

October 27, 2011

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

Subject: Final Application Reviewer Report for the Slack Dam Hydroelectric Projects

Dear Fred:

Attached please find my final reviewer's report on the application by Springfield Hydroelectric Company for certification of the Slack Dam Hydroelectric Projects by the Low Impact Hydropower Institute (LIHI). 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: Slack Dam Hydroelectric Project

Introduction and Overview

This report reviews the application submitted by Springfield Hydroelectric Company (applicant) to the Low Impact Hydropower Institute (LIHI) for Low Impact Hydropower Certification for the Slack Dam Hydroelectric Project (project or facility) located on the Black River in Springfield, Vermont. The Federal Energy Regulatory Commission (FERC) exempted the project (FERC 8014) from licensing in 1985 for the operation and maintenance of the 400 kilowatt run-of-river project.

Project and site characteristics.

The project is located in Springfield, Vermont on the Black River, which is a tributary to the Connecticut River. The dam, located at River Mile 4.2 upstream of the confluence of the Black and Connecticut Rivers, is one of five existing concrete gravity dams on the Black River in Springfield. (Comtu Falls site is immediately upstream, and the Lovejoy Dam site is just 0.2 river miles downstream.) The project was reconstructed in 1986 and has an installed capacity of 400 KW. Annual energy production has averaged 2,000,000 KWH. The project is a strict run-of-river operation utilizing 21-feet of gross head, between the headwater and tailwater. There is no bypass reach. The project is served by a 190 square mile drainage area on the Black River, 75% of which is controlled by the U.S. Army Corps of Engineers Flood Control Project in North Springfield, 4.5 miles upstream. A steel penstock 8' in diameter and 80' in length conducts water from the intake to the powerhouse.

The power house is 20' x 20' square and houses one horizontal full Kaplan turbine driving a vertical induction generator by means of an internal bevel gear, together with associated hydraulic, mechanical, electrical and electronic equipment. The powerhouse is constructed of reinforced concrete to an elevation greater than the 100 year flood level. A pad mounted transformer connects the station to 3-phase 4,160 V electrical service. A fishway, constructed in 2007, provides for downstream fish passage.

FERC Exemption: On January 30, 1984, Sterling Enterprises, Inc. (the previous owners) filed an application for an exemption from licensing for its proposed Hydropower Project. FERC issued an exemption from licensing on September 30, 1985. The exemption included Standard Article 2, which requires compliance with any terms and conditions that federal and state fish and wildlife agencies have determined appropriate to prevent loss of, or damage to, fish and wildlife resources.

Black River fishery. The Black River is part of the Connecticut River system. Historic records indicate that Atlantic salmon ascended the mainstem Connecticut River to its very headwaters (as far north as Beechers Falls, Vermont) and likely entered all major tributaries not blocked by natural barriers. Precise numbers of salmon that entered the river and its various tributary systems are unknown because early settlers did not enumerate the migrating fish as extirpation predated the development of fishery science.

The native salmon population disappeared soon after the construction of impassable dams. The first dam to be built across the mainstem Connecticut River was constructed in 1798 near the present site of Turners Falls, Massachusetts. It blocked the access of salmon to spawning habitat in the upper portion of the watershed, and the species disappeared from the river a few years later.¹

Beginning in 1967, a program to restore anadromous fish to the Connecticut River was initiated and in 1983 Congress passed the Connecticut River Basin Atlantic Salmon Compact, which formalized state and federal agreements for restoring the fishery. This action created the Connecticut River Atlantic Salmon Commission, which guides the restoration of salmon to the basin. Providing upstream fish passage at dams on the river has been an important aspect of migratory fish restoration. Efforts to provide downstream fish passage on both mainstem and tributary projects were initiated in the 1980s and have been ongoing.

The Black River supports populations of Atlantic salmon, brown trout, rainbow trout, and brook trout. At the present time, Atlantic salmon occur in the Black River solely as a result of annual stocking of fry into suitable juvenile nursery habitat. This stocking is being done as part of the multi-state and federal fishery agency program for the restoration of anadromous Atlantic salmon to the Connecticut River basin as noted above. Fry stocking in the Black River makes use of abundant juvenile habitat for producing salmon smolts, which will migrate out to sea and hopefully contribute to increasing adult salmon returns to the Connecticut River.²

According to correspondence between the LIHI Reviewer and the State of Vermont fisheries biologist, stocking of Atlantic salmon fry has occurred every year since at least 1995 upstream of Slack Dam. State biologists also confirmed that salmon used the Black River before extensive damming of the Connecticut River Watershed. In addition, they believe that eels were historically present above the Slack Dam project although they are now absent.

Significant Issues. The adequacy of downstream fish passage at the facility is an unresolved issue at Slack Dam. The relevant background is the following.

(1) The basis for the fish passage that is required as part of the federal license is Standard Article 2 in the applicant's license exemption. By letters date December 27, 1983 and March 5, 1985, the USFWS provided FERC with their terms and conditions for the project. Condition 1 states:

"The Exemptee shall provide fish-passage facilities at this project when prescribed by USFWS or the Vermont Department of Fish and Wildlife (VTDFW). Design, construction and operation of fish-passage facilities will be the responsibility of the Exemptee; however, approval of the design by USFWS will be necessary. Any additional instantaneous flows for operation of these facilities will also be provided by the Exemptee, as prescribed by USFWS"

¹ Strategic Plan for the Restoration of the Atlantic Salmon to the Connecticut River, Revised July 1, 1998.

² Basin 10 Black River and Ottauquechee River Watersheds Water Quality and Aquatic Habitat Assessment Report, 1995.

Further, Condition 8 states:

"USFWS is (sic) reserved the right to add and alter terms and conditions as appropriate to carry out its responsibilities during the life of the project with respect to fish and wildlife resources...."

Finally, Condition 9 states:

"The Exemptee shall incorporate the aforementioned fish and wildlife conditions in any conveyance - by lease, sale or otherwise - of his interests so as to legally assure compliance with said conditions for as long as the project operates under an exemption from licensing."

(2) Based on the initiation of upstream stocking of Atlantic salmon smolts some years after the FERC exemption was issued, the USFWS wrote to the applicant (September 22, 2006) and stated:

"While we knew that the facilities you installed were not sufficient to provide effective, safe passage for downstream migrants, there was no need to make modifications at that point in time because no salmon fry were being stocked upstream of the dam and no adult pre-spawned fish were able to pass upstream either. However, fry stocking of the Black River was initiated in 1993 and the applicant was notified that passage likely would be needed by the spring of 1995. "

(3) In conducting research for the LIHI Certification, the Reviewer contacted the State and Federal fishery agencies to determine if the downstream fish passage issues raised in 2006 by USFWS had been adequately resolved. Per an email dated, 9/22/ 2011, USFWS notified the LIHI reviewer that there were outstanding issues with the downstream fish bypass facility at Slack Dam and that it does not conform to USFWS design criteria. USFWS forwarded a memorandum from their fishway engineer that outlined their concerns with the hydraulics at the entrance. At the same time, the USFWS acknowledged to the Reviewer that it had not followed up with the applicant as it intended in 2008 after contact with the applicant, to work on the kinds of changes in downstream passage that it believed might be necessary, and that given this situation it would support certification so long as the downstream fish passage issues were resolved by early 2013.

Public comment and agency letters. The public comment period closed on April 18, 2011. LIHI did not receive any public comment or agency letters on this project.

General conclusions. The challenge presented by the application of the Slack Dam Project is that there are outstanding issues regarding downstream fish passage that need to be addressed. Correspondence with the State and Federal fishery agencies revealed that not all issues pertaining to downstream fish passage had been adequately resolved. Although the State believes the downstream measures are "appropriately protective" of the salmon resource, the USFWS is not certain based on an inspection conducted three years ago, but acknowledges that it has been remiss in not following up with the applicant. The applicant has stated a willingness to

work with USFWS to either demonstrate the current passage is "adequately protective" or to make needed changes. USFWS suggested that certification be conditioned requiring the applicant to address the downstream bypass design deficiencies by April 1, 2013 and that any modifications must be approved by the USFWS prior to their implementation.

Under these circumstances, I recommend that LIHI conditionally certify the project, with a condition that directs Springfield Hydroelectric Company ("Springfield," the applicant) to initiate consultation with USFWS and the Vermont Department of Fish and Wildlife immediately upon receipt of certification, to determine whether the current downstream passage at the project is appropriately protective, and to report to LIHI within four months -- by March 1, 2012 -- as to whether agreement has been reached, if it not deemed appropriately protective, on either changes that Springfield will make at the project, or on downstream passage effectiveness testing by Springfield in 2012. If downstream effectiveness testing is required, Springfield shall report to LIHI by November 1, 2012 on results of testing unless a different date is mutually agreed upon by certificate holder, the USFWS and Vermont Department of Fish and Wildlife. If results do not show adequate effectiveness, Springfield shall also report to LIHI as to whether agreement has been reached on changes in downstream passage that will be implemented and operational by April 1, 2013.

Recommendation. Based on my review of information submitted by the applicant, my review of additional documentation, and my consultations with resource agency staff, I believe the Slack Dam Project **CONDITIONALLY MEETS** all of the criteria, and I therefore **RECOMMEND** that the project be certified subject to the following **CONDITION**:

- Upon receipt of certification, Springfield Hydroelectric Company ("Springfield") must initiate a new round of consultations with the USFWS and the Vermont Department of Fish and Wildlife Department (collectively, the agencies) to determine whether the current downstream passage at its project is appropriately protective, and to report to LIHI by **March 1, 2012** as to whether the agencies have deemed it appropriately protective. If the agencies determine that it is not appropriately protective, Springfield shall provide an agreement has been reached with the agencies providing for either fishway modifications or downstream passage effectiveness testing by Springfield in 2012.
- If downstream effectiveness testing is required, Springfield shall report to LIHI by **November 1, 2012** on the results of the testing unless a different date is mutually agreed upon by Springfield and the agencies.
- If results do not show adequate effectiveness to be appropriately protective, Springfield shall also report to LIHI as to whether agreement has been reached on fishway modifications that will be implemented and operational by **April 1, 2013**.
- LIHI reserves right to suspend certification if the above steps are not completed, if no agreement is reached with the agencies; or if required measures to ensure

downstream passage is appropriately protective of the Atlantic salmon resource are not made by April 1, 2013.

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?**

NA. The recommendation was issued prior to January 1, 1987.

If YES, go to B.

If NOT APPLICABLE, go to A2.

If NO, project fails.

- 2) **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?**

Yes. The Facility is operated in an instantaneous run-of-river mode, as required by the project water quality certification, which also requires 0.5 inch of spillage. Run-of-river operations mode meets the minimum LIHI standard as there is no bypass reach. According to an email from a State of Vermont Water Quality Specialist at the Dept. of Environmental Conservation dated 6/13/2011, the project is in compliance with WQ Certification flow requirements.

If YES, go to B

If NO, go to A3.

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 for 1b). Email correspondence dated 8/26/2011 from Brian Fitzgerald, State of Vermont Water Quality Specialist at the Department of Environmental Conservation, stated that "there is reasonable assurance that the waters at these facilities and in the downstream reaches are in compliance with Vermont's quantitative water quality standards for this project."

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?**

No. Email correspondence dated 1/10/2011 from the Vermont Agency of Natural Resources, Department of Environmental Conservation, states that this reach of the Black River is not listed on the most recent (2010) list of impaired waters.

If YES, go to B3.

If NO, go to C.

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?**

NA.

If YES, go to C5.

If NOT APPLICABLE, go to C2.

If NO, project fails.

2) 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)?

State biologists stated that it is highly likely that salmon used the Black River before extensive damming of the Connecticut River mainstem. Salmon fry are stocked upstream, and, therefore, salmon now pass downstream through the Facility area. In addition, eels were historically present above the Slack Dam project although they are now absent; no restoration plans are in place at this time.

Yes to salmon upstream passage, go to C.2.a.

No to salmon downstream passage, go to C.3.

Yes to eels, go to C.2.a.

a) 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?

Salmon are present below the dam as a result of upstream passage facilities in place at the Connecticut River, but do not have access above Lovejoy Dam, which is in Springfield village downstream of Slack Dam. Eel passage is not provided at the many downstream dams; there is no restoration plan in place.

Yes to salmon upstream passage, go to C.2.b.

Yes to eels, go to C.2.b.

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?

No resource agency has Recommended upstream passage of salmon or eel passage at this dam.

N/A for salmon upstream passage, go to C.3.

N/A for eels, go to C.3.

3) If, since December 31, 1986:

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

- b) **The Resource Agencies declined to issue a Mandatory Fish Passage Prescription,**
- 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 fish are no longer present in the Facility area and/or downstream reach due in whole or part to the presence of the Facility?**

There is no record of consideration of upstream passage facilities for salmon nor for eel passage facilities. Regardless none of the limiting reasons would apply.

N/A for both salmon upstream passage and eels, to C.4.

4) If C3 was not applicable:

- 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?**

With respect to downstream passage of salmon smolts, the applicant does not know the answer to this; there is no current testing. There is no upstream passage of adult salmon.

Or

- 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?**

Although the State believes the downstream measures are "appropriately protective" of the salmon resource, the USFWS is not certain based on an inspection conducted three years ago, but acknowledges that it has been remiss in not following up with the applicant. The applicant has stated a willingness to work with USFWS to either demonstrate the current passage is "adequately protective" or to make needed changes.

Under these circumstances, I recommend that LIHI conditionally certify, with a condition that directs the applicant to immediately upon receipt of certification initiate consultation with USFWS to determine whether downstream passage is appropriately protective, and to report to LIHI within four months -- by March 1, 2012 -- as to whether agreement has been reached on changes or on a testing protocol for 2012. If a testing protocol,

certificate holder will report to LIHI by November 1, 2012 on results of testing unless different date mutually agreed upon by certificate holder and USFWS. If results don't show effective, report will also contain information on whether agreement has been reached on changes in downstream passage that will be implemented and operational by April 1, 2013. LIHI reserves right to suspend certification if steps are not completed, or if no agreement with resource agency and implementation to ensure downstream passage is appropriately protective of salmon resource.

There are no plans for eel restoration at this time.

YES, go to C5.

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

NA. No prescription has been issued.

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?

The agencies did not request any special measures to prevent fish entrainment.

If YES or NOT APPLICABLE, go to D

If NO, project fails.

CONDITIONALLY 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

NA. No buffer zone was required as part of the FERC exemption process.

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?**

No.

If YES = Pass, go to E and receive 3 extra years of certification

If NO = go to D3

- 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. There is no required shoreland management plan.

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?**

No.

If YES, go to E2.

If NO, go to F.

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, a letter dated 7/15/1996 from FERC states that the applicant is in compliance with the cultural provisions of their exemption.

If YES, go to G.

If NOT APPLICABLE, go to F.2

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?**

NA. The facility is FERC-regulated, however, there were no requirements listed in the exemption regarding recreational access, accommodation and facilities conditions in its exemption. A letter dated 7/15/1996 from FERC stated that there is no formal recreation at the project since it is located in the industrial center of town. They note that informal bank fishing occurs downstream.

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, the project provides opportunities to the public, at no charge, including kayak races, fishing and public access.

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 CONDITIONALLY LOW IMPACT

RECORD OF CONTACTS

Date of Conversation: 6/13/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Brian Fitzgerald, Vermont Dept. of Environmental Conservation
Telephone/email: 802.241.3468/brian.fitzgerald@state.vt.us
Areas of Expertise: Streamflow Protection Coordinator

Jackie,

Thanks for your voicemail and email.

Compliance with water quality certification conditions at both projects includes meeting flow requirements, so both projects are in compliance with respect to flows.

For comments specifically on fisheries impacts, you should contact the appropriate district fisheries biologist in the Vt. Department of Fish and Wildlife:

Slack Dam: Jay McMenemy, jay.mcmenemy@state.vt.us or 802.885.8829
Winooski-8: Rich Kirn, rich.kirn@state.vt.us or 802.485.7566

Please let me know if you need additional information.

BT

Brian T. Fitzgerald
Streamflow Protection Coordinator

Vermont Agency of Natural Resources
Department of Environmental Conservation
Water Quality Division
103 South Main Street, 10 North
Waterbury, VT 05671-0408

802.241.3468
802.793.0454 (cell)

brian.fitzgerald@state.vt.us
<http://www.vtwaterquality.org>

Date of Conversation: 8/26/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Brian Fitzgerald, Vermont Dept. of Environmental Conservation
Telephone/email: 802.241.3468/brian.fitzgerald@state.vt.us
Areas of Expertise: Streamflow Protection Coordinator

Jackie:

Fred Ayer requested confirmation of compliance with Vermont's quantitative water quality standards for the Winooski-8 (Winooski River) and Slack Dam (Black River) hydroelectric projects. Based on available information, there is reasonable assurance that the waters at these facilities and in the downstream reaches are in compliance.

Please contact me if you have questions.

BTF

Brian T. Fitzgerald
Streamflow Protection Coordinator

Vermont Agency of Natural Resources
Department of Environmental Conservation
Water Quality Division
103 South Main Street, 10 North
Waterbury, VT 05671-0408

802.241.3468
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<http://www.vtwaterquality.org>

Date of Conversation: 6/12/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: James McMenemy, Vermont Fish and Wildlife Dept.
Telephone/email: 802-885-8829/jay.mcmenemy@state.vt.us
Areas of Expertise: Fisheries Biologist

Hi Jackie,

Sorry about not responding to your voice mail sooner.

Slack has downstream passage that VTFW is satisfied with. They also operate as a run of river facility and I am not aware of any compliance issues.

Fifteen Mile Falls and Vernon were LIHI certified despite strong objections from multiple agencies regarding fish passage and flow issues. I don't see how you could not certify Slack, which actually is meeting the criteria.

Jay

James R. McMenemy
Fisheries Biologist
Vermont Fish and Wildlife Department
100 Mineral Street, Suite 302
Springfield, VT 05156-3168
Telephone: (802) 885-8829
Fax: (802) 885-8890
jay.mcmenemy@state.vt.us

Date of Conversation: 9/22/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Melissa Grader, USFWS
Telephone/email: 413-548-9138 x124/ Melissa_Grader@fws.gov
Areas of Expertise: Fisheries Biologist

Hi Jackie,

I've had a chance to review our files, and it looks like where we left off was back in Nov. of 2008 I sent John Warshow an email detailing the issues our fishway engineer had with the way John constructed his downstream bypass. John's response was that his preference was to wait until the d/s bypass facility was complete (meaning, I believe, that all issues had been resolved) before he would move forward with his LIHI certification request. I had said that I would forward John our fishway engineer's memo with the details of the issues, but it looks like I never did that. I have attached that memo, and the Nov. 2008 email exchange, for your information.

I realize that VT DFW indicated they were satisfied with the d/s fishway at Slack, and I think that some of the design issues may not need modification, but the hydraulics at the entrance are a concern that will need to be addressed.

Based on this review, the FWS recommends that if LIHI certifies the Slack Dam, the certification contain a condition requiring Mr. Warshow to address the d/s bypass design deficiencies by April 1, 2013, and that any modifications must be approved by the FWS prior to their implementation.

Thank you for the opportunity to comment on this LIHI certification process.

Sincerely,
Melissa

(See attached file: SlackVT5Dec08.MEM.doc)(See attached file: Slack fish passage nov 08 emails.pdf)

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Melissa Grader  
Fish and Wildlife Biologist  
US FWS/New England Field Office  
c/o CT River Coordinator's Office  
103 East Plumtree Road  
Sunderland, MA 01375  
413-548-8002, x124  
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[melissa\\_grader@fws.gov](mailto:melissa_grader@fws.gov)  
[www.fws.gov/newengland](http://www.fws.gov/newengland)  
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Date of Conversation:	9/27/2011
Application Reviewer:	Jackie Dingfelder, Consultant
Person Contacted:	Melissa Grader, USFWS
Telephone/email:	413-548-9138 x124/ Melissa_Grader@fws.gov
Areas of Expertise:	Fisheries Biologist

Downstream passage is required to protect outmigrating Atlantic salmon smolts. All other hydro facilities on the Black River have d/s passage also.

Mr. Warshow installed a d/s bypass facility that does not conform to Service design criteria. We visited the site during/after the initial install, and as noted in our fishway engineer's memorandum, there are concerns with the hydraulics at the entrance. I have no idea how much modifying the entrance might cost.

I proposed April 1 of 2013 because the d/s passage season starts April 1st annually, and that

would give Mr. Warshaw about 15 months to consult with us on acceptable ways to solve the hydraulic issue, and to implement any changes.

Regards,
Melissa

Date of Conversation: 9/28/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Rod Wentworth, Vermont Fish and Wildlife Dept.
Telephone/email: 802-560-5588/rod.wentworth@state.vt.us
Areas of Expertise: Fisheries Biologist

The reviewer had an extensive phone interview with Mr. Wentworth. He stated that the Slack Dam project has a 10-year history of working to resolve fish passage issues on the Black River. The State fishery biologists rely on the USFWS engineers regarding effective of the fish passage design and thus defer on the USFWS approval of the design.

Date of Conversation: 9/28/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Rod Wentworth, VT Dept. of Fish and Wildlife
Telephone/email: (802)241-3709/ rod.wentworth@state.vt.us
Areas of Expertise: Fisheries Biologist

Jackie, I did some looking around. The Black River is planned for non-natal salmon production, which means fry stocking but not trying to get adults to the habitat, possibly because there are so many dams. Stocking has been done every year since at least 1995 upstream of Slack. It is in my opinion highly likely that salmon used the Black River before extensive damming of the CT R watershed. I do not however have documentation available on that. I have read accounts of historical American eel use on the Black River, well upstream of Slack. Access the salmon plan at www.fws.gov/r5csrc/pdf/strplan.pdf You can find a list of Black R dams at www.fws.gov/r5csrc/Stuff/appg.html

And or Champlain: http://www.dec.ny.gov/docs/regions_pdf/09lcfishplan.pdf

Rod Wentworth

VT Dept. of Fish & Wildlife
103 South Main Street
Waterbury, VT 05671-0501
Phone: (802)241-3709
Fax: (802)241-3295

Date of Conversation: 9/30/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: James McMenemy, Vermont Fish and Wildlife Dept.
Telephone/email: 802-885-8829/jay.mcmenemy@state.vt.us
Areas of Expertise: Fisheries Biologist

Rod is correct. Eels were present above Slack historically although they are absent now. Salmon certainly got at least to Comtu Falls, just above Slack, and likely above and throughout the watershed. However, there is no documentation because they were gone by 1798.

There is downstream passage for salmon in place at all the dams on the Black, including Slack. No upstream passage is planned at this time. Salmon currently have access to the lower Black River below Lovejoy Dam.

Jay

James R. McMenemy
Fisheries Biologist
Vermont Fish and Wildlife Department
100 Mineral Street, Suite 302
Springfield, VT 05156-3168
Telephone: (802) 885-8829
Fax: (802) 885-8890
jay.mcmenemy@state.vt.us

Date of Conversation: 10/3/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Rod Wentworth, VT Dept. of Fish and Wildlife
Telephone/email: (802)241-3709/ rod.wentworth@state.vt.us
Areas of Expertise: Fisheries Biologist

Jackie, Jay has now retired from VDFW. You will note in the 'salmon plan' that Lovejoy is the first dam (most downstream) in the Black River and concerning upstream passage, is listed as not passable. Eels have been known to go around dams, overland, on rainy nights. While it is possible that they sometimes pass Lovejoy, I am not aware of any documentation of it. There are 5 dams on the Black River within a mile in Springfield, and I'm sure that collectively they do a good job of preventing upstream fish passage. Upstream passage is not planned for salmon; instead the upper Black river is stocked with fry. My Department has not made any plans related to eel recovery and passage, other than to address passage opportunistically at specific dams, such as during relicensing. Eel passage at Slack dam has not been discussed. You may want to check with the USFWS on this matter as they have been more active in eel restoration.

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Date of Conversation: 10/4/2011
Application Reviewer: Jackie Dingfelder, Consultant
Person Contacted: Melissa Grader, USFWS
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Eel passage is not needed at the Slack Dam at this time. Eel passage facilities exist at the Holyoke Dam on the Connecticut River, but not at Cabot (Turners Falls), Vernon or Bellows Falls dams. Once upstream passage is in place at those mainstem dams we likely will start seeking passage at projects on the Black River.

Regards,

Melissa

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