



SUBJECT - Low Impact Hydropower Institute (LIHI) Recertification Review for the Lower Penacook Project

BACKGROUND

The Lower Penacook Hydroelectric Project (Project) is authorized by the Federal Energy Regulatory Commission (FERC) as Project P-3342. The Project is owned by Briar Hydro Associates (BHA) headquartered in Boston, Massachusetts¹.

On April 7, 1981, the New Hampshire Water Supply and Pollution Control Commission (NHWSPPC) issued a water quality certificate (WQC) for the Project. On November 17, 1982 the FERC issued a 40-year license to New Hampshire Hydro Associates (NHHA) authorizing the construction, operation and maintenance of the Project². Construction was completed in 1984 when first power was generated. On June 14, 2002, the FERC authorized the transfer of the license to BHA³. The existing FERC license ends on November 1, 2022.

The Project is located on the Contoocook River in the Village of Penacook⁴ and partially in the City of Concord, New Hampshire at river mile (RM) 0.5 (latitude 43°17'8.77"N and 71°35'42.69"W). Upstream of the Project on the Contoocook River are the Upper Penacook Hydro Project, Rolfe Canal Hydro Project, York Dam and Davis Dam.

The Contoocook River rises on the eastern slopes of Mt. Monadnock in southeastern New Hampshire and ends at the confluence with the Merrimack River. The river is about 66 miles long and flows in a generally north-easterly direction through the towns of Jaffrey, Peterborough, Bennington, Antrim, Hillsboro, Henniker, and Contoocook, and has a total drainage area of 766 square miles. Its major tributaries, the Warner and Blackwater Rivers, both enter from the north, about two miles apart, near the village of Contoocook.

The watershed, which is primarily forested, contains numerous other small tributaries and many natural lakes. Elevations in the watershed range from 3165-foot mean sea level (ftMSL) at the top of Mt. Monadnock to 243-ftMSL at the confluence with the Merrimack. The Contoocook River drops about 130 feet in its final 20 miles (6.5 ft/mile).

¹ Briar Hydro Associates, c/o Essex Hydro Associates - 55 Union Street, 4th Floor, Boston, MA 02108 - Attn: Andrew Locke, President – (617-367-0032).

² <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13583895>

³ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=9514579>

⁴ The Village of Penacook is made up of a small portion of the Town of Boscawen and the northern end of the city of Concord. The project area is located on the extreme northern end of the city of Concord with a section of the tailrace located across the city line in the Town of Boscawen.



The Project utilizes a previously existing impoundment and the plant is unmanned, but operation is restricted to a run-of-river (ROR) operation monitored on a 24/7 basis. The estimated average head is 34-feet and the project is required to maintain a continuous minimum flow of 338-cfs or the inflow to the reservoir, whichever is less.

Project works consist of:

- a reservoir with an 8.4-acre surface area, and a useable storage capacity of 54 acre-feet;
- a concrete diversion spillway with three 9.5-foot by 10.0- foot-high timber gates and seven timber stop log gates;
- a concrete gravity auxiliary spillway, 316-feet-long and a main concrete spillway, gated, and 106-feet-long;
- a forebay, 70-feet-long;
- a concrete powerhouse constructed to bedrock on the same alignment as the centerline of the river profile. The overall length of the powerhouse is 97.5-feet and the width perpendicular to the profile is 35-feet. The powerhouse contains one horizontal tube-type 3-meter turbine encased in concrete with an installed capacity of 4,110 kW;
- a 55-foot-wide rock filled access area connects the north face of the powerhouse to the north river bank. Upstream and downstream sides of the access area are contained by concrete retaining walls to bedrock.
- a tailrace excavated in rock, 700-feet-long;
- transmission equipment and electrical facilities consisting of:
 - generator leads;
 - one 4.16/34.5 kV, 7.5 MVA step-up transformer;
 - 200-feet of 34.5-kV line and facilities necessary to connect the project to the grid, and;
- appurtenant facilities.

On January 19, 2011, the project was originally certified by LIHI as the “Lower Penacook Hydroelectric Project. – LIHI Certification No. 64”, effective August 13, 2010 for a term of five years ending on August 13, 2015. On June 19, 2015, the LIHI certification was extended until December 31, 2015. LIHI received a complete application for a new term of Low Impact Certification for the Project on October 30, 2015.

LIHI RE-CERTIFICATION PROCESS

Recertification review focuses solely on determining the answers to the following two questions:

- 1) Has there been a material change in circumstances since the original certification was issued?

For purposes of recertification review, a “material change in circumstances” will mean one or both of the following:

- (a) Non-compliance: Since receiving its last certification from LIHI, the certificate holder/applicant has not implemented, or has delayed implementing, or has done an inadequate job of implementing obligations at or near the facility that are of relevance to LIHI’s criteria.



These obligations could be in the form of terms and conditions of license(s), settlement agreements, resource agency recommendations or agreements, LIHI conditions of certification including annual notifications, agreements with local municipalities or other third parties or similar relevant obligations; or

(b) New or renewed issues of concern that are relevant to LIHI's criteria: Since receiving its last certification from LIHI, either new issues of concern and relevance to LIHI's criteria have emerged that did not exist or were not made known to LIHI at the time of certification, or there continues to be ongoing problems with previously known issues that appeared to LIHI to be resolved or on the road to resolution at the time of certification but in fact are not resolved, and are ongoing at the time of the re-certification application.

If a new license, settlement agreement, prescription, biological opinion or other similar regulatory decision has been made since the original recertification, these documents will be evaluated to determine if new or renewed issues have been raised.

- 2) Have any of LIHI's criteria, or the Board's interpretation of one or more criterion, changed in meaningful ways since original certification that are applicable to the circumstances of the facility seeking re-certification?

I reviewed the LIHI application to assess adherence to the LIHI certification criteria with the above in mind. The prior certification of the Project was effective on August 13, 2010 and terminated on August 13, 2015 and was extended to December 31, 2015. On October 30, 2015 LIHI received a complete application from BHA for an additional term of certification of the Project. LIHI posted the application for public notice on October 30, 2015. The public comment period closed on December 30, 2015. No public comments were received.

A FERC e-library search was conducted to verify claims in the application. The docket search contains documents from as far back as 1982. My review concentrated on the period from the start of the previous LIHI certification, approximately August 2010 through April 2016, for FERC docket number P-3342. Appendix A contains a reversed chronological list of docket items pertaining to this recertification.

On January 7, 2016, this reviewer emailed the agencies listed in the Project's Recertification application (NH Fish and Game (NHFG)⁵, US Fish and Wildlife Service (USFWS)⁶, NH Department of Environmental Services (NHDES)⁷, NH Department of Resources and Economic Development (NHRED)⁸, NH Natural Heritage Bureau (NHNHB)⁹, National Marine Fisheries Service (NMFS)¹⁰, National Park Service (NPS)¹¹). In my email I stated, "... *I am the LIHI reviewer tasked with*

⁵ NHFG, Carol Henderson, Carol.Henderson@wildlife.nh.gov - 603-271-3511

⁶ USFWS, John Warner, john_wamer@fws.gov - 603-223-2541 x 15

⁷ NHDES, Ted Walsh, Ted.Walsh@des.nh.gov - 603-271-2083

⁸ NHRED, Sara Cairns, Sara.Cairns@dred.state.nh.us - 603-271-2215 x. 9302

⁹ NHNHB, Melissa Coppola, Melissa.Coppola@dred.nh.gov - 603-271-2215 x 323

¹⁰ NMFS, Jeff Murphy, jeff.murphy@noaa.gov - 207-866-7379

¹¹ NPS, Kevin Mendik, kevin_mendik@nps.gov - 617-223-5299



determining whether the project should be LIHI recertified. I am emailing you today because you have been identified in the application as resource agency and non-governmental organization contacts familiar with the project. I would appreciate your perspective regarding the project's proposed operation with regard to satisfying its licensed environmental obligations and your views pertaining to the project being "low impact". Without your input my review can only be based on the documents found in the FERC docket. Thank you for your time in this matter. Please refer to the LIHI website for more details on the project's application and LIHI low impact criteria. [http://lowimpachydro.org/...](http://lowimpachydro.org/)"

The only Agency response I received follows:

- NHDES - On January 7, 2016, I received an email from Mr. Ted Walsh stating, "...Attached is the letter NHDES sent to the applicant outlining the information we would need to determine if the project is causing or contributing to violations of the state's water quality standards. NHDES has not yet received all of the information we requested ..." In the attached October 5, 2015 letter the NHDES states, "... In order for DES to determine if the subject hydroelectric project is causing or contributing to water quality standard violations, new monitoring and information is needed ... Environmental data and project information is needed to address the following water quality concerns that are typically associated with hydropower projects: 1. Impact on ambient water quality criteria; 2. Impact of pond fluctuations on aquatic habitat; 3. Maintenance of adequate minimum flows to protect downstream aquatic life; and 4. Adequate upstream and downstream fish passage ..."

Since I could not find any response to NHDES's letter by BHA, on April 20, 2016, I emailed Mr. Andrew Locke, President of BHA requesting any correspondence BHA may have provided in response to NHDES's October 5, 2015 letter. I also asked for a statement or letter from any state /federal agency stating that the Project's operations had no effect on threaten and endangered species. I gave BHA until May 15, 2016 to respond to my request. On this same date, I had a brief conference call with Mr. Locke and Ms. Anderson discussing my requested data.

On April 21, 2016, BHA emailed the NHDFG¹² attaching a September 18, 2015 letter from the NHHNB. In the letter, although the NHHNB agrees that no federally or state listed endangered plant species occur within the project area, the NHHNB recommends that the NHDFG should be contacted concerning an assessment with wildlife species. In the email, BHA asked NHDFG for an assessment on wildlife species. A series of additional emails between BHA and NHDFG occurred on April 29, 2016 from the NHDFG and on May 3, 2016 and May 10, 2016 from the BHA. On May 10, 2016, the last email from the NHDFG stated that the department will need to do a review before making an assessment. Once completed, the BHA will be contacted.

On April 28, 2016, BHA emailed Mr. Ted Walsh stating that for the LIHI recertification process BHA is certifying to LIHI that nothing has changed in the way the Project is operated. Based on no operational changes, the Project therefore has no impact, positive or negative on the water quality of the Contoocook River. BHA also proposed an alternative water quality testing protocol for the Project.

¹² NHDFG – Carol Henderson - Carol.Henderson@wildlife.nh.gov



Instead of performing the full scale set of tests contemplated by NHDES, BHA would perform “spot tests” that would serve to verify BHA’s claim that the water quality has not be impacted. BHA offers four water samples to be conducted to test for chlorophyll and phosphorous and 4 spots tests for dissolved oxygen to achieve this verification. Specific details would need to be worked out.

On May 11, 2016, BHA emailed me an update on my information requests. Regarding threatened or endangered species, BHA contacted the NHDFG and NHNHB for their concurrence that the Project does not affect listed plant or animal species of concern. BHA stated that LIHI will be forwarded agency responses upon their receipt. Also, BHA stated that they contacted the NHDES regarding their water quality concerns as contained in their October 5, 2015 letter. BHA states that the NHDES will be issuing a revised letter that outlines the process for water quality monitoring and a revised information request. BHA will share the updated letter from NHDES when it becomes available. BHA also attached all correspondence to FERC regarding the Project’s compliance with minimum flows. These documents can also be found on the FERC docket.

Also, on May 11, 2016, BHA emailed Ted Walsh. BHA stated that they are working to recertify the Project with the LIHI. BHA requested a letter from NHDES that these projects are not causing or contributing to water quality standards. Regarding the NHDES’s October 5, 2015 letter pertaining to pond level fluctuations over the past five years, BHA requested what level of granularity the NHDES would prefer this data to be presented in.

On May 17, 2016, I forwarded BHA’s May 11, 2016 minimum flow compliance letters I received to Mr. Ted Walsh. I also asked Mr. Walsh for confirmation on the general content contained in BHA’s May 11, 2016 email to me and offered him the opportunity to make additional comments or talk to me directly. On May 19, 2016, Mr. Walsh emailed me that he had contacted Mike Sale at LIHI and that he is in the process of working out with Mr. Sale the role NHDES will play in re-certifications. Mr. Sale called me on May 19, 2016 to verify that a phone conversation with Mr. Walsh did occur.

Also, on May 19, 2016, BHA forwarded me a response from NHNHB¹³ stating that based on more recent review the NHNHB has included a historical record for long-leaved pondweed (*Potamogeton nodosus*). It is not known when this plant was last seen and therefore they do not have accurate data regarding the status of the *Potamogeton nodosus* population in the Contoocook River, either current or historical. Therefore, it is not possible for NHNHB to say whether or not the dam has impacted this species. NHNHB also states that the initial installation of the dam, as well as other upstream dam on the Contoocook River Reservoir, have altered water levels. Without knowledge on average daily fluctuations or potential evidence of scour on riverbanks, it is difficult to say whether habitat for *Potamogeton nodosus* has been maintained.

¹³ NHNHB - Amy Lamb, Ecological Information Specialist – (603. 271-2215 ext. 323 -Amy.Lamb@dred.nh.gov)



RE-CERTIFICATION REVIEW

This section contains my review of the Project with regard to LIHI's certification criteria focusing solely on determining if there has been a material change in circumstances since the original certification was issued.

LIHI Criterion-Flows and Pond Fluctuations

A US Geological Survey (USGS) gage (01088000), located one-half mile upstream from the mouth of the Contoocook River, was maintained on the river from 1928 to 1977. The average flow over the 49 years of record was 1,255 cubic feet per second (cfs). The maximum discharge of record, 46,800-cfs, occurred on March 20, 1936; the minimum, 38-cfs, occurred August 17, 1965. Daily minimum flows of 57-cfs were recorded on October 12, 1964 and August 16, 1965. The 7Q10¹⁴ for this period is 94-cfs.

Although no resource agency has issued flow conditions for fish and wildlife protection, mitigation and enhancement compliance with recommendations since December 31, 1986, in accordance with its FERC License, the Project is operated as a ROR facility and is responsible for maintaining a continuous minimum flow of 338-cfs or inflow to the reservoir, whichever is less.

As recently requested in the October 5, 2015 letter from the NHDES, with regard to minimum flows and pond fluctuations, the agency wants BHA to issue a statement that the above minimum flow operations are the same in 2015 as they were during the 2010 LIHI certification and if not, to provide a summary to NHDES of the changes. Assuming no minimum flow management has changed; NHDES would appreciate a statement verifying that minimum flow requirement continues to be equal to the lesser of 338-cfs or project inflow.

A review of the FERC docket indicates that BHA's initial letter to FERC since issuance of LIHI's initial certification for the Project, stating the Project's adherence in meeting minimum flows, occurred on January 6, 2012, for calendar year 2011¹⁵. I could not find any similar correspondence for calendar year 2010. Similar submissions were filed for calendar years 2012, 2013, and 2014. In these letters, BHA states that minimum flows have been met without provide any data to verify their submission.

On February 2, 2015¹⁶, the FERC spoke with BHA regarding its annual minimum flow certification notification filings and advised that FERC no longer requires certification of minimum flows unless required by the license or unless minimum flow deviations have occurred. In this latter case, this notification must be made within the required reporting time, typically 10 days.

¹⁴ 7Q10 – A streamflow metric used to measure a stream's minimum flow characteristics. The parameter is calculated by initially calculating seven day rolling averages based on daily or hourly stream flow data. The seven data averages are then used in a frequency analysis to estimate the seven day rolling average flow that has a 90 percent change of being exceeded or conversely a 10 percent change of being lower.

¹⁵ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=12861131>

¹⁶ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13766460>



As requested in the October 5, 2015 letter from the NHDES, with regard to minimum flows and pond fluctuations, the agency wanted the BHA to issue a statement that the above minimum flow operations are the same in 2015 as they were during the 2010 LIHI certification and if not, to provide a summary to NHDES of the changes. Assuming no minimum flow management has changed; NHDES would appreciate a statement verifying that minimum flow requirement continues to be equal to the lesser of 338-cfs or project inflow.

On April 28, 2016, BHA sent an email to NHDES stating that the Project's operation will continue unchanged going forward. On May 17, 2016, BHA's letters to FERC certifying minimum flow compliance were forwarded to the NHDES. Also, in a May 11, 2016 email to NHDES, BHA addressed NHDES's concerns pertaining to pond level fluctuations over the past five years. BHA requested what level of granularity the NHDES would prefer this pond elevation data to be presented in. Data can be summarized as refined as every fifteen minutes. To date no response from the NHDES has occurred.

During the prior certification period, a review of the FERC docket indicates that BHA has been in compliance in meeting minimum flows. Also the Project's operation has not been altered and BHA indicates that the Project will continue to operate in a like fashion. BHA has approached the NHDES pertaining to their concerns about minimum flows and pond fluctuations going forward. The BHA is currently waiting for the NHDES to provide more detail on the format required pertaining to pond fluctuation history over the last five years. Given that BHA will keep the LIHI informed on the status of this issue and provide LIHI all future related correspondence, then I am satisfied that this LIHI criterion has been met.

LIHI Criterion-Water Quality

As stated previously, on April 7, 1981, the NHWSPCC issued a WQC for the Project. In the LIHI application for recertification BHA states:

- The Project is in compliance with quantitative water quality standards established by the state;
- There have been no deficiencies noted by any state or federal agency in regards to the project's impact on the water quality of the Contoocook River since the project began operation in 1983;
- BHA is working with Mr. Ted Walsh, Surface Water Monitoring Coordinator for the NHDES to develop and implement a testing program to confirm that the Project is not causing or contributing to violations of state water quality standards;
- Testing was completed in 2010 and by NHDES letter dated December 21, 2010 based on the operations at that time it appeared the Project was not causing or contributing to water quality standard violations;
- Testing on current conditions began in August 2015 and will be completed by September 30, 2015;
- Testing results will be forwarded to the Low Impact Hydropower Institute upon receipt.

In NHDES's December 21, 2010 letter the agency stated, "... *it appears the Contoocook River immediately upstream and downstream of the Penacook Lower Falls Hydroelectric Project is not causing or contributing to water quality standard violations at this time ... please note that this assessment could change in the future should a change in water quality criteria and/or new data*



indicate water quality violations. It could also change if the NHFG and/or USFWS conclude in the future that upstream or downstream fish passage is not adequate ...”

As noted in NHDES’s October 5, 2015, their current position is that new monitoring is needed for the NHDES to determine whether or not the Project is currently impacting ambient water quality criteria and proposes locations and water quality parameters to monitor.

On April 28, 2016, BHA notified the NHDES via email that nothing has changed in the way the Project is operated and therefore the Project’s operation has no impact, positive or negative on the water quality of the Contoocook River during the prior LIHI certification period. BHA also proposed an alternative water quality testing protocol for the Project by performing “spot tests” that would serve to verify BHA’s claim that the water quality has not be impacted. This approach offers four water samples to be conducted to test for chlorophyll and phosphorous and 4 spots tests for dissolved oxygen to achieve this verification with specific details to be worked out with NHDES.

During the prior certification period, a review of the FERC docket indicates that BHA has not made any submissions to FERC pertaining to water quality issues. Although no non-compliance issues were found, a request by the NHDES to update existing data has been made. Since BHA proposes no changes to the operation of the Project, I believe the BHA alternative approach for testing the water quality will suffice in meeting LIHI’s concerns. Given that BHA will keep the LIHI informed on the status of this issue and provide LIHI all future related correspondence, I am satisfied that this LIHI criterion has been met.

LIHI Criterion-Fish Passage and Protection

Article 32 of the 1982 FERC license provided for the construction of fish passage facilities at the Project within three years after the completion of fish passage facilities at the downstream Sewalls Falls Project (FERC No. 3040). In April 1984 a flood washed away one-third of the Sewalls Falls Dam. The dam was never rebuilt. As a consequence, it was necessary to delete reference to the Sewalls Falls Project in connection with the construction of fish passage facilities in the Merrimack River basin. Now, the Garvin's Falls Project became the next downstream dam from the Project.

On October 16, 1986, the FERC issued an Order Amending license. This order updated Article 32 for the Project to reflect an agreement between Public Service of New Hampshire (PSNH) and the state and federal fishery agencies regarding the construction of fish passage facilities at the mainstream dams on the Merrimack River. Article 32 requires the Project to file functional design drawings with the FERC within two years after the passage of 15,000 adult American shad at the Garvins Falls Project (FERC No. 1893). To date this passage of American shad has not yet occurred.

The 1986 License requires the functional design drawings to be prepared in consultation with the New Hampshire Department of Fish and Game (NHDFG) and the USFWS. Since the Project began operation, the Merrimack River fish restoration program has not achieved its original goals. Consequently, agreement was reached among various state and federal agencies and affected hydroelectric projects on the Merrimack and Contoocook rivers to delay the originally contemplated installation dates of upstream fish facilities at projects above the Amoskeag dam in Manchester, N.H. until a minimum of 15,000 American Shad are observed at that dam.



The Garvin Falls Project (GFP) is the one intervening hydroelectric plant between the Amoskeag facility and the Project. The GFP is required to install upstream fish passage facilities within 3 to 5 years after the passage of 15,000 American shad at the Amoskeag dam. The Project is required to install its fish passage facilities within 3 years after 15,000 American shad are present at the GFP. A letter in March of 2009¹⁷ between the GFP and FERC states that during 2008, no American shad or river herring were observed at the Amoskeag development. Consequently, BHA believes since the GFP was not required to install fish facilities until 2012 at the earliest, the soonest the Project would be required to install its facilities is 2015, three years from 2012.

For an updated status on upstream American Shad passage, I performed a web search and found on the USFWS Central New England Fisheries Resources Office's web site¹⁸, that American Shad passage above the Amoskeag Dam continues to document no passage of fish as of May 31, 2016.

With respect to downstream fish passage the Project maintains a 40-cfs downstream flow through a pipe located in the gated concrete spillway of the project. In accordance with USFWS requirements, the bypass flow is maintained from May 1 through June 30 of each year.

In the application BHA states:

- Anadromous and/or catadromous fish are present in the Project area or are known to have been present historically. Additionally, the facility is in compliance with mandatory fish passage prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by resource agencies after December 31, 1986;
- BHA stated that they have ongoing and periodic consultation with the USFWS and the NH Department of Fish and Game (NHDFG), concerning the schedule for design and construction of upstream and downstream fish passage facilities. BHA also stated that the Project is in compliance regarding downstream migration facilities, with all the installed facilities functioning satisfactorily;
- In recent discussion with USFWS and NHDFG regarding upstream passage facilities, barring changes to river conditions or fish management plans, BHA's next scheduled consultation on these matters was scheduled to take place no earlier than June 1, 2012.

During the prior certification period, a review of the FERC docket indicates that BHA made one submission to FERC pertaining to fish passage and protection issues¹⁹. Also no non-compliance issues or areas of new concerns were found. I am satisfied that this LIHI criterion has been met.

LIHI Criterion-Watershed Protection

BHA states that there is no buffer zone dedicated for conservation purposes extending 200 feet from the average annual high water line for at least 50% of the shoreline. Additionally, no approved

¹⁷ <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11959795>

¹⁸ <http://www.fws.gov/northeast/cnefro/returns.html#AMO>

¹⁹ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=12295744>



watershed enhancement fund exists that could achieve within the watershed the ecological and recreational equivalent of land protection.

My review was unable to find any references to shoreline manage plans within the FERC license or the FERC docket.

During the prior certification period, a review of the FERC docket indicates that BHA has not made any submissions to FERC pertaining to watershed protection issues. No non-compliance issues or areas of new concerns were found during the last LIHI certification period. I am satisfied that this LIHI criterion has been met.

LIHI Criterion-Threatened and Endangered Species

In the application BHA states that:

- No species in the Contoocook River watershed are currently federally listed as endangered. The following species are currently listed by the state of New Hampshire as threatened, endangered or species of Special Concern:
 - long-leaved pond weed (*Potamogeton nodosus*) – Threaten
 - Bald Eagle (*Haliaeetus /eucocephalus*) - Threaten
 - Fowler's Toad (*Bufo fowleri*) – special concern
 - Wood Turtle (*Glyptemys iiiSculpta*) – special concern
- The FERC license requires compliance with any terms and conditions that Federal or State Fish and Wildlife agencies have determined appropriate to prevent loss of, or damage to, fish and wildlife resources. The NHDFG did not request the FERC to require a cumulative impact study for this facility.
- There have been no deficiencies noted by any agency with jurisdiction for the facility. A request was submitted to the New Hampshire Natural Heritage Bureau (NHHB) for a comprehensive list of all threatened or endangered species in the vicinity of the project. On September 18, 2015, the NHHB sent a letter to BHA supporting BHA's conclusion regarding species impacted by the facility. For the three wildlife species found, the NHHB directed the BHA to contact the NHDFG for further guidance.

On May 19, 2016, BHA forwarded me an email response from NHDFG stating they need to perform a department review before making an assessment on wildlife species. Also, an email response from the NHHB was provided stating they do not have accurate data regarding the status of the *Potamogeton nodosus* population in the Contoocook River, either current or historical. Therefore, it is not possible for NHHB to say whether or not the dam has impacted this species. NHHB also states that the initial installation of the dam, as well as other upstream dam on the Contoocook River Reservoir, have altered water levels. Without knowledge on average daily fluctuations or potential evidence of scour on riverbanks, it is difficult to say whether habitat has been maintained.

*During the prior certification period, no non-compliance issues or areas of new concerns were found. Recent response from NHDFG concludes further study is required before making an assessment on wildlife species. The NHHB concluded that they do not have accurate data regarding *Potamogeton nodosus* population in the Contoocook River, either current or historical to make a proper biological assessment and recommended studies. However, since no significant*



changes in Project operation or overall river conditions have been identified during the prior certification period, I am satisfied that this LIHI criterion has been met.

LIHI Criterion-Cultural Resource Protection

BHA states the Project is in compliance with all requirements regarding cultural resource protection, mitigation or enhancement.

BHA submitted a Request for Project Review to the New Hampshire Division of Historical Resources (NHDHR) and provided a boundary map encompassing both the Penacook Upper and the Penacook Lower Project boundaries. On February 9, 2010 the NHDHR confirmed that there are no historic properties affected by the project.

My review could not find any other correspondence within the FERC docket pertaining to cultural resources protection concerns.

The Facility is in compliance with all requirements regarding Cultural Resources. A review of the FERC docket indicates that during the prior LIHI certification period, no new concerns pertaining to protection of cultural resources have occurred.

LIHI Criterion-Recreation

BHA states the Project is in compliance with the recreational access, accommodation and facilities conditions in its FERC license.

Prior to licensing, there were no developed recreational facilities within the project vicinity. As part of the FERC licensing process, the USFWS recommended access to anglers across project lands including a boat-launching ramp below the dam and a small parking area be provided. The Project has constructed and currently maintains a parking area and boat launch facility in a cove on the southern shore of the Contoocook River approximately 700 feet downstream of the powerhouse free of charge to visitors. The boat launch area provides access to the Merrimac River and is widely used by local fishermen, daytime boaters and by local kayak clubs. Moderate levels of angling have been observed in the project's impoundment and on the southern bank of the tailrace during the 27 years of project operation. Access is gained to the southern bank of the tailrace by crossing BHA property immediately downstream of the powerhouse or from property surrounding the boat launch ramp. An abandoned mill prevents access on the northern bank of the tailrace area.

My review could not find any other correspondence within the FERC docket pertaining to recreation concerns.

The Facility is in compliance with all requirements regarding Recreation. A review of the FERC docket indicates that during the prior LIHI certification period, no new concerns pertaining to recreation have occurred.



LIHI Criterion-Facilities Recommended for Removal

A review of the FERC docket indicates that during the prior LIHI certification period, the Project has not been recommended for removal by a natural resource agency.

RECOMMENDATION

A review of the recertification application, additional documentation noted herein, public comments submitted in writing or other communications with resource agencies and other entities, and a FERC docket search for the current LIHI certification period has been conducted. I have concluded that there are no material changes or violations of required operations that have occurred during this period.

I recommend that BHA be issued a LIHI recertification for an additional five years for the Lower Penacook Hydroelectric Project, FERC Docket P-3342, based on the following conditions:

- 1. BHA has approached the NHDES pertaining to their concerns about minimum flows and pond fluctuations going forward. The BHA is currently waiting for the NHDES to provide more detail on the format required pertaining to pond fluctuation history over the last five years. The BHA will prepare the pond fluctuation summary report within 60 days after receiving a response from the NHDES pertaining to an agreed to reporting format. The BHA will also provide a copy of this report to LIHI along with all related correspondence.*
- 2. Within 30 days after LIHI recertification, BHA will contact the NHDES to work out final details on the alternative approach for spot testing the water quality as proposed by BHA. The BHA will also provide LIHI with all related correspondence pertaining to this issue.*

Gary M. Franc



FRANC LOGIC

*Licensing & Compliance
Hydropower Consulting & Modeling*



APPENDIX A
SUMMARY OF E-LIBRARY SEARCH
(REVERSE CHRONOLOGICAL ORDER)