

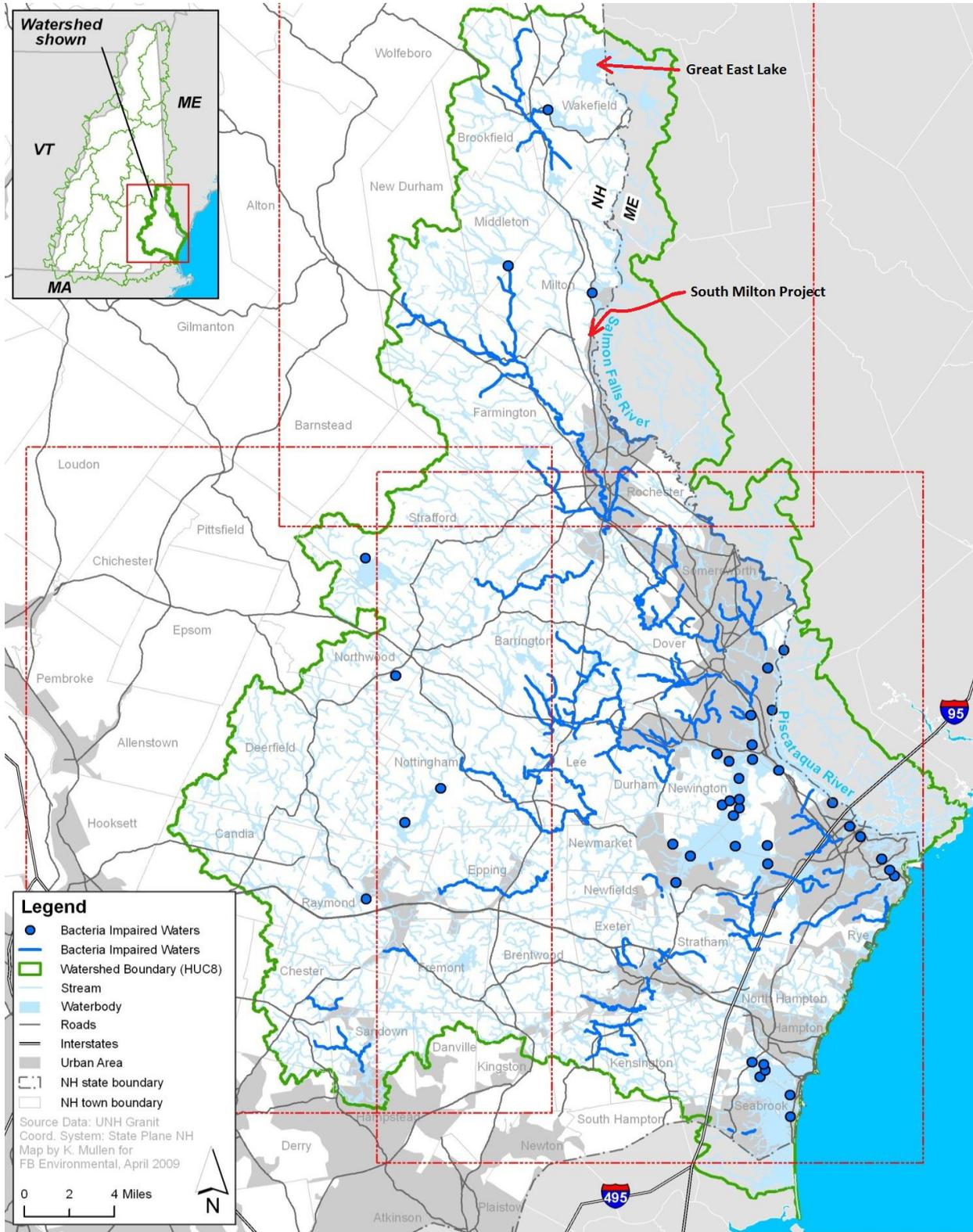
## **REVIEW OF APPLICATION FOR CERTIFICATION OF SOUTH MILTON HYDROELECTRIC PROJECT**

This report provides review findings and recommendations related to the application submitted to the Low Impact Hydropower Institute (LIHI) on September 6, 2012 by Essex Hydro Associates, L.L.C. as the agent for the Salmon Falls River Hydro Corporation, or SFR Hydro (Applicant) for Low Impact Hydropower Certification of the South Milton Hydroelectric Project (the Project).

### **I. PROJECT'S GEOGRAPHIC LOCATION**

The South Milton Hydroelectric Project is located on the Salmon Falls River in the town of Milton, New Hampshire. The Salmon Falls River originates at Great East Lake about twelve miles due north of the Project site. The river flows principally southeast from the Project site to join the Cochecho River, which flows in from the west in the town of Dover, New Hampshire. Together they form the Piscataqua River, which is a tidal river that enters the Atlantic Ocean twelve miles downstream in Portsmouth, New Hampshire and Kittery, Maine. The Salmon Falls River, with a length of 38 miles, forms a portion of the southern border between New Hampshire and Maine. Except for the Project dam, all Project infrastructure is located in New Hampshire.

The Project dam is one of fifteen dams located on the Salmon Falls River. Six federally licensed or exempted hydroelectric projects are located between the Project and South Berwick, Maine: North Rochester (FERC Project No. 3985), Boston Felt (FERC Project No. 4542), Somersworth (FERC Project No. 3820), Lower Great Falls (FERC Project No. 4451), Rollinsford (FERC Project No. 3777), and South Berwick (FERC Project No. 11163). Below South Berwick, the river becomes tidal for its last three miles before entering the Piscataqua River.



**Figure 1. Piscataqua River Basin showing Project location.**



**Figure 2. South Milton Project and nearby dams.**

## **II. PROJECT AND IMMEDIATE SITE CHARACTERISTICS**

The mills on the upper Salmon Falls River were initially developed in the early 1900's by the Jonas Spaulding, a partner in Spaulding Fiber, a manufacturer of leatherboard, transformer board, and vulcanized fibre founded in 1873 in Townsend Harbor, Massachusetts. The New Hampshire mills were operated for leatherboard manufacture under the name the J. Spaulding and Sons. Dams related to this manufacturing enterprise persist and are shown in Figure 2.

Project works consist of: (1) a 164-foot-long concrete-capped timber crib dam which is 16.4 feet high at its highest point; (2) a 6-foot 6-inch-diameter, 3,800-foot-long steel penstock; (3) a powerhouse located in the former Spaulding Fiber Company Mill 4,600 feet downstream of the dam; (4) three turbines, with Units 1, 2, and 4 located in Mill Building No. 1 and Unit 3 located in adjacent Mill Building No. 2. Mill building No. 1 is considered the primary powerhouse with

the controls and electrical cubicles situated within. Each of the generating units has individual draft tubes which discharge flow into a common tailrace. The Project dam forms a 100-acre impoundment with an average depth of 15 feet and a gross storage capacity of about 768 acre-feet. The FERC exemption application Exhibit B indicates that the headpond elevation is 340 feet and the tailwater 238 feet, presumably referenced to sea level.

The dam was completed in 1893. The upper six feet of the dam consists of stanchion stoplogs. Two 10.5 feet wide by 6.5 feet high wooden wastegates were incorporated in the structure in 1999. The gates are motorized. The intake structure is comprised of a trashrack, a custom built trash rake system, a manually operated headgate, and a transition section which feeds the penstock. The trashrack rake system is operated manually on a daily basis and more frequently during specific times of the year such as during the fall and during ice break-up periods.

The station has a capacity of 2.05 MW.

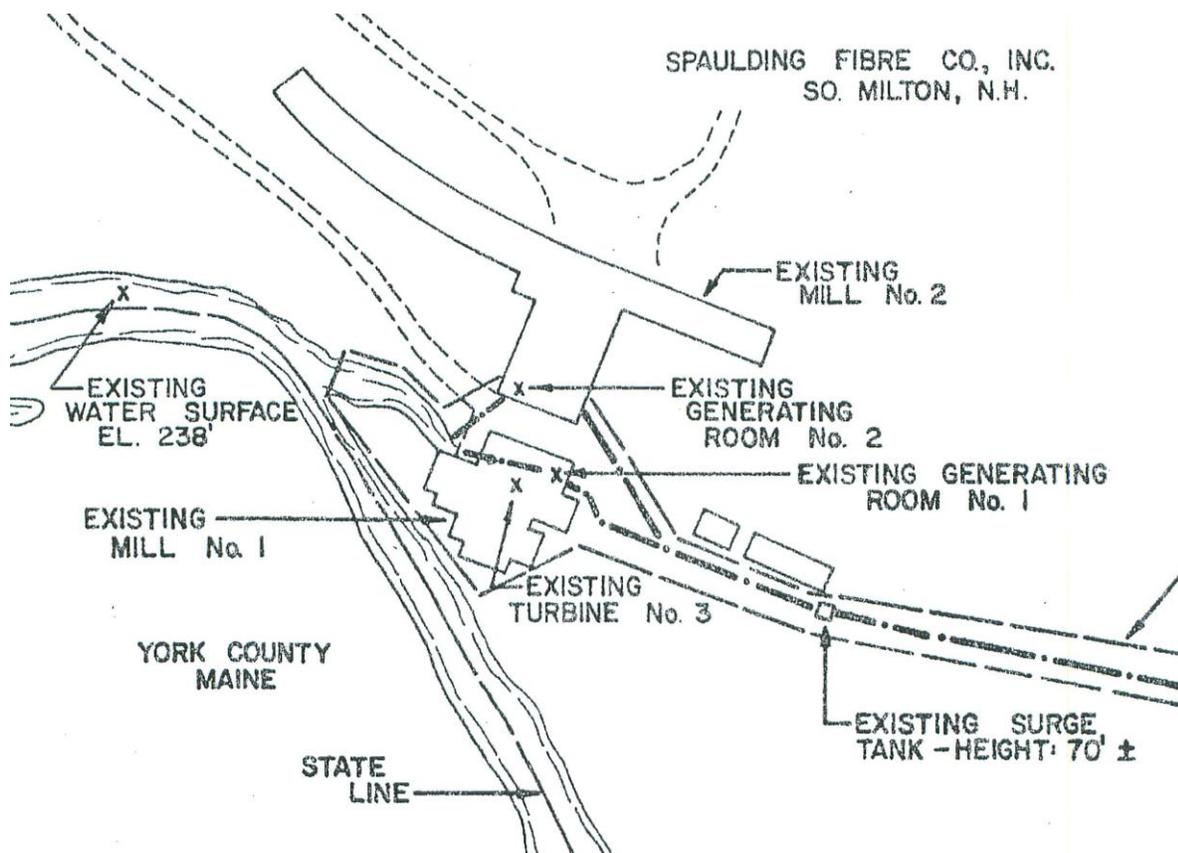
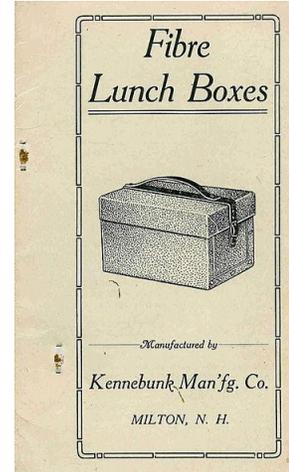


Figure 3. Hydroelectric plant layout (drawing oriented with north to right).



**Figure 4. Mill Building 1 with main powerhouse.**



**Figure 5. West section of dam looking towards Maine shore. The struts support the stanchion stoplogs.**



**Figure 6. East section of dam from Maine side showing two sluiceways, one of which is adjusted to release the bypass minimum flow.**



**Figure 7. Tailrace channel before convergence with river channel.**

### III. REGULATORY AND COMPLIANCE STATUS

The Federal Energy Regulatory Commission (FERC) granted the Project an exemption from licensing of a small hydroelectric project 5 megawatts or less under the standard articles on June 30, 1981 as Project No. 3984. The exemptee was Spaulding Fiber Company. SFR Hydro Corporation and the Project were purchased by Algonquin Power Systems Inc. in July 2000. Abenaki Timber Company purchased the SFR Hydro Corporation and the Project from Algonquin in February 2012.

The Project is subject to exemption terms and conditions set forth in resource agency letters, copies of which were provided to LIHI in a supplemental filing of September 6, 2012. The primary terms and conditions are contained in letters from the New Hampshire Department of Fish and Game (NHDFG) (April 20, 1981), the Maine Department of Marine Resources (January 5, 1981), the U.S. Fish and Wildlife Service (USFWS) (January 1981) and the U.S. Department of Interior (DOI) (May 8, 1981):

1. Fish passage upon initiation of an anadromous fish restoration program for the Salmon Falls River;
2. No operation of South Milton in a peaking manner that would reduce flows below South Berwick below 50 cfs (the tidal reach);
3. A minimum flow below the Project of 58 cfs, or inflow if less; and
4. An interim minimum flow of 25 cfs in the bypassed reach subject to adjustment by the NHDFG, after one year has passed, based on suitability for a “put-and-take” rainbow trout fishery.

No compliance issues were revealed in my review of the last ten years of documents in FERC’s eLibrary. The exemptee annually files minimum flow compliance statements with FERC.

### IV. PUBLIC COMMENTS RECEIVED BY LIHI

The LIHI application was publicly noticed on July 30, 2012. No comments were received during the notice period, which ended on September 30, 2012.

### V. LIHI CRITERIA REVIEW

Under each of the issue sections that follow, I include a table that contains the related LIHI questionnaire sections and my analysis and conclusions.

**General Conclusions and Recommendations.** I recommend that the facility be conditionally certified for the standard period of five years, with four recommended conditions to address issues related to bypass conservation flows, flow compliance, fish passage, and protection of historic resources. The four recommended conditions are set forth below. If these conditions are

attached to the certification, it is my opinion that the Project will meet all of LIHI's criteria.

Regarding flows, the facility as exempted operates in an instantaneous run-of-river mode with a minimum flow equivalent to the USFWS summer aquatic base flow both in the penstock bypass and downstream of the project, although the regulatory record on the minimum flow is unclear. The basis for the current minimum flow could not be found; given that, any LIHI certification should be conditioned on this flow standard being met. I am also recommending that the Project flow monitoring plan be revised to include bypass flows.

Regarding water quality, the New Hampshire Department of Environmental Services (NHDES) indicates that, based on data provided by the Applicant, the Project is currently meeting water quality standards.

Regarding fish passage, catadromous American eel are present in the basin upstream of the Facility dam but no permanent measures are in place to accommodate safe upstream and downstream passage. Consequently, I recommend that the certification be conditioned to require fish passage for eel with permanent measures designed and implemented as acceptable to the USFWS and NHDFG; interim downstream passage measures are already provided. Anadromous species are not present nor is passage likely to be needed within the term of the certification; however, the fish passage condition I am recommending would require the Applicant to notify LIHI should circumstances change.

Regarding cultural resources, the mill buildings housing the generating equipment may be National Register eligible; however, there is no requirement under the FERC exemption to protect historic resources. Consequently, I am recommending a related condition.

Regarding other LIHI criteria, there are no known listed T&E species at the site. The Project does not qualify for extension of the certification term by three years under the watershed protection criteria, and there is no shoreland management plan with which the Applicant must comply. Recreational access within the limited ownership of the Applicant is provided. No dam removal has been recommended.

**Issue 1.** While the project is operated to provide a minimum bypass flow of 58 cfs, the Applicant was unable to provide the regulatory record of the increase from the original interim requirement of 25 cfs.

**Recommended Condition No. 1.** SFR Hydro shall maintain a minimum flow of 58 cfs, or inflow if less, in the penstock-bypassed reach of river.

**Issue 2.** The FERC-approved flow monitoring plan does not address releases into the penstock-bypassed reach.

**Recommended Condition No. 2.** After consultation with the USFWS, the N.H. Department of Fish and Game, and the N.H. Department of Environmental Services, SFR Hydro shall revise the Project flow monitoring plan to address the method for releasing the bypass minimum flow and how records will be supplemented to enable demonstration of compliance with the bypass minimum flow. The revised plan will be filed with FERC for approval within 90 days of LIHI's grant of certification; SFR Hydro shall copy LIHI on the filing.

**Issue 3.** While the Applicant has interim measures in place to pass American eel, a species which currently uses the Salmon Falls River, downstream, there is a need for permanent upstream and downstream passage. The Applicant proposes to develop and implement a plan for upstream and downstream passage in consultation with, and subject to approval by, the USFWS and the New Hampshire Department of Fish and Game.

**Recommended Condition No. 3.** By October 1, 2013, SFR Hydro shall enter into, and provide LIHI with a copy of, an agreement reached between the USFWS, the New Hampshire Department of Fish and Game, and SFR Hydro for providing both interim and permanent downstream passage and permanent upstream passage, that are safe, timely, and effective, for American eel, including a description of the planned passage and protection measures and the implementation schedule for design, installation, and operations. Said permanent facilities for upstream and downstream passage shall be in place and operational by August 1, 2015, and SFR Hydro shall notify LIHI within two weeks of completion. Pending the agreement, SFR Hydro shall continue providing downstream passage by maintaining the exclusionary trashracks and passing eels through the opening in one sluiceway during the period August 15 to November 15. In the event that the USFWS and the New Hampshire Department of Fish and Game determine prior to the installation of permanent downstream passage that the above-described interim downstream passage measure is not providing safe, timely and effective interim passage for outmigrating eels, SFR Hydro shall implement other reasonable interim measures as requested by these agencies.

During the term of this certification, should a resource agency request implementation of passage measures at the Facility for anadromous fish species, SFR Hydro shall so notify LIHI within 14 days and provide LIHI with a copy of the request and its response.

**Issue 4.** The Facility site may contain archaeological or architectural/historic resources eligible for listing in the National Register of Historic Places (historic properties). There is no programmatic agreement between the Applicant, FERC, and the New Hampshire Division of Historical Resources nor is there a historic properties management plan to protect such resources, if present.

**Recommended Condition No. 4.** SFR Hydro shall consult with, and obtain approval from, the State Historic Preservation Office for activities that may have an adverse effect on historic properties, including excavation, demolition, and structural alteration. Information on such activities shall be included in the annual reports filed with LIHI.

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#### A. Flows

The Salmon Falls River drains an area of 116 square miles at the dam site. The Project operates in a run-of-river mode over a range of flows up to 1,200 cfs while maintaining a conservation flow of 58 cfs, or inflow if less, in the bypassed reach. The 58 cfs is equal to the USFWS summer aquatic base flow of 0.5 cfs/sq. mile as prescribed in the Interim Regional Policy for New England Streams Flow Recommendations (1981).

By letter dated July 27, 1992, FERC notified the exemptee that the records being kept at the Project were insufficient to document compliance with exemption Article 2 as related to maintenance of minimum flows, specifically the DOI-required below-project minimum flow of 58 cfs. Further, FERC noted that the operation, described by the exemptee as “erratic” and causing an 18-inch variation in headpond levels, did not comply with the exemption. This compliance letter was followed by a Compliance Order on November 24, 1992 amending the exemption to require a flow monitoring system. The exemptee filed a monitoring plan on January 25, 1993 with USFWS concurrence. The exemptee proposed to install a pressure transducer to monitor and stabilize headpond levels; to operate the station in an instantaneous run-of-river mode; and to record headpond levels and generation hourly. FERC approved the plan by order dated April 20, 1993. The plan was silent with respect to the method for complying with the bypass flow requirement. The LIHI application indicates that the minimum flow is released into the bypassed reach through a 1 1/16-inch opening in one of the two sluice gates at the east end of the dam (see Figure 6).

The minimum flow compliance statements for 1998 and 1999 indicate that the flow in the bypassed reach is maintained “at no less than the rate of historic dam leakage.” The LIHI application suggests that a minimum flow of 58 cfs is now maintained in the bypassed reach, although no documentation of the change from “historic dam leakage” or the 25 cfs originally set forth in the exemption terms and conditions (reference Section III above). Further, I noted that, in a rating curve provided by the Applicant, that a gate opening of about four inches is necessary to provide a flow of 58 cfs, not 1 1/16 inch. I brought this to the attention of the Applicant’s agent, who confirmed in an email of December 17, 2012 (copy appended) that 58 cfs is being maintained in the bypassed reach; the agent suggested making the 58 cfs a requirement of the LIHI certification.

NHDES, by letter dated May 24, 2012, requested certain information to enable it to reach a conclusion as to whether the Project complies with New Hampshire water quality standards, specifically with regard to 1) impact on ambient water quality criteria (dissolved oxygen, total phosphorus, and chlorophyll-a); 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. By letter dated January 14, 2013 to LIHI, NHDES provided its conclusion that the river immediately upstream and downstream of the Project appears to be meeting water quality standards. This conclusion was based in part on the Project operating in an instantaneous run-of-river mode and providing a bypass minimum flow of 58 cfs.

In order to assure compliance with the LIHI flow criteria, I recommend that LIHI certification be subject to Recommended Condition #1 and Recommended Condition #2, which provide for 1) a bypass flow of 58 cfs and 2) supplementing the project flow records to include the gate opening, respectively.

LIHI Questionnaire: Flows	
<b>A.1</b>	<p><b>Is the Facility in <i>Compliance with Resource Agency Recommendations</i> issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations) for both the reach below the tailrace and all bypassed reaches?</b></p>
	<p><i>Reviewer Analysis/Conclusions:</i> The Resource Agency Recommendations (U.S. Fish and Wildlife Service) are from 1981. This subcriterion only applies when the recommendations are from or after 1987. <b>N/A = Go to A.2</b></p>
<b>A.2</b>	<p><b>If there is no flow condition recommended by any Resource Agency for the Facility, or if the recommendation was issued prior to January 1, 1987, is the Facility in Compliance with a flow release schedule, both below the tailrace and in all bypassed reaches, that at a minimum meets Aquatic Base Flow standards or “good” habitat flow standards calculated using the Montana-Tennant method?</b></p>
	<p><i>Reviewer Analysis/Conclusions:</i> With respect to the below-tailrace reach, the Facility meets the Flow criterion under A.2, as the Facility is operated strictly run-of-river with a minimum flow of 58 cfs (USFWS summer ABF). The Applicant also provides a gate release at the dam equal to the summer ABF to protect the bypassed reach resources. <b>YES (so long as Recommended Condition #1 and Recommended Condition #2 are attached to the certification) = PASS</b></p>

**B. Water Quality**

Because this project was subject to an FERC exemption proceeding, there is no state water quality certification. Consequently, as mentioned in the previous section on Flows, the Applicant performed water quality sampling program during June - August 2012 in accordance with a NHDES sampling protocols in order to demonstrate compliance with state water quality standards. NHDES, in its letter of January 14, 2013, indicates that the Project appears to be compliant with the State standards for dissolved oxygen, phosphorus and chlorophyll-a.

The Salmon Falls River in the Project reach is currently a Category 3 water according to the 2012 New Hampshire Section 305(b) water quality assessment. Category 3 waters are those waters for which there is insufficient information upon which to base a determination of designated-use support. Based on the Applicant’s data, NHDES intends to recategorize the impoundment (Assessment Unit NHIMP600030405-02) and downstream reach (Assessment Unit NHRIV600030405-03) as Category 2, full support for Aquatic Life and Primary Contact Recreation, in the 2014 assessment unless additional data is collected that demonstrates otherwise.

LIHI Questionnaire: Water Quality	
<b>B.1</b>	<p><b>Is the Facility either:</b>  <b>a) In Compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the Facility after December 31, 1986? Or</b>  <b>b) In Compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?</b></p>
	<p><i>Reviewer Analysis/Conclusions:</i> The Project does not have a water quality certification issued after 1986. NHDES analyzed the Project’s impact on water quality and concluded that the current operation is compliant.  <b>YES to (b) = Go to B.2</b></p>
<b>B.2</b>	<p><b>Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?</b></p>
	<p><i>Reviewer Analysis/Conclusions:</i> The Salmon Falls River is not 303(d) listed (2010 list) for the impoundment or immediately downstream of the Facility dam. Neither segment is it proposed for listing according to the 2012 draft list.  <b>YES = Go to B.3</b></p>

**C. Fish Passage and Protection**

The USFWS through the Department of Interior (letter of May 8, 1981) reserved authority to prescribe fish passage during the exemption proceeding; however, no formal prescriptions have been issued to date for migratory or for riverine fish. As input to the LIHI process, the USFWS, in an email of May 7, 2012 to the Applicant’s agent, indicated that American eel ascend the Salmon Falls River and that passage is an existing need at the site. Commenting on anadromous species, the USFWS stated that there is neither a plan nor a timetable for passage at the Project; only the first mainstem dam, at South Berwick, is fitted with an upstream anadromous fish passage facility.

Responding (email of May 10, 2012) to the USFWS’s eel passage request, the Applicant’s agent stated that its client has agreed to develop an eel passage plan addressing upstream and downstream movement, subject to approval of the USFWS and NHDFG. The plan will include a trap for downstream migrants and effectiveness testing. As proposed, preparation and implementation of the plan would be a condition of the LIHI certification. The Applicant has already installed trashracks with ¾-inch clear spacing to exclude eels from the intake.

NHDES’s determination of water quality standards compliance (letter of January 14, 2013) is based in part on the Applicant’s agreement to provide fish passage as outlined herein.

In order to assure compliance with the LIHI fish passage criteria, I recommend that LIHI certification be subject to Recommended Condition #3, which provides for preparation of a plan and schedule for interim downstream and permanent upstream and downstream eel passage and implementation of permanent upstream and downstream passage by the 2015 passage season.

LIHI Questionnaire: Fish Passage and Protection	
<b>C.1</b>	<p><b>Is the Facility in Compliance with <i>Mandatory Fish Passage Prescriptions</i> for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> No prescription currently exists. N/A = Go to C.2</p>
<b>C.2</b>	<p><b>Are there historic records of anadromous and/or catadromous fish movement through the Facility area, but anadromous and/or catadromous fish do not presently move through the Facility area (e.g., because passage is blocked at a downstream dam or the fish run is extinct)?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> Several anadromous species continue to enter the Piscataqua River but are blocked from reaching the Project dam due to several downstream dams. American eel, a catadromous species, persists in the watershed, including upstream of the Project dam. <b>Yes with respect to anadromous fish = Go to C.2.a</b> <b>No with respect to catadromous fish = Go to C.3</b></p>
<b>C.2.a</b>	<p><b>If the fish are extinct or extirpated from the Facility area or downstream reach, has the Applicant demonstrated that the extinction or extirpation was not due in whole or part to the Facility?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> Several mainstem dams are located downstream of the Project dam. It is unlikely that this particular dam played a role in extirpation. <b>Yes with respect to anadromous fish = Go to C.2.b</b></p>
<b>C.2.b</b>	<p><b>If a Resource Agency Recommended adoption of upstream and/or downstream fish passage measures at a specific future date, or when a triggering event occurs (such as completion of passage through a downstream obstruction or the completion of a specified process), has the Facility owner/operator made a legally enforceable commitment to provide such passage?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> Such a request has not been made to date. N/A with respect to anadromous fish = Go to C.3</p>
<b>C.3</b>	<p><b>If, since December 31, 1986:</b></p> <ul style="list-style-type: none"> <li>a) Resource Agencies have had the opportunity to issue, and considered issuing, a Mandatory Fish Passage Prescription for upstream and/or downstream passage of anadromous or catadromous fish (including delayed installation as described in C2a above), and</li> <li>b) The Resource Agencies declined to issue a Mandatory Fish Passage Prescription,</li> <li>c) Was a reason for the Resource Agencies' declining to issue a Mandatory Fish Passage Prescription one of the following: (1) the technological infeasibility of passage, (2) the absence of habitat upstream of the Facility due at least in part to inundation by the Facility impoundment, or (3) the anadromous or catadromous</li> </ul>

	<p><b>fish are no longer present in the Facility area and/or downstream reach due in whole or part to the presence of the Facility?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> The agencies have had an opportunity to prescribe fish passage as a reserved right under the exemption terms and conditions but have not done so to date. None of the three C.3.c factors apply to this Facility. <b>N/A for both anadromous and catadromous fish = Go to C.4</b></p>
C.4	<p><b>If C3 was not applicable:</b></p> <p><b>a) are upstream and downstream fish passage survival rates for anadromous and catadromous fish at the dam each documented at greater than 95% over 80% of the run using a generally accepted monitoring methodology? OR</b></p> <p><b>b) If the Facility is unable to meet the fish passage standards in 4.a, has the Applicant either i) demonstrated, and obtained a letter from the U.S. Fish and Wildlife Service or National Marine Fisheries Service confirming that demonstration, that the upstream and downstream fish passage measures (if any) at the Facility are appropriately protective of the fishery resource, or ii) committed to the provision of fish passage measures in the future and obtained a letter from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service indicating that passage measures are not currently warranted?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> With respect to <b>anadromous species</b>, the Resource Agencies have a reserved right to prescribe upstream passage but have not yet done so. Passage is deferred, and there is no present initiative to move anadromous species upstream of the Project dam. Recommended Condition #3 would require the Applicant to notify LIHI should a Resource Agency prescribe anadromous species passage.</p> <p>With respect to <b>catadromous species</b>, the Applicant has not attempted to demonstrate effective eel passage, but has agreed to provide both upstream and downstream eel passage as a condition of LIHI certification. <b>YES to (b) for anadromous fish (so long as Recommended Condition #3 is attached to the certification) = Go to C.5</b> <b>YES to (b) for catadromous fish (so long as Recommended Condition #3 is attached to the certification) = Go to C.5</b></p>
C.5	<p><b>Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of Riverine fish?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> There are no prescriptions for riverine fish. <b>N/A = Go to C.6</b></p>
C.6	<p><b>Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> There are no Resource Agency Recommendations for entrainment protection measures. Interim and permanent downstream passage measures for eel will address entrainment of outmigrants. <b>N/A = PASS</b></p>

**D. Watershed Protection**

The Facility dam creates a small impoundment with a surface area of about 100 acres and a length of about 1,100 feet. No protected buffer zones have been created along the riverine impoundment through a settlement agreement or the federal exemption. Further, there is no shoreland protection plan. Except at the dam, the Applicant only has flowage rights for the impoundment.

LIHI Questionnaire: Watershed Protection	
<b>D.1</b>	<b>Is there a buffer zone dedicated for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low-impact recreation) extending 200 feet from the high water mark in an average water year around 50 - 100% of the impoundment, and for all of the undeveloped shoreline?</b>
	<i>Reviewer Analysis/Conclusions:</i> There are no buffer zones at this project. <b>NO = Go to D.2</b>
<b>D.2</b>	<b>Has the facility owner/operator established an approved watershed enhancement fund that: 1) could achieve within the project's watershed the ecological and recreational equivalent of land protection in D.1.,and 2) has the agreement of appropriate stakeholders and state and federal resource agencies?</b>
	<i>Reviewer Analysis/Conclusions:</i> There is no watershed enhancement fund. The facility does not qualify for an extension of the LIHI certification term by three years. <b>NO = Go to D.3</b>
<b>D.3</b>	<b>Has the facility owner/operator established through a settlement agreement with appropriate stakeholders and that has state and federal resource agencies agreement an appropriate shoreland buffer or equivalent watershed land protection plan for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low impact recreation).</b>
	<i>Reviewer Analysis/Conclusions:</i> There is no settlement agreement. <b>NO = Go to D.4</b>
<b>D.4</b>	<b>Is the facility in compliance with both state and federal resource agencies recommendations in a license approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project?</b>
	<i>Reviewer Analysis/Conclusions:</i> There are neither recommendations nor a shorelands management plan related to the exemptee's Facility. <b>N/A = PASS</b>

**E. Threatened and Endangered Species Protection**

The Applicant provided a consultation memorandum from the New Hampshire Heritage Bureau indicating that there is no record of federally or state listed rare species, including threatened and endangered species, near the Facility area.<sup>1</sup> The USFWS also responded, by letter dated June 5, 2012, that no federally listed species are known to be present. Since the river is a border water, the Applicant also consulted the Maine Department of Inland Fisheries & Wildlife, which indicated that no listed species are known to be present and noted that American eel, a Species of Special Concern in Maine, is present in Spaulding Pond, which is the next downstream impoundment.

Efforts by state and federal agencies to protect and enhance the depleted coastwise stock of American eel are ongoing. The USFWS is currently reviewing eel status for possible protection under the Endangered Species Act. The Applicant has agreed, as discussed under Fish Passage above, to modify the dam and operations as necessary to accommodate upstream and downstream eel migration.

LIHI Questionnaire: Threatened and Endangered Species Protection	
<b>E.1</b>	<b>Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?</b>
	<b>Reviewer Analysis/Conclusions:</b> There is no record of state or federally listed T&E species in the Facility area presently. <b>NO = PASS</b>

**F. Cultural Resource Protection**

The Applicant submitted a Request for Project Review to the New Hampshire Division of Historical Resources by letter dated April 19, 2012. The Division responded on April 27, 2012 that the LIHI certification process is not an undertaking that would affect facilities and that the facility may become National Register eligible at a future date, necessitating architectural inventories.

There is no specific site information concerning archaeological or architectural/historical resources; however, it is known that this site has a rich history as related to mill development. There is no programmatic agreement between the Applicant, FERC, and the New Hampshire Division of Historical Resources nor is there a historic properties management plan<sup>2</sup> to protect

<sup>1</sup> Listed species for New Hampshire are available at:  
[http://www.wildlife.state.nh.us/Wildlife/Nongame/endangered\\_list.htm](http://www.wildlife.state.nh.us/Wildlife/Nongame/endangered_list.htm)

<sup>2</sup> Information on the National Historic Preservation Section 106 and FERC can be found at  
<http://www.ferc.gov/industries/hydropower/gen-info/guidelines/hpmp.pdf> (*Guidelines for he*

such resources, if present. Consequently, certification should be subject to Recommended Condition #4.

LIHI Questionnaire: Cultural Resource Protection	
<b>F.1</b>	<p><b>If FERC-regulated, is the Facility in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> No conflicts were identified in the record; however, there are no requirements set under the exemption, and the New Hampshire Division of Historic Resources when consulted did not state that historic properties are not present and instead inferred the contrary.</p> <p><b>YES (so long as Recommended Condition #4 is attached to the certification) = PASS</b></p>

**G. Recreation**

The application (Appendix G, p. 19) states that “little or no” recreational activity occurs at the Project, attributing that to the “rocky nature of the reach” and the commercial development. Recreational access is provided “within a safe distance of the project works.” There is very limited Applicant ownership of riparian lands. The impoundment shoreline is owned by others except in the immediate vicinity of the dam. There is no formal boat access nor is there a portage.

LIHI Questionnaire: Recreation	
<b>G.1</b>	<p><b>If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> There is neither a recreation plan nor an exemption requirement to provide recreational access or amenities.</p> <p><b>N/A = Go to G.3</b></p>
<b>G.3</b>	<p><b>Does the Facility allow access to the reservoir and downstream reaches without fees or charges?</b></p> <p><i>Reviewer Analysis/Conclusions:</i> Access is provided without charge on the limited associated lands owned by the Applicant.</p> <p><b>YES = PASS</b></p>

*Development of Historic Properties Management Plans for FERC Hydroelectric Projects, FERC, May 20, 2002).*

*H. Facilities Recommended for Removal*

The record does not indicate an interest on the part of resource agencies in removing the dam.

LIHI Questionnaire: Facilities Recommended for Removal	
<b>H.1</b>	<b>Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?</b>
	<i>Reviewer Analysis/Conclusions:</i> No. <b>NO = PASS</b>

**APPENDIX**

**Contents**

Correspondence..... A-1 to A-15  
Contacts ..... A-16

**From:** Steven Hickey [mailto:sjh@essexhydro.com]  
**Sent:** Monday, December 17, 2012 1:24 PM  
**To:** Jeffrey Cueto  
**Subject:** Re: South Milton - Flows

Jeff,

In response to your emails, the project would be amenable to LIHI requiring a minimum flow bypass of 58 cfs or inflow which is how the project is currently operated. The plan is still current with respect to the pond being maintained 8 inches below the crest. The stoplogs have been a permanent feature of the dam since it was constructed in the 1930s. The stop logs are 8 inches high and 6 ft in height. The total height of the stop logs is 6'. The stop logs span the length of the dam and end at the waste gate. The stop logs are not removed unless penstock maintenance requires the pond level to be drawn down. Any such maintenance is only conducted after receiving approval from the relevant agencies. I have attached three pictures of the stop logs for your reference.

I expect to receive a letter from NHDES stating the the project does not cause or contribute to violations of state water quality standards sometime this month. I will forward it upon receipt.

Please let me know if you have any additional questions.

Thank you,  
Steve

Stephen Hickey  
Hydro Management Group, LLC  
as agent for SFR Hydro Inc.  
55 Union Street, 4th Floor  
Boston, MA 02108  
tel: 617-367-0032  
fax: 617-367-3796

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**From:** Jeffrey Cueto <[ompompanoo@aol.com](mailto:ompompanoo@aol.com)>  
**To:** 'Stephen Hickey' <[sjh@essexhydro.com](mailto:sjh@essexhydro.com)>  
**Sent:** Sunday, December 9, 2012 8:37 AM  
**Subject:** FW: South Milton - Flows

Sorry, Steve. I see you did provide the flow plan as well as a rating for the sluiceways. Looks like it would take a 4-inch opening to provide 58 cfs at a normal pond level of 340 feet.

So, please clarify.



**From:** Stephen Hickey [<mailto:sjh@essexhydro.com>]  
**Sent:** Friday, January 04, 2013 2:28 PM  
**To:** Jeffrey R. Cueto  
**Subject:** Fwd: Re: South Milton fish passage and minimum flow conditions approved by J.Warner USFWS for your approval

Jeff,

Please see the below comments from Carol Henderson of the New Hampshire Fish and Game Department as well as SFR Hydro Inc's consent to her additions to the conditions agreed to by John Warner of the United States Fish and Wildlife Service. NHDES was waiting on Carol's comments before they could issue their letter confirming the South Milton hydroelectric project does not cause or contribute to violations of NH State water quality standards and have promised their letter will be delivered next week. That being said, will you be able to prepare your package so that the South Milton project can be voted on by the LIHI governing board at their January 2013 meeting?

Thank you,  
Steve

----- Original Message -----

**Subject:**Re: South Milton fish passage and minimum flow conditions approved by J.Warner USFWS for your approval  
**Date:**Fri, 04 Jan 2013 14:16:42 -0500  
**From:**Stephen Hickey <[sjh@essexhydro.com](mailto:sjh@essexhydro.com)>  
**To:**Henderson, Carol <[Carol.Henderson@wildlife.nh.gov](mailto:Carol.Henderson@wildlife.nh.gov)>

Thank you Carol, SFR Hydro agrees to your below conditions.

Steve

Stephen Hickey  
Hydro Management Group, LLC  
as agent for SFR Hydro Inc.  
c/o Essex Hydro Associates, L.L.C.  
55 Union Street, 4th Floor  
Boston, MA 02108  
tel: 617-367-0032  
fax: 617-367-3796

On 1/4/2013 2:00 PM, Henderson, Carol wrote:  
[Hi Steve:](#)

The New Hampshire Fish and Game Department agrees with the proposed conditions for the South Milton hydro project by maintaining the existing 58 cfs bypass flow, new flow monitoring plan and eel passage conditions as outlined in Jeffrey Cueto's email, which reads:

By October 1, 2013, SFR Hydro shall enter into, and provide LIHI with a copy of, an agreement reached between the USFWS, the New Hampshire Department of Fish and Game, and SFR Hydro for providing both interim and permanent downstream passage and permanent upstream passage, that are safe, timely, and effective, for American eel, including a description of the planned passage and protection measures and the implementation schedule for design, installation, and operations. Said permanent facilities for downstream passage shall be in place and operational by August 1, 2015, and SFR Hydro shall notify LIHI within two weeks of completion. Pending the agreement, SFR Hydro shall continue providing downstream passage by maintaining the exclusionary trash racks and passing eels through the opening in one sluice gate during the period August 15 to November 15. In the event that the USFWS and the New Hampshire Department of Fish and Game determine prior to the installation of permanent downstream passage that the above-described interim downstream passage measure is not providing safe, timely and effective interim passage for out migrating eels, SFR Hydro shall implement other reasonable interim measures as requested by these agencies.

However, in addition to the above requirements for eel passage it was not apparent from the above description whether the agreement included any action deadlines' for the provision of permanent upstream passage for eels. Pursuant to our recent phone conversation (January 3rd, 2013), it was noted that upstream eel passage was discussed with SFR Hydro Inc. and it was intended to be included in the October 1st, 2013 implementation schedule (described above), as well as, be included in the operational schedule of August 1st, 2015 for upstream eel passage implementation, which the Department also agrees with initiating.

In addition, during the term of this certification, should a resource agency request implementation of passage measures at the Facility for anadromous fish species, SFR Hydro shall so notify LIHI within 14 days and provide LIHI with a copy of the request and its response

I hope this information is helpful. If you have any further concerns or questions, please do not hesitate to contact me. Thank you, Carol Henderson, Environmental Review Coordinator, NH Fish and Game Department

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**From:** Stephen Hickey [<mailto:sjh@essexhydro.com>]

**Sent:** Friday, December 28, 2012 11:39 AM

**To:** Henderson, Carol

**Subject:** Fwd: South Milton fish passage and minimum flow conditions approved by J.Warner USFWS for your approval

Carol,

SFR Hydro Inc. owner and operator of the South Milton Hydroelectric facility (FERC Project No. 3984) located on the Salmon Falls River in Milton, NH has applied for low impact certification from the Low Impact Hydropower institute. application with all of the relevant FERC and agency documents can be found at the following link:

<http://www.lowimpacthydro.org/september-sfr-hydro-inc.-files-for-low-impact-status.html>)

Please confirm you are in agreement with the 58 cfs bypass flow, new flow monitoring plan and eel passage measures described in the below email and agreed to as shown below by John Warner of the United States Fish and Wildlife Service.

Thank you and please feel free to contact me with any questions.

Steve

Stephen Hickey  
Hydro Management Group, LLC  
as authorized agent for SFR Hydro Inc.  
c/o Essex Hydro Associates, L.L.C.  
55 Union Street, 4th Floor  
Boston, MA 02108  
tel: 617-367-0032  
fax: 617-367-3796

Sent from my iPad

Begin forwarded message:

**From:** "Warner, John" <[john\\_warner@fws.gov](mailto:john_warner@fws.gov)>  
**Date:** December 28, 2012, 7:27:52 AM EST  
**To:** Stephen Hickey <[sjh@essexhydro.com](mailto:sjh@essexhydro.com)>  
**Subject: Re: South Milton fish passage**

Hi Steve - I have indicated to Jeff Cueto that I support the 3 conditions he proposed for 58 cfs bypass flow, a new flow monitoring plan and eel passage measures as described in his recent e-mail (not the previously drafted eel passage measure Jeff appended to his e-mail (in small font)). It is accurate that anadromous fish passage is deferred at this time.

So - I think you this all looks good to me as you and Jeff have outlined - JW

On Fri, Dec 21, 2012 at 2:41 PM, Stephen Hickey <[sjh@essexhydro.com](mailto:sjh@essexhydro.com)> wrote:

John,

Please see the below certification condition proposed by LIHI and agreed to by SFR Hydro with regards to the installation of safe, timely and effective upstream and downstream eel passage at the South Milton hydroelectric facility (FERC Project No. 3984, see attached FERC Exemption). On May 7, 2012 you indicated via email that eel passage would be needed but that passage measures for other species had not been triggered at this time.

Additionally, the project currently maintains a discharge of 58 cfs in the downstream bypass reach. The FERC exemption for the project requires a discharge of 25 cfs and it is unclear to me

why or when it was increased to 58cfs. The project utilizes a waste gate in combination with water passed over the dam with impoundment levels controlled by a plc to maintain the minimum flow discharge of 58cfs and needs confirmation from your agency that 58 cfs is an acceptable minimum flow. Flow measurements were taken in the bypass reach this summer during low flow conditions and have been sent to NHDES along with chlorophyll-a, total phosphorus and dissolved oxygen measurements (taken at 15 minute increments over a 10 day period) for their review. Measurements were taken during low flow conditions (3X7Q10 which is equivalent to 1.5 cfs). I will send a second email with pictures taken of the bypass reach during low flow conditions during which flow measurements were taken as required by the sampling plan from NHDES, which will also follow in a second email.

NHDES needs confirmation from you of the adequacy of the bypass flow measurements and your agreement to the below eel passage condition before they can issue a statement to LIHI that the project does not cause or contribute to violations of state water quality standards.

Your agreement to this email would be sufficient.

Thank you and please contact me with any questions.

Steve

Stephen Hickey  
Hydro Management Group, LLC  
as authorized agent for SFR Hydro Inc.  
c/o Essex Hydro Associates, L.L.C.  
55 Union Street, 4th Floor  
Boston, MA 02108  
tel: 617-367-0032  
fax: 617-367-3796

----- Original Message -----

**Subject:**Re: South Milton fish passage

**Date:**Fri, 21 Dec 2012 12:59:01 -0500

**From:**Stephen Hickey <[sjh@essexhydro.com](mailto:sjh@essexhydro.com)>

**To:**Jeffrey Cueto <[ompompanoo@aol.com](mailto:ompompanoo@aol.com)>

Jeff,

SFR Hydro agrees to the below condition to be included in the low impact certification of its South Milton hydroelectric facility.

Thank you,  
Steve

On 12/20/2012 1:44 PM, Jeffrey Cueto wrote:

Steve – Before I talk to resource agency staff, I wanted to provide you with my suggested language for the fish passage condition. It is a bit different than the language you proposed to John Warner back in June. As I understand it, you hadn't received a response. Both versions follow. I am teeing off of your email of May 10 where you proposed both upstream and downstream eel passage. Your language deferred on downstream. Aren't eels already present? You mention that the project is being operated to provide interim downstream passage already.

By October 1, 2013, SFR Hydro shall enter into, and provide LIHI with a copy of, an agreement reached between the USFWS, the New Hampshire Department of Fish and Game, and SFR Hydro for providing both interim and permanent downstream passage and permanent upstream passage, that are safe, timely, and effective, for American eel, including a description of the planned passage and protection measures and the implementation schedule for design, installation, and operations. Said permanent facilities for downstream passage shall be in place and operational by August 1, 2015, and SFR Hydro shall notify LIHI within two weeks of completion. Pending the agreement, SFR Hydro shall continue providing downstream passage by maintaining the exclusionary trashracks and passing eels through the opening in one sluiceway during the period August 15 to November 15. In the event that the USFWS and the New Hampshire Department of Fish and Game determine prior to the installation of permanent downstream passage that the above-described interim downstream passage measure is not providing safe, timely and effective interim passage for outmigrating eels, SFR Hydro shall implement other reasonable interim measures as requested by these agencies.

During the term of this certification, should a resource agency request implementation of passage measures at the Facility for anadromous fish species, SFR Hydro shall so notify LIHI within 14 days and provide LIHI with a copy of the request and its response.

Within twelve months after LIHI certification, the project shall enter into, and provide LIHI with a copy of, an agreement reached between the U.S. Fish and Wildlife Service, the New Hampshire Fish and Game Department, and SFR Hydro Corporation for providing both interim and permanent safe, timely, and effective upstream passage for American eel, including a description of the planned passage and protection measures and the implementation schedule for design, installation, and operations. Said permanent facilities shall be in place and operational three years after the date required for a signed agreement, and SFR Hydro Corporation shall notify LIHI within two weeks of completion. During the term of this certification, should a resource agency request implementation of downstream passage at the Facility, SFR Hydro Corporation shall so notify LIHI within 14 days and provide LIHI with a copy of the request and its response."

><{{f}}> *Jeffrey R. Cueto, P.E.*



**From:** Warner, John [mailto:john\_warner@fws.gov]  
**Sent:** Friday, December 28, 2012 7:22 AM  
**To:** Jeffrey Cueto  
**Cc:** Carol.Henderson@wildlife.nh.gov  
**Subject:** Re: LIHI Application for South Milton Project, Salmon Falls River

Hi Jeff - I support the 3 conditions as you have laid them out and prefer the eel condition to the previous version. The anadromous fish condition is fine - The first dam on the Salmon Falls River has a denil ladder for herring passage but other facilities upstream do not. I believe formal eel passage is also in place at the Salmon Falls /Berwick Project and eels navigate to points upstream from the Milton Project.

Regarding minimum flows, if the notation above is correct relative to drainage area at the project site, then we are comfortable with a 58 cfs bypass flow release and a flow monitoring plan is obviously needed.

So - this all looks good to me as you have outlined - Thanks - JW

On Fri, Dec 21, 2012 at 1:34 PM, Jeffrey Cueto <[ompompanoo@aol.com](mailto:ompompanoo@aol.com)> wrote:

**From:** Jeffrey Cueto [mailto:ompompanoo@aol.com]  
**Sent:** Friday, December 21, 2012 1:35 PM  
**To:** 'John\_Warner@fws.gov'; 'Carol Henderson'  
**Cc:** 'Wippelhauser, Gail'; Walsh, Ted  
**Subject:** LIHI Application for South Milton Project, Salmon Falls River

Carol and John – I am preparing a report for LIHI concerning SFR Hydro’s application for certification. The applicant has proposed to address both upstream and downstream passage of American eel and has accepted the language (#3 below) that I drafted as a recommended condition for LIHI certification. I would appreciate it if you would read over the condition to see if it suits your management objectives. As I understand it, the applicant currently has ¾-inch clear spacing trashracks in place now and maintains an opening in the sluicgate to accommodate downstream passage.

I would appreciate it if you could clarify what the status is with respect to passage facilities at any of the downstream dams, both with respect to eels and anadromous species. I got the impression from NHDFG’s website that some facilities are in place for anadromous runs.

Regarding flows, I drafted the following text. Please let me know if it is accurate to your knowledge. I also provide drafted language for two related conditions (#1 and #2), and would appreciate your input.

The Salmon Falls River drains an area of 116 square miles at the dam site. The Project operates in a run-of-river mode over a range of flows up to 1,200 cfs while maintaining a conservation flow of 58 cfs, or inflow if less, in the bypassed reach. The 58 cfs is equal to the USFWS summer aquatic base flow of 0.5 cfs/sq. mile as prescribed in the Interim Regional Policy for New England Streams Flow Recommendations (1981).

By letter dated July 27, 1992, FERC notified the exemptee that the records being kept at the Project were insufficient to document compliance with exemption Article 2 as related to maintenance of minimum flows, specifically the DOI-required below-project minimum flow of 58 cfs. Further, FERC noted that the operation, described by the exemptee as “erratic” and causing an 18-inch variation in headpond levels, did not comply with the exemption. This compliance letter was followed by a Compliance Order on November 24, 1992 amending the exemption to require a flow monitoring system. The exemptee filed a monitoring plan on January 25, 1993 with USFWS concurrence. The exemptee proposed to install a pressure transducer to monitor and stabilize headpond levels; to operate the station in an instantaneous run-of-river mode; and to record headpond levels and generation hourly. FERC approved the plan by order dated April 20, 1993. The plan was silent with respect to the method for complying with the bypass flow requirement. The LIHI application indicates that the minimum flow is released into the bypassed reach through a 1 1/16-inch opening in one of the two sluice gates at the east end of the dam (see Figure 6).

The minimum flow compliance statements for 1998 and 1999 indicate that the flow in the bypassed reach is maintained “at no less than the rate of historic dam leakage.” The LIHI application suggests that a minimum flow of 58 cfs is now maintained in the bypassed reach, although no documentation of the change from “historic dam leakage” or the 25 cfs originally set forth in the exemption terms and conditions (reference Section III of this report). Further, I noted that, in a rating curve provided by the applicant, that a gate opening of about four inches is necessary to provide a flow of 58 cfs, not 1 1/16 inch. I brought this to the attention of the applicant’s agent, who confirmed in an email of December 17, 2012 (copy appended) that 58 cfs is being maintained in the bypassed reach; the agent suggested making the 58 cfs a requirement of the LIHI certification.

**Issue 1.** While the project is operated to provide a minimum bypass flow of 58 cfs, the applicant was unable to provide the regulatory record of the increase from the original interim requirement of 25 cfs.

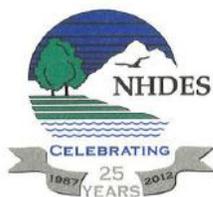
**Recommended Condition No. 1.** SFR Hydro shall maintain a minimum flow of 58 cfs, or inflow if less, in the penstock-bypassed reach of river.

**Issue 2.** The FERC-approved flow monitoring plan does not address releases into the penstock-bypassed reach.

**Recommended Condition No. 2.** After consultation with the USFWS, the N.H. Department of Fish and Game, and the N.H. Department of Environmental Services, SFR Hydro shall revise the Project flow monitoring plan to address the method for releasing the bypass minimum flow and how records will be supplemented to enable demonstration of compliance with the bypass minimum flow. The revised plan will be filed with FERC for approval within 90 days of LIHI’s grant of certification; SFR Hydro shall copy LIHI on the filing.

**Issue 3.** The applicant proposes to develop and implement a plan for upstream and downstream passage of American eel, a species which currently uses the Salmon Falls River. As proposed the plan would be developed in consultation with, and subject to approval by, the USFWS and the





The State of New Hampshire  
**Department of Environmental Services**

**Thomas S. Burack, Commissioner**

*Celebrating 25 Years of Protecting  
New Hampshire's Environment*



January 14, 2013

Fred Ayer, Executive Director  
Low Impact Hydropower Institute  
34 Providence Street  
Portland, Maine 04103

RE: Water Quality Status of the Salmon Falls River for Low Impact Hydropower Institute Certification of the Milton Hydroelectric Project (FERC No. 3984), Salmon Falls River

Dear Fred:

Essex Hydro Associates (EHA) has applied on behalf of SFR Hydro Corporation for Low Impact Hydropower Certification from the Low Impact Hydropower Institute (LIHI) for the Milton Hydroelectric Project (FERC No. 3984) on the Salmon Falls River in Milton, NH. We understand that to receive LIHI certification, you require a statement from the New Hampshire Department of Environmental Services (DES) stating that the project is not causing or contributing to violations of state water quality standards. On May 24, 2012, DES sent EHA a letter stating what would be needed to determine if the Salmon Falls River in the vicinity of the Milton Hydroelectric Project was or was not attaining water quality standards. In specific, the following was stated: "In order for DES to determine if the subject hydroelectric project is causing or contributing to water quality standard violations, additional monitoring and information is needed. In general, data / information is needed to address the following water quality concerns that are typically associated with hydropower projects:

1. Impact on ambient water quality criteria and thresholds;
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."

The purpose of this letter is to provide you with our assessment of data and information received from EHA in response to our letter of May 24, 2012 and, our conclusions as to whether or not the Milton Hydroelectric Project is causing or contributing to New Hampshire surface water quality standard violations in the Salmon Falls River.

With regards to water quality, EHA collected water quality data for dissolved oxygen, water temperature, total phosphorus, chlorophyll-a, and discharge. Monitoring locations in the impoundment (23-SFR), the bypass reach (22-SFR) and in the downstream section of the river (21-SFR) were monitored continuously for a 10 day period in July 2012 for water temperature and dissolved oxygen using multi-parameter dataloggers. DES specified that the multi-parameter continuous water quality data should be collected under critical low flow/higher water temperature conditions. There is no USGS stream gage in the Salmon Falls River watershed so DES assigned the USGS stream gage on the Oyster River in Durham as a surrogate to estimate low flow conditions in the vicinity of the project. The continuous water quality data submitted by EHA was collected when the Oyster River was flowing below or just above the 3 x 7Q10 conditions of 1.5 cfs. During the collection of the continuous water quality data, daily average water temperatures in the Salmon Falls River exceeded 23° F. EHA has stated that during the collection of the continuous water quality data the Milton Hydroelectric Project was operating under normal operating procedures.

[www.des.nh.gov](http://www.des.nh.gov)

29 Hazen Drive • PO Box 95 • Concord, NH 03302-0095  
(603) 271-3503 • TDD Access: Relay NH 1-800-735-2964

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Instantaneous measurements were taken in the impoundment (23-SFR) for water temperature and dissolved oxygen at one foot depth intervals. This data confirmed that the approximately 10 foot deep impoundment is not stratified during the summer months. In addition, between June and August 2012, ten samples from stations 23-SFR and 21-SFR were collected and tested for total phosphorus and chlorophyll-a.

DES has assessed the water quality data collected in 2012, and based on this assessment concludes that the water quality in the impoundment, bypass reach, and downstream section of the Salmon Falls River, under the dam's current operating conditions, does not appear to be violating existing water quality criteria or thresholds for dissolved oxygen, phosphorus and chlorophyll-a. In the May 24, 2012 letter DES provided the assessment status for the parameters of concern for the reaches of the Salmon Falls River upstream and downstream of the Milton Hydroelectric Project. Table 1 provides an update to the current assessment status of the river reaches in question for the parameters collected this summer. Our assessments were based on the methodology described in the DES Consolidated Assessment and Listing Methodology (CALM)<sup>1</sup>. This information will be used in the next Section 305(b)/303(d) Water Quality Assessment report which is expected to be issued by DES in early 2014. Please note that the assessment status listed in Table 1 could change if water quality criteria or thresholds change and/or if additional data collected between now and the 2014 report indicate water quality violations. For example, data collected at lower flows and/or higher temperatures might result in a different assessment.

**Table 1. Assessment Status for Water Quality Monitoring Parameters - Milton Hydroelectric Project**

Assessment Unit and Monitoring Station	Location	Parameter	Designated Use	Assessment Status based upon summer 2012 sampling
NHIMP700030507-09 23-SFR	Milton Hydroelectric Dam Impoundment	Dissolved Oxygen (mg/L)	Aquatic Life	Fully Supporting
		Dissolved Oxygen (% Saturation)	Aquatic Life	Fully Supporting
		Chlorophyll-a	Primary Contact Recreation	Fully Supporting
			Aquatic Life	Indeterminate <sup>A</sup>
		Total Phosphorus	Aquatic Life	Indeterminate <sup>A</sup>
Water Temperature	Aquatic Life	No numeric criteria <sup>C</sup>		
NHIMP700030507-06 22-SFR	Downstream of Milton Hydroelectric Dam – Bypass Reach	Dissolved Oxygen (mg/L)	Aquatic Life	Fully Supporting
		Dissolved Oxygen (% Saturation)	Aquatic Life	Fully Supporting
		Water Temperature	Aquatic Life	No numeric criteria <sup>C</sup>
NHIMP700030507-06 21-SFR	Downstream of Milton Hydroelectric Dam Bypass Reach - Downstream of Powerhouse – Upstream of Spaulding Pond	Dissolved Oxygen (mg/L)	Aquatic Life	Fully Supporting
		Dissolved Oxygen (% Saturation)	Aquatic Life	Fully Supporting
		Chlorophyll-a	Primary Contact Recreation	Fully Supporting
		Total Phosphorus	Aquatic Life	No numeric criteria <sup>B</sup>
		Water Temperature	Aquatic Life	No numeric criteria <sup>C</sup>

<sup>1</sup> 2012 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. New Hampshire Department of Environmental Services. NHDES-R-WD-10-3. February, 2010. Available at <http://des.nh.gov/organization/divisions/water/wmb/swqa/documents/2010calm.pdf>.

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<sup>A</sup> DES does have numeric water quality thresholds for the aquatic life designated use for total phosphorus and chlorophyll-a in lakes/ponds and impoundments with characteristics similar to lakes/ponds but it can only be applied to waterbodies where the trophic class is known. For waterbodies where the trophic class is known the median total phosphorus and chlorophyll-a value is used to make the threshold comparison. The aquatic life designated use nutrient and chlorophyll-a thresholds are depicted below with the median values for each parameter for the data collected at station 23-SFR in assessment unit NHIMP600030405-02 and station 21-SFR in assessment unit NHRIV600030405-03 during the summer of 2012.

	TP (ug/L)	Chl-a (ug/L)
Median 23-SFR (2012)	10	2.22
Median 21-SFR (2012)	10	2.47
Oligotrophic	< 8	< 3.3
Mesotrophic	≤ 12	≤ 5
Eutrophic	≤ 28	≤ 11

<sup>B</sup> DES does not have numeric water quality criteria for nutrients in rivers or streams. The narrative criteria states that "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring."

<sup>C</sup> Although there is currently no numerical water quality criteria for water temperature, NHDES is in the process of collecting biological and water temperature data that will contribute to the development of a procedure for assessing rivers and stream based on water temperature and its corresponding impact to the biological integrity of the waterbody.

EHA provided DES with a detailed description of the infrastructure of the facility. Project works consist of:

- a 164 foot long concrete gravity crib dam which is 16.4 feet high at its highest point,
- a six foot six inch diameter 3,800 foot long steel penstock,
- an approximately 4,600 foot long bypass reach,
- a power house located in the former Spaulding Fiber Company Mill,
- three turbines – (Units No. 1 and 2 are located in the Mill Building No. 1 while turbine Unit No 3. is located in the adjacent Mill Building No. 2. Mill Building No. 1 is considered the primary powerhouse with the controls and electrical cubicles situated within), and
- individual draft tubes associated with each generating unit which discharge flow into a common tailrace.

In December of 2012, EHA provided DES with information regarding minimum flows and pond fluctuations at the Milton Hydroelectric Project. EHA confirmed that the facility is operated as a run of river project and that the project does not draw down the impoundment or store water for purposes of power generation. Any pond level fluctuations are solely the result of natural conditions in the Salmon Falls River and inflow equals outflow at all times.

With regard to minimum flow in the bypass reach, the project's FERC license requires a minimum flow of 25 cfs. The project currently maintains a minimum flow of 58 cfs in the bypass reach. The project uses a waste gate in combination with water passed over the dam to maintain a minimum flow of 58 cfs in the bypass reach. The U.S. Fish and Wildlife Service (USFWS) and New Hampshire Fish and Game (NHFG) have indicated that they support the 58 cfs minimum flow in the bypass reach as adequate for achieving acceptable habitat conditions. A minimum flow of 58 cfs is approximately equal to a yield of 0.5 cfs/sq. mile multiplied by the upstream drainage area.

Regarding the issue of fish passage, EHA has provided documentation that SFR Hydro Corporation has agreed to terms provided by the USFWS. By October 1, 2013, SFR Hydro shall enter into, and provide LHI and DES with a copy of an agreement reached between the USFWS, NHFG, and SFR Hydro for providing both interim and permanent downstream passage and permanent upstream passage for American eel. This agreement will include a description of the planned passage and protection measures and an implementation schedule for design, installation, and operations. These permanent facilities for downstream passage shall be in place and operational by August 1, 2015, and SFR Hydro shall notify

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LHIH within two weeks of completion. Pending the agreement, SFR Hydro shall continue providing downstream passage by maintaining the exclusionary trash racks and passing eels through the opening in one sluice-gate during the period of August 15<sup>th</sup> to November 15<sup>th</sup> annually. In the event that the USFWS and NHFG determine prior to the installation of permanent downstream passage that the above-described interim downstream passage measure is not providing safe, timely and effective interim passage for out-migrating eels, SFR Hydro shall implement other reasonable interim measures as requested by these agencies.

During the term of LHIH certification, should a resource agency request implementation of passage measures at the Milton Hydroelectric Project for anadromous fish species, SFR Hydro shall so notify LHIH within 14 days and provide LHIH with a copy of the request and its response.

In summary, based on the current and agreed upon changes to the operation of the facility, current water quality standards, the water quality data collected in 2012 and information provided to DES by EHA, it appears the Salmon Falls River immediately upstream and downstream of the Milton Hydroelectric Project is attaining water quality standards at this time. As previously noted, however, this assessment could change in the future should a change in water quality criteria or thresholds and/or new data indicate water quality violations. It could also change if the DES, USFWS and/or NHFG conclude in the future that the project is not in compliance with upstream or downstream fish passage requirements or minimum bypass flow requirements.

Should you have any questions or require additional information please contact me at (603)271-2083 ([ted.walsh@des.nh.gov](mailto:ted.walsh@des.nh.gov)).

Sincerely,



Ted Walsh, Surface Water Monitoring Coordinator  
NH DES Watershed Management Bureau

Cc (via email): Steve Hickey, Essex Hydro Associates, LLC  
Carol Henderson, NHFG  
John Magee, NHFG  
John Warner, USFS  
Pat McIlvaine, LHIH

## CONTACTS

Entity	Authorized Representatives	Contact Information
SFR Hydro (Applicant)	Steve French (owner)  Stephen Hickey	SFR Hydro 361 Pleasant Street Epping, NH 03042 Telephone: (603) 679-4319 Email: <a href="mailto:sbf-atc@abenakitimber.com">sbf-atc@abenakitimber.com</a> Essex Power Services, Inc. 55 Union Street, 4th Floor Boston, MA 02108 Telephone: (617) 367-0032 Email: <a href="mailto:sjh@essexhydro.com">sjh@essexhydro.com</a>
United States Fish and Wildlife Service	John P. Warner Assistant Supervisor	Conservation Planning Assistance and Endangered Species New England Field Office, U.S. Fish and Wildlife Service 70 Commercial Street, Suite 300 Concord, NH 03301 Telephone: (603) 223-2541 - ext.15 Email: <a href="mailto:John.Warner@fws.gov">John.Warner@fws.gov</a>
	Susie Von Oettingen	U.S. Fish and Wildlife Service New England Field Office 70 Commercial Street, Suite 300 Concord, NH 03301 Telephone: (603) 223-2541 Email: <a href="mailto:susi_vonoettingen@fws.gov">susi_vonoettingen@fws.gov</a>
NH Department of Environmental Services	Ted Walsh Surface Water Monitoring Coordinator	NHDES, Watershed Management Bureau 29 Hazen Drive, P.O. Box 95 Concord, New Hampshire 03301-0095 Telephone: (603) 271-2083 Email: <a href="mailto:Ted.Walsh@des.nh.gov">Ted.Walsh@des.nh.gov</a>
New Hampshire Water Resources Board	Delbert F. Downing Chairman	37 Pleasant Street Concord, NH 03301
New Hampshire Department of Fish and Game	Carol Henderson Fish & Wildlife Ecologist	New Hampshire Department of Fish and Game 11 Hazen Drive Concord, NH 03301 Telephone: (603) 271-3511 Email: <a href="mailto:Carol.Henderson@wildlife.nh.gov">Carol.Henderson@wildlife.nh.gov</a>
	Kim Tuttle Certified Wildlife Biologist	New Hampshire Fish and Game Department 11 Hazen Drive Concord, NH 03301 Telephone: (603) 271-6544 Email: <a href="mailto:Kim.Tuttle@wildlife.nh.gov">Kim.Tuttle@wildlife.nh.gov</a>
Maine Department of Marine Resources	Gail Wippelhauser	Telephone: (207) 624-6349 Email: <a href="mailto:Gail.Wippelhauser@maine.gov">Gail.Wippelhauser@maine.gov</a>
Maine Department of	David Courtemanch	Email: <a href="mailto:Dave.L.Courtemanch@maine.gov">Dave.L.Courtemanch@maine.gov</a>

Environmental Protection		
NH Natural Heritage Bureau DRED NH Division of Forests and Lands	Melissa Coppola	172 Pembroke Road Concord, NH 03302-1856 Tel: (603) 271-6488 Email: <a href="mailto:Melissa.Coppola@dred.state.nh.us">Melissa.Coppola@dred.state.nh.us</a>
NH State Historical Preservation Office	Nadine Peterson Preservation Planner	New Hampshire Division Of Historical Resources 19 Pillsbury Street Concord, NH 03301 Telephone: (603) 271-6628 Email: <a href="mailto:Nadine.Peterson@dcr.nh.gov">Nadine.Peterson@dcr.nh.gov</a>
National Park Service Rivers and Special Studies Branch	Kevin Mendik	Telephone: (617) 223-5299 Email: <a href="mailto:kevin_mendik@nps.gov">kevin_mendik@nps.gov</a>