October 17, 2011

Fred Ayer, Executive Director
Low Impact Hydropower Institute
34 Providence St.
Portland, ME 04103

Subject: Final Application Reviewer Report for the Benton Falls Hydroelectric Project

Dear Fred:

Attached please find my final reviewer's report on the application by Benton Falls Associates (BFA) c/o Essex Hydro Associates for certification of the Benton Falls Hydroelectric Project by the Low Impact Hydropower Institute (LIHI). As you know, for certain parts of this review I was assisted by Ron Kreisman, including contact with certain agency and NGO representatives.

Please contact me with any questions or concerns.

Sincerely,

Jackie Dingfelder

Attachment: as described.

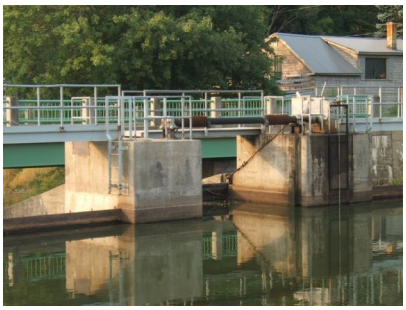
Review of Low Impact Hydropower Institute Application for Low Impact Hydropower Certification: Benton Falls Hydroelectric Project

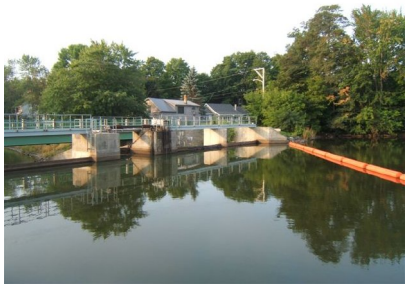
Introduction and Overview

This report reviews the application submitted by Benton Falls Associates c/o Essex Hydro Associates (applicant) to the Low Impact Hydropower Institute (LIHI) for Low Impact Hydropower Certification for the Benton Falls Hydroelectric Project (project or facility) located on the Sebasticook River in Benton, Maine.

Project and site characteristics.

The project is located in the village of Benton, Maine on the lower reaches of the Sebasticook River, a tributary of the Kennebec River, and is 5.3 miles from the confluence of the Sebasticook and Kennebec Rivers. The project is the first upstream dam on the Sebasticook from the confluence with the Kennebec River since the removal of the Fort Halifax dam several years ago, which had been located at the confluence of the Sebasticook River and the Kennebec River. The project is also the first dam encountered by sea-run fish migrating from the Atlantic Ocean up the Kennebec and into the Sebasticook River since the removal of the Edwards Dam in Augusta, Maine in 1999.



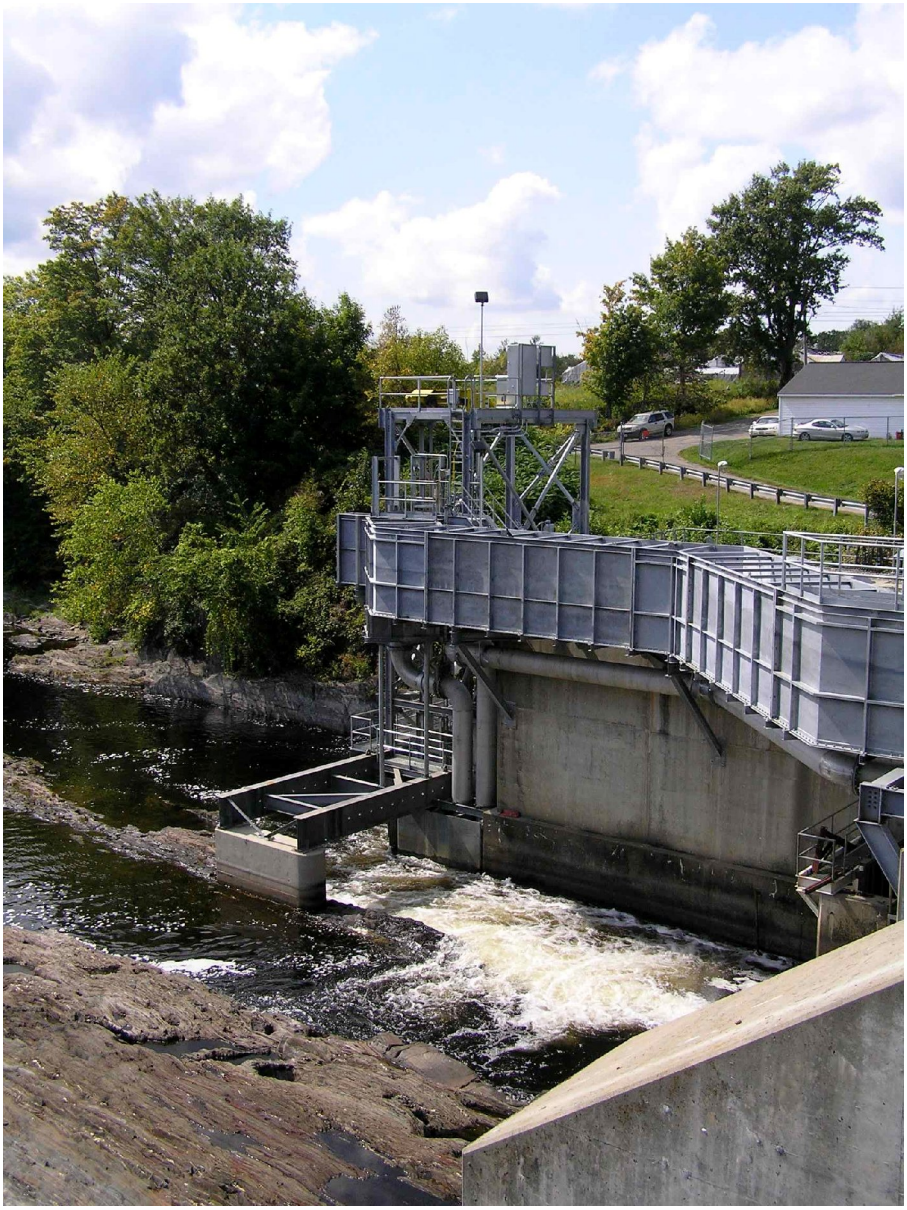


The Sebasticook River basin has a drainage area of 975 square miles and is the largest sub basin of the Kennebec River system. Almost 90 percent of the total drainage area (860 miles) is upstream of the site. The project is operated as a run of river plant. The downstream release through the turbine-generators plus the excess spill over the dam equals the inflow to the reservoir. The project discharges a continuous minimum flow of 100 cfs from the Benton Falls Project of the inflow to the reservoir, whichever is less, for the purpose of protecting fish and wildlife resources and water quality of the Sebasticook River.

Construction of the Benton Falls project was completed in 1984. The powerhouse contains two turbine generators with a total rated hydraulic capacity of 2115 cfs under a gross head of 29.5 feet. The project utilizes all of the available head and about 79% of the stream flow.

The Benton Falls Project works consists of: (1) a 500-foot long, 27-foot high concrete gravity dam with a 300-foot long integral uncontrolled spillway topped by 4-foot high flashboards; (2) a powerhouse located near the west dam abutment, constructed integrally with the dam, containing two turbine generators with a total rated capacity of 4.468MW; (3) a 350-foot long tailrace

channel; (4) the 4.16-kV generator leads, 4.16/12-kV step-up transformers and a 170-foot long, 12-kV transmission line; and (5) a fish lift which contains a 600-gallon hopper and a minimum cycle time of approximately seven minutes.



The Federal Energy Regulatory Commission (FERC) licensed the project (FERC 5073) in 1984 for the operation and maintenance of the 4.468 megawatt run-of-river project. FERC's license did not require anadromous or catadromous fish passage facilities. On January 25, 1998, as part of the Kennebec Hydro Developers Agreement ("the KHDG Agreement") that was executed by the previous owners of the project and other dam owners in the lower Kennebec River basin, state and federal fisheries agencies, and NGOs, the Applicant's FERC license was amended to require installation of upstream and downstream fish passage facilities. Both upstream and downstream fish passage facilities were installed in 2006. The upstream fish passage facility consists of an elevator designed to pass alewives, shad and salmon. The downstream fish passage

facility consists of two conduits that maintain a minimum flow of 350 cfs or project inflow that bypass the turbines. The upstream and downstream facilities became operational in the spring of 2006 and now have operated during five upstream and downstream fish migration seasons.

Public comment and agency letters. LIHI received three comment letters from Mr. Doug Watts with the Friends of the Kennebec Salmon during the public comment period. The first letter raises concerns about the need for additional downstream fish passage mitigation measures to protect Atlantic Salmon at the Benton Falls Project. He questioned whether this project should be certified as low impact and expressed concerned about Atlantic Salmon passing safely through the project during their winter and early spring migration out of the Sebasticook and Kennebec Rivers to the Atlantic Ocean. His second comment letter pertained to recreational easements and concerns about providing and maintaining public access points for fishing, swimming, nature photography, parking and canoeing. BFA responded in writing to this comment letter on 1/17/2011. In the final comment letter Mr. Watts commented that the fish prescriptions required for this project are outdated and that since Atlantic Salmon were listed as an endangered species in June 2009, the benchmark now has to be the Endangered Species Act. His letter stated that "if any dam can even possibly cause a 'take' of an endangered species, it must apply for and receive an Incidental Take Permit under Section 10 of the ESA. None of the above Kennebec and Penobscot Dams have applied for and received Incidental Take Permits for their existing operations."

Comments were also submitted by the Atlantic Salmon Federation (ASF) on 6/29/2011 regarding concerns about project impacts on endangered species. ASF questioned whether the project meets LIHI's criterion for "fish passage and protection" specifically with regard to "effectiveness testing" of downstream passage measures for different life stages of Atlantic salmon and American shad". They acknowledged that the applicant has built fish passage facilities and implemented operational measures for both downstream and upstream passage of sea-run fish at the dam, however, they raised concerns that no effectiveness testing for downstream passage of Atlantic Salmon has occurred. Their letter stated that "while we understand the Maine

Department of Marine Resources has told BFA they do not need to do this testing based on their assessment that the Sebasticook is not a priority Atlantic salmon stream, the fact remains that Atlantic salmon have been documented passing though the Benton Falls Hydroelectric project and without an effective downstream by pass, these salmon have a real chance of being killed in the turbines when subsequently migrating out of the stream". AFS claimed that "BFA has failed to show anywhere in the record that the Benton Falls Dam does not negatively affect endangered Atlantic salmon nor that they have received authority to "take" Atlantic salmon under the Endangered Species Act". They stated that the project needs to either develop a Habitat Conservation Plan or obtain an incidental take permit under the Endangered Species Act in order to meet LIHI's criterion for threatened and endangered species.

General conclusions. Based on my review of the material submitted by the applicant, the extensive public comments received, and my consultations with federal and state resource agencies, two issues of concern with LIHI criteria compliance arose: (1) recreational access, and (2) whether the applicant has fulfilled its license and settlement agreement obligation to test for and demonstrate that the fish passage currently in place at the facility provides safe and timely downstream passage for two species of migratory fish -- Atlantic salmon and American shad -- that either are or may be upstream, as required by license and settlement terms.

• Regarding the recreational access concerns, subsequent to comments received during the public comment period and prior to the completion of this review, the applicant took actions to satisfy LIHI's recreation access criterion, as described below.

• Regarding the license and settlement requirement that all downstream fish passage must be demonstrated to be effective in providing safe and timely downstream passage at the time that passage is installed at Benton Falls, I have determined the following:

> (1) Notwithstanding the requirement, no downstream passage effectiveness testing for American shad and Atlantic salmon has been conducted by the applicant, although upstream effectiveness has been demonstrated for these species. Both upstream and downstream effectiveness testing has been conducted for American eel and alewife, with safe and timely passage having been proven.
>
> (2) The applicant originally represented to LIHI that no downstream effectiveness testing for shad and salmon was required, and that effectiveness had been demonstrated. Upon further consultations with the applicant, the applicant agrees that additional downstream effectiveness testing for shad and salmon is required, and that demonstrated safe and timely downstream passage for shad and salmon has yet to be proven. However, the applicant also contends that conducting downstream effectiveness studies for shad and salmon now is not appropriate because, in the case of shad, the species has only begun to re-populate the area below the facility and the numbers that have returned, while growing, are not sufficient yet to conduct scientifically-valid testing (e.g., radio telemetry tagging, or the like). The resource agency with lead responsibility for shad, the Maine Department of Marine Resources (DMR), agrees with this assessment. Also for shad, the applicant contends that there is no evidence of downstream mortality or morbidity and cited for this review studies in other locations which it contends demonstrate that

downstream passage is likely sufficient. To this point, DMR stated that it did not have sufficient evidence to make a valid prediction regarding downstream passage effectiveness for shad at Benton Falls and that effectiveness testing should occur once sufficient numbers of shad are passed upstream.

Regarding salmon, the applicant stated that salmon have only been passed once at the site, in 2009, that there is no evidence of repeated passage and that until salmon return, a valid effectiveness study is not possible or needed. Resource agencies state that they have no evidence that would suggest that the current downstream passage for salmon is ineffective, but cannot know without a study once the fish return. The federal resource agencies state that until salmon are again passed upstream, effectiveness testing is not needed, but as soon as salmon do pass again in minimal numbers it is appropriate.

(3) Based on all of these circumstances, I conclude that although required effectiveness testing was not done for shad and salmon with the installation of fish passage six years ago, it is premature to perform this testing immediately, because the stock of shad in the upstream waters is too small a sample size to base a determination of effectiveness and, in the case of Atlantic salmon, not demonstrated to pass upstream after the one occasion.

(4) However, because it is reasonably likely that at least one of the species in question -- American shad -- will pass upstream in sufficiently large numbers during the term of the LIHI certification to allow meaningful effectiveness testing, and because Atlantic salmon is a listed ETS, and could again pass upstream, further because compliance with LIHI's C.1 criterion requires a demonstration of effectiveness and not just testing, I am recommending that a condition be attached to certification. This condition will ensure that the goals and criteria of LIHI's Fish Passage and Protection and Endangered and Threatened Species criteria will be satisfied throughout the term of the certification.

Recommendation. Based on my review of information submitted by the applicant, my review of additional documentation, and my consultations with the applicant, the resource agency staff and public commenters (assisted by reviewer Ronald Kreisman), I believe the Benton Falls Hydroelectric Project MEETS all of the criteria to be certified and I recommend certification *so long as* the following condition is attached to the certification:

In order to ensure ongoing compliance with LIHI's Fish Passage and Protection criterion, Benton Falls Associates shall do the following:

1. Annually on the anniversary date of the granting of this certification Benton Falls Associate shall file a written report to LIHI (copied to the contact persons who have ongoing monitoring and regulatory responsibility for the facility at the Maine Department of Marine Resources, the US Fish and Wildlife Service, and the National Marine Fisheries Service), in which Benton Falls Associates reports to LIHI on the following: (a) the number of Atlantic salmon and American shad passed upstream during the just-completed upstream migration season, and (b) the number of American shad and Atlantic salmon that were found in the facility's trash racks or otherwise entrained, or found injured or dead downstream of the facility.

2. In the event that more than 100 American shad are passed upstream in any two years of the term of the certification, or any salmon are passed in any single year, BFA shall immediately engage in consultations with the federal and state resource agencies for the purpose of reaching agreement with the resource agencies on the design and implementation of one or more scientifically-valid downstream effectiveness studies to occur the next migration season, and shall report to LIHI whether agreement has been reached with the resource agencies on their design and implementation no later than March 1st of the year in which the effectiveness study (or studies) is to be conducted. Should BFA conclude that one or more downstream effectiveness studies is not timely or otherwise required notwithstanding the occurrence of one or both events described above, BFA shall immediately report this position and its basis to LIHI.

3. Benton Falls Associates shall report to LIHI on the results of any effectiveness study conducted and any conclusions reached within two months of the conclusion of that study.

In the event that Benton Falls Associates (a) is unable to reach agreement with the resource agencies on the design or implementation of the study, (b) otherwise declines to conduct downstream effectiveness studies when timely and otherwise required, or (c) the results of any effectiveness study demonstrates that safe and timely downstream passage for either American shad or Atlantic salmon is not occurring, LIHI reserves the right to suspend or terminate its certification.

Low Impact Certification Criteria

A. Flows

1) Is the Facility in *Compliance* with *Resource Agency Recommendations* 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?

Yes. The original FERC license was amended in 1988 for river flows. According to Article 29 of the amended FERC license, the project must be operated in an instantaneous run-of-river mode. The license is required to minimize the fluctuations of the reservoir surface elevation by maintaining sufficient discharge from the project so that the flow, as measured immediately downstream from the project tailrace, approximates the instantaneous inflow to the project reservoir. The Maine Department of Environmental Protection issued a Water Quality Status Report in January 2011, that lists the Project as in compliance with their minimum flow requirements as outlined in their 401 Water Quality Certification under conditions 5 and 6.

If YES, go to B.
If NOT APPLICABLE, go to A2.
If NO, project fails.

PASS

B. Water Quality

1) Is the Facility either:
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) 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?

Yes. Consultation with Maine DEP staff confirmed that the project is in compliance with all terms and conditions of their 401 Certification.

If YES, go to B2.
If NO, project fails.

2) 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?

Yes.

If YES, go to B3.
If NO, go to C.

3) If the answer to question B.2 is yes, has there been a determination that the Facility is not a cause of that violation?

Yes. However, upon consultation with the Maine DEP, they reported the following:

> The Benton Falls dam is located in the Maine Assessment Unit number ME0103000309_332R, described as "Sebasticook River main stem, below the confluence of the East and West Branch, excluding the Halifax Impoundment". This 22 mile long segment is on the Maine 303d list of impaired waters although the listing causes are <u>not attributable</u> to any issues associated with the dam in Benton.

If YES, go to C.
If NO, project fails.

PASS.

C. Fish Passage and Protection

1) Is the Facility 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?

Yes, so long as the recommended condition of certification is issued with the certification, as described in the general conclusions at beginning of this review and further discussed below.

FERC originally licensed the Benton Falls project in 1984 with no requirement for fish or eel passage facilities. Subsequently, in 1998, FERC issued *Order Approving Settlement, Transferring License, and Amending Fish Passage Requirements* (84 FERC ¶ 61,227). That order contained the terms of a settlement agreement called the Kennebec Hydro Developers Group Settlement Agreement (KHDG Agreement) which was developed between seven hydroelectric project owners, state and federal fish and wildlife resources agencies and several non-government organizations. The KHDG Agreement provided for the construction of a permanent upstream fish passage facility, at the Benton Falls project, one year following: (1) the passage of alewives at the Fort Halifax Project, and (2) effective alewife passage at a) Newport dam, b) outlet of Sebasticook Lake, c) outlet of Plymouth Lake, and d)below the outlet of Pleasant Pond on Stetson Stream. The two conditions were met on June 13, 2003; therefore the fish passage facility at the Benton Falls Project was required to be constructed and operational by June 13, 2004.

It also required post-construction effectiveness testing and a demonstration that the passage facilities were effective in meeting passage goals.

In June 2004, FERC received a complaint that the Benton Falls upstream passage was not being built as required. Subsequently, BFA was required to develop a mitigation plan outlining a schedule to install required fish passage facilities. The mitigation plan was filed on 2/28/2005 and ultimately approved by FERC.

<u>Anadromous Fish Passage</u>
In 2005 FERC approved the plans for the fish passage design and in 2006, BFA completed installation of both upstream and downstream anadromous fish passage facilities as required under the KHDG Agreement. The upstream fish passage facility consists of an elevator designed to pass American alewives, shad and Atlantic salmon and an upstream eel ramp. The downstream fish passage facility consists of a surface bypass system (two 3-foot wide intakes leading to a bypass pipe that discharges to the project tailrace). This system is used to provide attraction flow during fish lift operations and to provide downstream passage

during the fall migration season. The upstream and downstream facilities became operational in the spring of 2006 and has since operated annually during the fish migration seasons since then.

Eel Passage Facility
Upstream eel passage at the facility consists of a ramp and is sited and operated to pass juvenile eels, the focus of the agencies' management objectives. BFA installed this upstream eel ramp at Benton Falls in the summer of 2001 and has operated the upstream eel facility annually since that time. After consultation with the resource agencies, in 2005 BFA installed an eel screen on the trash racks of its main turbine, Turbine #1, to facilitate downstream passage of eels. Concurrent with the installation of the eel screen, BFA agreed to limit the nighttime operation of its Turbine #2 (which does not contain and eel screen) to work with agencies to adopt operating procedures to minimize eel mortality at the Project. On August 9, 2009, BFA submitted a request to FERC to approve installation of a new trash rack on Turbine #2 so that it could be operated during nighttime hours. The new trash racks were installed on August 17, 2009.

If YES, go to C5.
If NOT APPLICABLE, go to C2.
If NO, project fails.

5) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of *Riverine* fish?

N/A, as there are no prescriptions for riverine fish.

If YES, go to C6.
If NOT APPLICABLE, go to C6.
If NO, project fails.

6) Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?

Yes, with condition attached to certification.

If YES or NOT APPLICABLE, go to D
If NO, project fails.

PASS.

D. Watershed Protection

1) 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

No. No watershed buffer zone was required as part of the FERC license or resource agency recommendations.

If YES = Pass, go to E and receive 3 extra years of certification
If NO = go to D2

2) 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?

If YES = Pass, go to E and receive 3 extra years of certification
If NO = go to D3

No.

3) 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)

No.

If YES = Pass, go to E
If NO = go to D4

4) 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.

NA. No management plan was required.

If YES = Pass, go to E
If No = Fail

PASS.

E. Threatened and Endangered Species Protection

1) Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?

Yes for state endangered species**.**

The Maine Department of Inland Fisheries and Wildlife database indicates documented occurrence of three species of State-listed freshwater mussels immediately downstream of the Benton Falls Dam, and presumed present within the upstream project boundary area as well. All are listed as "Threatened" status: Tidewater Mucket; Yellow Lampmussel; and Brook Floater. No other State-listed Endangered or Threatened species or their habitats have been identified within the project area. Provided the Project is operated within the terms of the FERC license (particularly downstream flow releases and maximum and minimum impoundment elevation limits) Maine Department of Inland Fisheries and Wildlife stated that they anticipate no adverse effects upon these species due to project operations.

Yes for federally listed species.

In 2000, NOAA and USFWS listed as endangered all naturally reproducing wild Atlantic salmon, as well as river-specific hatchery populations returning to small coastal Maine rivers and their tributaries. As a group, these were called the Gulf of Maine population. In June 2009, NOAA and USFWS extended Endangered Species Act protection to more Atlantic salmon by adding fish in the Penobscot, Kennebec, and Androscoggin rivers and their tributaries to the endangered Gulf of Maine population first listed in 2000.

The Benton Falls Hydro Project is located within the Gulf of Maine (GOM) Distinct Population Segment (DPS) for endangered Atlantic salmon, however, the project is not located within critical habitat for endangered Atlantic salmon as determined by NOAA and USFWS.

If YES, go to E2.
If NO, go to F.

2) If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the plan relevant to the Facility?

The Recovery Plan was adopted in 2005. The facility is in compliance with all applicable recommendations.

***If YES or NOT APPLICABLE, go to* E3.**
If NO, project fails.

3) If the Facility has received authority to incidentally *Take* a listed species through: (i) Having a relevant agency complete consultation pursuant to ESA Section 7 resulting in a biological opinion, a habitat recovery plan, and/or (if needed) an incidental Take statement; (ii) Obtaining an incidental Take permit pursuant to ESA Section 10; or (iii) For species listed by a state and not by the federal government, obtaining authority pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authority?

N/A. No incidental take authority has been received by the facility.

If YES, go to E4.
If NOT APPLICABLE, go to E5.
If NO, project fails.

5) If E.2. and E.3. are not applicable, has the Applicant demonstrated that the Facility and Facility operations do not negatively affect listed species?

The state IF&W has not taken the position that the facility is negatively affecting state-listed species.

The federal resources agencies have taken the position that, to date, there is no evidence that the facility is negatively affecting Atlantic salmon given the absence of a population being passed above the facility on an ongoing basis, the existing design of its downstream fish passage construction, and the absence of evidence of mortality from downstream passage. But if Atlantic salmon return again, agency opinion is that downstream effectiveness testing should be conducted to demonstrate that the facility's operations do not negatively affect salmon.

If YES, go to F.
If NO, project fails.

PASS.

F. Cultural Resource Protection

1) 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?

Yes. According to a letter dated November 22, 2010 from the Maine Historic Preservation Commission, the applicant has met their requirements regarding Cultural Resource protection, mitigation and enhancement as outlined in the original FERC license issued in 1984.

The only remaining archeological issue was long-term monitoring of erosion at archeological site 53.34. According to the Maine Historic Preservation Commission, this obligation was met through a 20-year monitoring contract with the Maine Archeological Society, Inc. The monitoring concluded in 2008, without detecting significant erosional damage to the archeological site.

PASS.

G. Recreation

1) 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?

YES. The FERC license sets forth in detail that BFA is required to maintain a portage trail around the Benton dam.

On 1/06/2011, LIHI received a comment letter regarding concerns about the canoe portage access trail at the site. The issues raised was that BFA was not providing adequate public access or signage for canoe portage as required under their FERC license and not informing landowners of their obligation to provide public access.

The LIHI reviewer received notification from BFA that they have remedied the situation by implementing the following actions:

> BFA installed six additional canoe portage signs, each one visible from the next so that the public has a clear indication of the trail and stays within Benton Falls property. There is also a large sign along the trail indicating the project boundary. BFA provided labeled photos documenting the location of the each sign. BFA also contacted the landowners in the vicinity of the canoe portage trail to inform them of the project's obligation to provide recreational access to the general public.

If YES, go to G3.
If NOT APPLICABLE, go to G2.
If NO, project fails.

2) Does the Facility allow access to the reservoir and downstream reaches without fees or charges?

YES.

If YES, go to H.
If NO, project fails.

PASS.

H. Facilities Recommended for Removal

1) Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?

No.

If NO, facility is low impact.
If YES, the project fails.

PASS.

FACILITY IS LOW IMPACT
so long as the following condition is attached to the certification:

In order to ensure ongoing compliance with LIHI's Fish Passage and Protection criterion, Benton Falls Associates shall do the following:

1. Annually on the anniversary date of the granting of this certification Benton Falls Associate shall file a written report to LIHI (copied to the contact persons who have ongoing monitoring and regulatory responsibility for the facility at the Maine Department of Marine Resources, the US Fish and Wildlife Service, and the National Marine Fisheries Service), in which Benton Falls Associates reports to LIHI on the following: (a) the number of Atlantic salmon and American shad passed upstream during the just-completed upstream migration season, and (b) the number of American shad and Atlantic salmon that were found in the facility's trash racks or otherwise entrained, or found injured or dead downstream of the facility.

2. In the event that more than 100 American shad are passed upstream in any two years of the term of the certification, or any salmon are passed in any single year, BFA shall immediately engage in consultations with the federal and state resource agencies for the purpose of reaching agreement with the resource agencies on the design and implementation of one or more scientifically-valid downstream effectiveness studies to occur the next migration season, and shall report to LIHI whether agreement has been reached with the resource agencies on their design and implementation no later than March 1st of the year in which the effectiveness study (or studies) is to be conducted. Should BFA conclude that one or more downstream effectiveness studies is not timely or otherwise required notwithstanding the occurrence of one or both events described above, BFA shall immediately report this position and its basis to LIHI.

3. Benton Falls Associates shall report to LIHI on the results of any effectiveness study conducted and any conclusions reached within two months of the conclusion of that study.

In the event that Benton Falls Associates (a) is unable to reach agreement with the resource agencies on the design or implementation of the study, (b) otherwise declines to conduct downstream effectiveness studies when timely and otherwise required, or (c) the results of any effectiveness study demonstrates that safe and timely downstream passage for either American shad or Atlantic salmon is not occurring, LIHI reserves the right to suspend or terminate its certification.

RECORD OF CONTACTS

Date of Conversation: 1/18/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Dana Paul Murch, Maine DEP
Telephone/email: 207-287-7784/Dana.P.Murch@maine.gov
Areas of Expertise: Hydropower Specialist

Jackie:

To the best of my knowledge, the Benton Falls Project is in compliance with all terms and conditions of its 401 certification, as modified. See attached compliance status report. The DEP is satisfied with these conditions.

Dana Paul Murch
Hydropower Specialist
Maine Department of Environmental Protection

Date of Conversation: 1/19/ 2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Susan Davies, Maine DEP
Telephone/email: 207-441-9271/ Susan.P.Davies@Maine.gov
Areas of Expertise: Water Quality Standards Coordinator

The Benton Falls dam is located in the Maine Assessment Unit number ME0103000309_332R, described as "Sebasticook River main stem, below the confluence of the East and West Branch, excluding the Halifax Impoundment". This 22 mile long segment is on the Maine 303d list of impaired waters although the listing causes are not attributable to any issues associated with the dam in Benton.

A summary of the 2010 assessment follows:
This segment is listed (i.e., in the standard US EPA reporting categories) for 2010 in Category 5D (legacy pollutants) for PCBs; and in Category 5A (impaired, needs a TMDL) for dioxin from upstream sources on the West Branch and for dissolved oxygen. Low dissolved oxygen levels were reported historically (1979 and 1981) for portions of the river segment well upstream of Benton (e.g., Detroit) and in the former Halifax Impoundment (downstream of the Benton Dam) but DO consistently attained standards within the Benton Falls impoundment and in the free-flowing section downstream of the Benton Falls Dam. We do not have recent data on this segment but there are no significant new sources of pollutants in the vicinity of Benton. The segment was moved to Category 4A (TMDL complete) in 2010 for bacteria impairments due to approval of the Maine Statewide bacteria TMDL. The Halifax Dam (next downstream dam) was

removed in 2008 and that 2 mile long Assessment Unit (ME0103000309_332R01) has now been moved to Category 2 (attaining standards) for dissolved oxygen and biocriteria.

Please feel free to follow-up with me if you have additional questions.

Susan P. Davies
Water Quality Standards Coordinator
Maine DEP SHS 17
Augusta, ME 04333
207-441-9271
207-287-7846 (FAX)

Date of Conversation:	1/19/2011
Application Reviewer:	Jackie Dingfelder, Consultant
Person Contacted:	Steve Timpano, Maine Dept. of Inland Fisheries and Wildlife
Telephone/email:	(207) 287-5258/Steve.Timpano@maine.gov
Areas of Expertise:	T & E Species

Our database indicates documented occurrence of three species of State-listed freshwater mussels immediately downstream of the Benton Falls Dam, and presumed present within the upstream project boundary area as well. All are listed as "Threatened" status: Tidewater Mucket; Yellow Lampmussel; and Brook Floater. No other State-listed Endangered or Threatened species or their habitats have been identified within the project area.

Provided the Project is operated within the terms of the FERC license (particularly downstream flow releases and maximum and minimum impoundment elevation limits) we anticipate no adverse effects upon these species due to project operations. We would request consultation with our Department if project operations are modified or any future instream work is proposed.

Please contact me again if you have any questions about this review. It is based strictly upon currently known occurrence data. No site visit was made specifically for this evaluation.

Steve T.

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Date of Conversation: 1/31/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Norm Dube, Maine Dept of Marine Resources
Telephone/email: norm.dube@maine.gov/(207) 941-4453
Areas of Expertise: Fisheries Scientist

Jackie,

The Benton Falls Hydro Project is located within the Gulf of Maine (GOM) Distinct Population Segment (DPS) for endangered Atlantic salmon. The project is not located within critical habitat for endangered Atlantic salmon as determined by NMFS and USFWS. Links to the GOM DPS listing and critical habitat designation can be found at

Listing documents: http://www.nero.noaa.gov/prot_res/altsalmon/

Critical habitat Mapbook: http://www.nero.noaa.gov/prot_res/altsalmon/dpsmaps.html

Norm

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Date of Conversation: 2/4/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Jeff Murphy, NOAA Fisheries
Telephone/email: (207) 866-7379/jeff.murphey@noaa.gov
Areas of Expertise: Hydropower, ESA biologist

USFWS is taking the lead on the Recovery Planning on GOM Atlantic Salmon. USFWS is updating the Recovery Plan and draft is expected out for public comment Summer 2011. The plan will discuss the hydropower impacts and mechanisms for reducing impacts. Targeted species will include Alewives, American Shad and Atlantic Salmon.

Is the upstream/downstream passage working at Benton Falls? His response was there hasn't been effectiveness studies conducted yet on Atlantic Salmon so don't know yet. He stated that is

would be in the applicant's best interest to have a conversation with the Services and initiate a Section 7 consultation and ITP statement.

Date of Conversation: 2/10/2011
Application Reviewer: Ron Kreisman, Consultant
Person Contacted: Fred Seavey/USFWS
Telephone/email: 207-866-3344x113/fred_seavy@fwx.gov
Areas of Expertise: Fish Passage Coordinator

1. Essex is very good operator to work with. They have done everything asked of them as far as Fred is aware.

2. Key contact person to double-check is Nate Gray, the DMR biologist in charge of Sebasticook restoration. He said that Nate works closely with Essex, knows the project well, and understands the importance of making sure this project works very well, as the first-on-river-to - ocean, gatekeeper dam for the Sebasticook, one of the two major tribs of Kennebec.

3. Fred confirmed that target species are: blueback herring, alewife, American eel, American shad and Atlantic salmon. This is entirely consistent with the KHDG Agreement.

4. Status re: passage and effectiveness as far as he knows is as follows:

A. Blueback herring and alewife: very clear effectiveness of upstream passage. Not sure if downstream effective has been proven. Check with Nate Gray.

B. American shad: Only a few shad have so far made it to fish lift. Sebasticook was clearly historically a major shad river. Not clear if reason so few shad is because too early since removal of Fort Halifax at mouth of Sebasticook for downriver of Benton Falls to have seeded, or whether the huge number of returning blueback and herring are crowding out the shad. Question is whether effectiveness for both upstream and downstream should be tested now.

C. American eel: while all upstream and downstream passage required is in place, not clear if effectiveness testing has occurred. Check with Nate Gray.

D. Atlantic salmon: not clear if 4 fish found in 2009 was a result of wild salmon from the ocean, or a large release that year of 125 hatchery-raised fish by DMR in the Sandy River (upstream) to test whether they would spawn, and these 4 were strays. Could well have been. There has been no effectiveness testing for Atlantic salmon. The downstream fishway was designed to be safe for Atlantic salmon, but don't know if it will work. NOAA did not list the Sebasticook as critical habitat because no known occupancy now, but that is also because of previous Ft Halifax dam, and no salmon passage. Habitat in Sebasticook is not ideal for salmon, as temperatures go higher due to warmer water being fed in from a lot of upstream lakes and ponds (ideal spawning and rearing habitat for alewife) and not a lot of cold water refugia.

Date of Conversation:	9/19/2011
Application Reviewer:	Ron Kreisman, Consultant
Person Contacted:	Jeff Murphy, NOAA Fisheries
Telephone/email:	(207) 866-7379/jeff.murphey@noaa.gov
Areas of Expertise:	Hydropower, ESA biologist

Conducted a follow-up conversation with Jeff regarding his response to public comments LIHI received contending that downstream effectiveness studies for salmon are required under the ESA to prove that no incidental take is occurring, and his view of whether downstream effectiveness testing should occur immediately. Jeff repeated statements made to Jackie Dingfelder earlier in the year regarding not knowing if downstream passage for salmon is effective, but emphasized that no salmon have been found at site except for once in 2009, that there is no active salmon restoration program for the Sebasticook, that there is no evidence to date that any take has occurred or that downstream fish passage in place is clearly inadequate for effective passage as now operating. Jeff stated that if salmon again return there should be effectiveness testing, and that Benton Falls could do it now using smolts to ensure no take is occurring.

Date of Conversation:	2/23/2011
Application Reviewer:	Jackie Dingfelder, Consultant
Person Contacted:	Nate Gray, Maine Dept. of Marine Resources
Telephone/email:	207-624-6344/nate.gray@maine.gov
Areas of Expertise:	Marine Resource Scientist

Blueback Herring and Alewives: He said that the project does exceeding well for these species on both upstream and downstream passage and he gives it an A+. He said about 1.6 million herrings are passing through the Sebasticook River system and the facilities are working great.

Am. Eel: Upstream passage does very well; downstream passage had issues in the past but this have been corrected and now the downstream passage is working fine.

American Shad: Upstream passage is working well; seeing number of Shad slowly climbing in the Sebasticook River system. Nate stated that the downstream passage for Shad is also working well. There are about 10,000 adults in the entire system.

Atlantic Salmon: He said that 4 Salmon passed through the project last year as it was a high water year and they are starting to see more Salmon straying into the system since its historical habitat and the dams are now removed. Nate said that the Salmon appear to be passing fine upstream but they don't have effectiveness studies for the downstream passage. He thought that Essex might want to consider doing study to see if smolts can pass through the large turbine successfully as they don't have that information currently. He said he'd follow up with Peter LaMothe, a fisheries biologist at MDMR who specializes in ESA and HCPs. See his follow up email below.

mail sent of 2/24/2011:

Jackie,
Spoke w/ Peter LaMothe in our bureau and here is what the conversation boiled down to: Essex Hydro (Benton Falls) should get an incidental take permit and do a section 7 consultation with the agencies. Even though the project is NOT located in "critical habitat" Essex should pursue these options as a form of failsafe should an incident occur at the project involving an endangered species. And that's about it in a nut shell. If you should have any further questions regarding Essex Hydro (Benton Falls) feel free to call or e-mail. Again, I would like to reiterate how well Benton Falls does in regards to fish passage. Having seen my share of sub-standard fish passage projects/operations, Benton Falls Project is an excellent example of what can and should be an example to the industry.

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Date of Conversation:	2/4/2011
Application Reviewer:	Jackie Dingfelder, Consultant
Person Contacted:	Gail Wippelhauser/Maine Department of Marine Resources
Telephone/email:	207-624-6349/gail.wippelhauser@maine.gov
Areas of Expertise:	Marine Resource Scientist, Supervisor

Phone conversation with Gail regarding upstream/downstream fish and eel passage. She said that based on their review, the upstream/downstream passage at the project appears to be working for eel, Shad, Alewives and Atlantic Salmon. She indicated that the fish lift has successfully passed Atlantic Salmon upstream and they have been working with BFA on criteria for summertime passage and they have been following their prescribed protocol.

Regarding downstream passage, the facility is in compliance with all their requirements, however, the downstream passage requirements might change with the listing but would have to consult with the Services.

Date of Conversation:	9/16/11
Application Reviewer:	Ronald Kreisman, Consultant
Person Contacted:	Gail Wippelhauser/Nate Gray, Maine Department of Marine Resources
Telephone/email:	207-624-6349/gail.wippelhauser@maine.gov
Areas of Expertise:	Marine Resource Scientists

Conducted a follow-up joint conversation with Gail and Nate regarding their response to public comments LIHI received contending that downstream effectiveness studies for salmon and shad

is required and has not been conducted, and that therefore no proof exists of safe and timely downstream passage, and how to harmonize these contentions with each of their statements that downstream passage is working well for shad and salmon. Gail and Nate acknowledge that no downstream effectiveness studies have been done for either species and their optimism about safe passage was based on results for alewife, plus their general knowledge of design of facility. Regarding shad, they state that shad population is small but apparently growing numbers are passing upstream (this year, 53 shad) and that they have observed no downstream passage problems (no indication of entrainment (no dead fish in trash racks) and no visible mortality downstream), but they acknowledge that these observations are very imperfect how difficult it would be to observe mortality given small number of shad and that millions of alewife are passing downstream at same time. They agree that radio telemetry or other scientifically-valid testing should be done once shad population passing upstream reaches size that big enough study is possible. They believe this is 100 or more shad passing for two years in a row, after which testing should immediately be done. They look forward to working with Essex/Benton Falls Associates to design and conduct this study when this time comes.

Regarding Atlantic salmon, Nate referred me to his previous communication regarding discussion with Peter, and both Gail and Nate suggested that given the absence of salmon at the site except for the one occasion in 2009 and what they believed to be a good likelihood of safe passage given the design, they saw no immediate need for downstream effectiveness studies until salmon re-presented themselves. They also suggested that Jeff Murphy at NMFS should be re-contacted to discuss the federal view of when effectiveness testing for Atlantic salmon should occur.