Flow and habitat effects on juvenile fish abundance in natural and altered flow regimes. Ecological Applications 11:179-190.

potential Project related contributions of methyl mercury to the aquatic food chain. The Applicant continues to collect fish tissue samples and provides the results to Vermont and New Hampshire. The results continue to be high relative to other locations in the state which results in a continued fish consumption advisory specific to the Project area.

The continued high levels of methyl mercury are a concern to the Agency and to public health. Current literature suggests there could be operational or other mitigation measures that could lower the toxic form of mercury in the food web. However, the Agency recognizes some mitigation measures could be overly burdensome under the LIHI process. Therefore, the Agency is recommending the following condition be included as part of the LIHI certification.

- B- The Applicant shall within 1 year of Certification provide a literature review of potential causes of methyl mercury accumulation within the aquatic food-chain. The report should include any potential mitigation opportunities. The Applicant will additionally review the mitigation measures and determine if any are feasible in the near future. The report shall be submitted to the Vermont Agency of Natural Resources for review.

Article 404 of the Applicants FERC license indicates that there is a requirement to monitor the dissolved oxygen (DO) and temperature at the 3 facilities for 5 years. At Comerford the Applicant completed the water quality data collection in the years 2003, 2006, 2007, 2008 and 2013. The delay to 2013 was due to a proposed upgrade of the waterwheel. It was agreed by both Vermont and New Hampshire to complete monitoring after the upgrade was complete. The 2013 report was filed with Vermont and New Hampshire for comment. Both parties indicated that one year of data collected was inadequate and requested another year of sampling. From Agency records it does not appear that additional year of data was collected at the Comerford facility after completion of the waterwheel upgrade.

McIndoes and Moore data collection occurred in similar years as that of Comerford with the exception of 2013. The Applicant completed water quality monitoring after 5 years in 2008. The 2008 report was filed with FERC in July 2009. The report noted that in some years below Moore station there were short durations, typically in August and September, where DO levels did not meet water quality standards. The report continues by stating “We intend to submit a report to the NH and VT water quality agencies prior to December 31, 2009 with our proposal for addressing the issue. Upon review, consultation and approval of our proposal we will prepare a plan and schedule for instituting any such measures as well as specify if additional monitoring will be necessary.”

The Agency reviewed our records and the FERC e-library and was unable to obtain the proposed 2009 report for Moore. The Agency still has concerns with low dissolved oxygen below Moore station, in addition to concerns of only having one year of data collection to confirm water quality standards are being met below Comerford station.

The Agency takes issue with the Applicant using the DO monitoring at Moore Dam as a plus standard criteria. The DO monitoring at Moore was an agreed upon requirement by the Applicant and state agencies as part of the Unit 5 installation. In the September 3, 2021 filing referenced (pg. 4) in the Application GRH notes “Also attached to this letter is a DO Monitoring Plan developed in consultation with NHDES and VANR and together with implementation of the DO Enhancement System serves as the basis for [401] waivers issued by both state agencies.” The Agency views the DO monitoring and DO

Enhancement System as an ‘Agency recommendation’ to assure water quality standards are being met, not a ‘method to enhance ambient water quality’.

The Agency is recommending the following condition as part of the LIHI certification.

- C- The Applicant shall within 6 months of certification provide the Agency with the proposed Moore report addressing the issue of low dissolved oxygen. The Applicant shall also collect one additional year of water quality data (dissolved oxygen and temperature) below the Comerford facility according to the study plan followed in 2013. Upon completion the Applicant shall submit a report summarizing the collected data and provide the data along with needed operational data to the Agency for review.

### **Watershed and Shoreline Protection**

As part of the SA, the Applicant created a Land Management Plan (Plan). The Plan includes use of the Project land for forest production in addition to wildlife management. Much of the Project area is forested with less than 10% being developed. Additionally, conservation easements that were conveyed to New England Forestry Foundation Inc. in 2008, also adopted the current protection buffers that were established in the SA.

The Plan does not provide any means for confirming compliance with the SA. A report documenting adherence to buffer requirements and surveys of threatened and endangered species are being conducted would confirm Agency recommendations are being followed. The frequency at which a report should be provided can be discussed with the Applicant.

Additionally, the Agency reviewed the Land Management Plan supplied by GRH in the Application and was unable to find current forestry management practices. In 2018, the Vermont Department of Forest Parks and Recreation updated the “Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont”. The Agency recommends the following conditions as part of the LIHI certification so the best available science and practices are being followed as part of the shoreline protection standard, and to confirm Agency recommendations are being followed.

- D- The Applicant shall review the currently followed forestry practices and compare them to the most recent Vermont Acceptable Forestry Practices guidelines within 1 year of Certification. Should there be a discrepancy between the two, the Applicant shall adhere to the most stringent practices and update any applicable documentation (i.e. Land Management Plan).
- E- The Applicant shall provide a report to applicable stakeholders and LIHI that documents adherence to the Land Management Plan. The frequency at which this occurs shall be discussed with applicable stakeholders.

The Enhancement and Mitigation Fund was a requirement of the SA with parties. Additionally, this fund was used in the previous LIHI application to qualify as plus standard and no additional funds have been made available for future watershed protection efforts. If GRH wishes to continue to use this fund as the basis for a plus standard, we’d strongly encourage GRH to engage with relevant stakeholders and create a plan for keeping the fund solvent so that it can continue to undertake watershed protection efforts consistent with the plus standard for the duration of the certification.

### **Threatened and Endangered Species Protection**

The Applicant lists a number of threatened and endangered species in the Project area one of which is the Northern long-eared bat. A number of bat species are now state listed due to the decline in population numbers in part due to white nose syndrome, a fungal disease that can be fatal. In addition to studying the white-nose syndrome Vermont management also includes the protection of potential roosts. Current recommendations include to avoid tree trimming and removal, unless there is an emergency, between April 1 and October 31 to avoid any roost disruption of the Northern long-eared bat.

Dwarf wedgemussels (DWM), as noted in the Application, are listed as endangered federally and in the state of Vermont. DWM are known to occur upstream of the Moore development. At the time of the SA a survey was completed to locate DWM. Additionally, a hydraulic study was completed to determine if the upper extent of the impoundment overlapped with DWM locations. Mussels are known to expand into new habitat. The Agency is concerned with the condition of this endangered species and are interested in protecting areas where the population has expanded. Additionally, there is the possibility of other mussels in the survey area. These should also be documented.

The Agency is recommending the following conditions as part of the LIHI certification to update the science-based information relating to endangered species.

- F- The Applicant shall avoid tree trimming and removal, unless there is an emergency, in its Project Boundary between April 1 and October 31 to avoid any roost disruption of the Northern long-eared bat.
- G- Within two years of Certification the Applicant shall obtain the necessary permitting and conduct a limited survey in the area upstream of the Moore facility for Dwarf wedgemussels and other mussel species. Study development should be done in coordination with applicable stakeholders. If Dwarf wedgemussels or other mussels of concern, are located in the Project boundary, consult with applicable resource agencies to discuss any mitigation needs if applicable.

### **Recommendation**

Based on its review of the filed application and related pertinent information, the Agency does not believe the Fifteen Mile Falls Hydroelectric Project complies with LIHI's criteria and goals, as set forth in the 2<sup>nd</sup> edition Handbook. However, the Agency believes that with updated information and conforming project activities to current standards, the protection of resources affected by the Fifteen Mile Falls Project could be better guided by science-based recommendations within the scope of the LIHI certification process. If LIHI does certify the project, the Agency would recommend the following conditions be included in certification of the project.

- A. The applicant shall within 1 year develop a site-specific flow aquatic habitat study plan for the critical areas in the reach below the Comerford facility. This plan shall be developed in consultation with the Vermont Agency of Natural Resources and other applicable parties. The objective of this study will be to determine available aquatic habitat for target species under various flows. GRH shall then conduct the study the following year and supply the data results to the applicable parties.

- B. The Applicant shall within 1 year of Certification provide a literature review of potential causes of methyl mercury accumulation within the aquatic food-chain. The report should include any potential mitigation opportunities. The Applicant will additionally review the mitigation measures and determine if any are feasible in the near future. The report shall be submitted to the Vermont Agency for review.
- C. The Applicant shall within 6 months of certification provide the Agency with the proposed Moore report addressing the issue of low dissolved oxygen. The Applicant shall also collect one additional year of water quality data (dissolved oxygen and temperature) below the Comerford facility according to the study plan followed in 2013. Upon completion the Applicant shall submit a report summarizing the collected data and provide the data along with needed operational data to the Agency for review.
- D. The Applicant shall review the currently followed forestry practices and compare them to the most recent Vermont Acceptable Forest Practices guidelines within 1 year of Certification. Should there be a discrepancy between the two, the Applicant shall adhere to the most stringent practices and update any applicable documentation (i.e., Land Management Plan).
- E. The Applicant shall provide a report to applicable stakeholders and LIHI that documents adherence to the Land Management Plan. The frequency at which this occurs shall be discussed with applicable stakeholders.
- F. The Applicant shall avoid tree trimming and removal, unless there is an emergency, in its Project Boundary between April 1 and October 31 to avoid any roost disruption of the Northern long-eared bat.
- G. Within two years of Certification the Applicant shall obtain the necessary permitting and conduct a limited survey in the area upstream of the Moore facility for Dwarf wedgemussels and other mussel species. Study development should be done in coordination with applicable stakeholders. If Dwarf wedgemussels or other mussels of concern, are located in the Project boundary, consult with applicable resource agencies to discuss any mitigation needs if applicable.

Thank you for consideration of our comments.

Yours truly,



Betsy Simard

CC.

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