Application for Low Impact Hydro Certification for the Lower Robertson and Ashuelot Hydroelectric Projects

Submitted to: Low Impact Hydropower Institute 34 Providence Street Portland, ME 04103 Tel. (207) 773-8190

Date: June 29, 2009

Part E: Low Impact Hydropower Questionnaire

Background Information

1) Project Names: **ROB**) Lower Robertson Hydroelectric Project ASH) Ashuelot Hydroelectric Project 2) Owner and operator: Ashuelot River Hydro, Inc. (hereafter ARH) P.O. Box 194, Sullivan, NH 03445 Phone) (603) 847-9798 bking@gaw.com Email) Contact) Robert E. King, P.E., Pres. 3) Both projects are located on the Ashuelot River in Winchester, NH, off Route 119 between the village of Ashuelot and the Town of Hinsdale. Lower Robertson is easily visible from Route 119 and is approx. 1 mile upstream of Ashuelot, which is located at 80 Lost Road, an unmarked off of Route 119. 4) Exempted Capacity ASH) 870 KW ROB) 840 KW 5) Annual generation ROB) 3.2 GWH ASH) 3.3 GWH 6) FERC Exemptions, granted July 31, 1986: ROB) No. 8235; ASH) No. 7791 (see Appendix A - file names ROBxA & ASHxA, FERC Exemption) 7) Reservoir volumes, approx: ROB) 100 acre feet; area 8.6 acres ASH) 20 acre feet; area 3 acres 8) Non-reservoir facilities at both projects cover approx. 4800 sq. ft. 9) Inundated area is approx. ROB) 3 acres; ASH) 1 acre 10) ROB) A 200 foot buffer area around the reservoir would be approx. 26 acres ASH) A 200 foot buffer area around the reservoir would be approx. 12 acres 11) For a list of agency contacts, see Appendix B - file name xB Contact List. 12) Both projects are small, low head, run-of-river hydro plants built in the mid 1980's at existing paper company dams. ARH purchased the projects in 2007 and has operated them ever since. For site maps, see Appendix C - file names ROBxC & ASHxC, Maps.

A. Flows

1) Yes. Article 2 of the Exemptions requires adherence to conditions originally issued by New Hampshire Fish & Game and U.S. Fish and Wildlife that instantaneous flows of 203 cfs (0.5 cfs/sm) be passed at all times. At the behest of the project owner of the time, FERC and those two agencies approved a stream flow gauging plan by orders dated November 1, 1994 (ASH) and May 16, 1995 (ROB). Under our ownership, the project is operated run-of-river and in conformance with those orders. See relevant documents at Appendix D - file names ROBxD & ASHxD, Flows.

B. Water Quality

1) The projects were awarded 401 Water Quality Certificate in 1985. However, these documents were vaguely worded, and therefore ARH asked for a letter of compliance from the Water Quality division of the New Hampshire Dept. of Environmental Services this spring. In response, DES has asked ARH to collect water quality data during the summer of 2009 to demonstrate compliance with state standards. Because of the prolonged stretches of white water upstream and downstream of the projects, the resultant high dissolved oxygen levels, and the small size of the impoundments, ARH does not anticipate any problem proving that the projects meet water quality standards. See Appendix E - file name xE Water Quality.

C. Fish Passage and Protection

1) Yes. Article 2 of the Exemption requires adherence to conditions originally issued by New Hampshire Fish & Game and U.S. Fish and Wildlife that upstream and downstream fish passage be installed when those agencies deem it necessary. See relevant documents at Appendix F - file name xF, Fish Passage.

Downstream: Using a design approved by FERC letter dated January 8, 1999, downstream fish passage was installed at Lower Robertson in the summer of 1999. It has been operating ever since. Using a design approved by FERC letter dated July 20, 2001, downstream fish passage was installed at Ashuelot in late 2001. It has been operating ever since.

Upstream: The Ashuelot River has been targeted for anadromous fish restoration. A dam downstream of the two dams operated by ARH, known as the Fiske Mill, is in the process of installing upstream passage. ARH agrees to construct fishways at both Ashuelot and Lower Robertson projects within 2 years after 750 American shad are passed at Fiske Mill or within 4 years after 150 shad pass Fiske Mill, whichever comes first. The fishways would be designed based on the plans developed by our predecessors, Algonquin Power, dated March 14, 2006, with modifications described in a letter from the Fish and Wildlife Service to Algonquin Power dated July 12, 2006. If in the future, we and the regulatory agencies agree on alternative fishway designs, ARH agrees to construct these alternatives according to the trigger and construction schedule above. In Appendix F, we have included a letter from ARH to FERC dated July 27, 2008 to demonstrate our willingness to install fish passage, but we note the trigger numbers and schedule in that letter are not properly stated. The proper triggers and schedule are contained in the July 12, 2006 U.S. F&W letter, also included in the Appendix.

D. Watershed Protection

1) ASH) No. There is no formal buffer zone because the project impoundment is surrounded by an old highway on one side and private land and a railroad grade on the other side.

ROB) No. There is no formal buffer zone because the project impoundment is surrounded by an old paper mill and several residences.

2) Yes. We have not established a fund per se, but in December of 2008, ARH made a \$15,000 donation to the Society for the Protection of New Hampshire Forests (SPNHF) to help them protect some 1700 acres in the basin. This important land conservation project, known as Ashuelot Headwaters, will be consummated in stages, probably beginning this year. A letter acknowledging our donation to SPNHF is included in Appendix G. Robert King, president and majority owner of ARH has participated directly in the protection of another 2300 acres in the Ashuelot basin in the last decade. Please see

a brief article from Forest Notes (SPNHF's magazine) included in Appendix G - file name xG Watershed Protection.

E. Threatened and Endangered Species Protection

1) The U.S. Fish & Wildlife Service has indicated by email that there are no target species in the vicinity of these projects. See Appendix H - file name xH Endangered Species.

F. Cultural Resource Protection

1) Yes. Article 10 of the Exemption required of the original project owner certain conditions for cultural and historic preservation. To the best of our knowledge, these conditions were met. There have been no issues of this kind during our ownership or, to our knowledge, in the decade before our ownership.

G. Recreation

1) Yes. Article 2 of the Exemption requires adherence to conditions issued by agencies including the requirement to allow basic riverine access.

3) Yes. The project lands around the reservoir and downstream are neither fenced nor posted, and no fees or charges are applied to visitors. The actual power plant is fenced.

H. Facilities Recommended for Removal

1) No

<u>APPENDICES</u>	<u>File Names</u>	
Appendix A FERC Exemptions	ASHxA	ROBxA
Appendix B Contact List	xB	
Appendix C Site Maps	ASHxC	ROBxC
Appendix D Flows	ASHxD	ROBxD
Appendix E Water Quality	xE	
Appendix F Fish Passage	xF	
Appendix G Watershed Protection	xG	
Appendix H Endangered Species	xH	

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UNITED STATES OF AMERICA FEDERAL ENERGY REGULATORY COMMISSION

Hydroelectric Development, Inc.

Project No. 7791-001

ORDER GRANTING EXEMPTION FROM LICENSING (5 MW OR LESS)

(Issued July 31, 1986)

On February 15, 1985, Hydroelectric Development, Inc. filed an application to exempt the Ashuelot Paper Company Dam Project from the licensing requirements set forth in Part I of the Federal Power Act. The proposed small hydropower project is described in the attached public notice. The comments of interested agencies and individuals, including the U.S. Fish and Wildlife Service and the state fish and wildlife agency, have been fully considered in determining whether to issue this exemption from licensing.

Article 2 of this exemption requires compliance with the terms and conditions prepared by federal or state fish and wildlife agencies to protect fish and wildlife resources. These mandatory terms and conditions are contained in the attached letters commenting on the exemption application. If contested, the Commission will determine whether any mandatory term or condition is outside the scope of article 2.

After considering the mandatory terms and conditions designed to protect fish and wildlife resources, the environmental information in the exemption application, the staff's independent assessment 1/, and other public comments, the Director finds that issuance of this order is not a major federal action significantly affecting the quality of the human environment. -2-

The Director orders:

(A) The Ashuelot Paper Company Dam Project is exempted from the licensing requirements of Part I of the Federal Power Act, subject to the attached standard articles and the special article included below. See section 4.106 of the Commission's regulations.

Article 9. Before commencing any ground-disturbing or spoil-producing activities, the Exemptee, in consultation and cooperation with the appropriate Federal, state, and local agencies (including the Soil Conservation Service and any Federal agency with managerial authority over any part of the project lands), shall prepare a plan to control erosion and dust, stabilize slopes, and minimize the quantity of sediment or other potential water pollutants resulting from construction and operation of the project. The plan shall identify critical areas, include functional design drawings and map locations of control measures, and establish schedules for implementation, monitoring, maintenance, and periodic review.

The Exemptee may commence ground-disturbing or spoil-producing activities 30 days after submitting the final plan to the consulted agencies, or sooner if the plan is approved by the Soil Conservation Service and any Federal agency with managerial authority over any part of project lands. Any consulted agency that objects to the Exemptee's final plan should notify the Commission, specify the objection, and recommend alternative measures. The Commission reserves the right to modify the final plan.

(B) This order is issued under authority delegated to the Director and is final unless appealed to the Commission within 30 days from the date of this order.

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Richard T. Hunt Director, Office of Hydropower Licensing

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^{1/} Environmental Assessment, Ashuelot Paper Company Dam, FERC Project No. 7791-001, Federal Energy Regulatory Commission, June 18, 1986. This document is available in the Commission's public file associated with this proceeding.

Attachment E-2 Form

-1-§ 4.106 Standard terms and conditions of exemption from licensing

Any exemption from licensing granted under this subpart for

a small hydroelectric power project is subject to the following

standard terms and conditions:

(a) <u>Article 1</u>. The Commission reserves the right to conduct investigations under sections 4(g), 306, 307, and 311 of the Federal Power Act with respect to any acts, complaints, facts, conditions, practices, or other matters related to the construction, operation, or maintenance of the exempt project. If any term or condition of the exemption is violated, the Commission may revoke the exemption, issue a suitable order under section 4(g) of the Federal Power Act, or take appropriate action for enforcement, forfeiture, or penalties under Part III of the Federal Power Act.

(b) <u>Article 2</u>. The construction, operation, and maintenance of the exempt project must comply with any terms and conditions that the United States Fish and Wildlife Service or any state fish and wildlife agencies have determined are appropriate to prevent loss of, or damage to, fish or wildlife resources or to otherwise carry out the purposes of the Fish and Wildlife Coordination Act, as specified in Exhibit E of the application for exemption from licensing or in the comments submitted in response to the notice of the exemption application.

(c) <u>Article 3</u>. The Commission may revoke this exemption if actual construction or any proposed generating facilities has not begun within two years, or has not been completed within four years from the date on which this exemption was granted. If an exemption is revoked under this article, the Commission will not accept from the prior exemption holder a subsequent application for exemption from licensing or a notice of exemption from licensing for the same project within two years of the revocation.

(d) Article 4. This exemption is subject to the navigation servitude of the United States if the project is located on navigable waters of the United States.

(e) Article 5. This exemption does not confer any right to use or occupy any Federal lands that may be necessary for the development or operation of the project. Any right to use or occupy any Federal lands for those purposes must be obtained from the administering Federal land agencies. The Commission may accept a license application by any gualified license applicant and revoke this exemption, if any necessary right to use or occupy Federal lands for those purposes has not been obtained within one year from the date on which this exemption was granted. -2-

(f) <u>Article 6</u>. In order to best develop, conserve, and utilize in the public interest the water resources of the region, the Commission may require that the exempt facilities be modified in structure or operation or may revoke this exemption.

(g) <u>Article 7</u>. The Commission may revoke this exemption if, in the application process, material discrepancies, inaccuracies, or falsehoods were made by or on behalf of the applicant.

(h) Article 8. Any exempted small hydroelectric power project that utilizes a dam that is more than 33 feet in height above streambed, as defined in 18 CFR 12.31(c) of this chapter, impounds more than 2,000 acre-feet of water, or has a significant or high hazard potential, as defined in 33 CFR Part 222, is subject to the following provisions of 18 CFR Part 12, as it may be amended:

- (1) Section 12.4(b)(1)(i) and (ii), (b)(2)(i) and (iii), (b)(iv), and (b)(v);
- (2) Section 12.4(c);
- (3) Section 12.5;
- (4) Subpart C; and
- (5) Subpart D.

For the purposes of applying these provisions of 18 CFR Part 12, the exempted project is deemed to be a licensed project development and the owner of the exempted project is deemed to be a licensee.

(i) Before transferring any property interests in the exempt project, the exemption holder must inform the transferee of the terms and conditions of the exemption. Within 30 days of transferring the property interests, the exemption holder must inform the Commission of the identity and address of the transferee.

- Al. Exemption for Small Hydroelectric Power Project under SMM Capacity -- Any qualified license or conduit exemption applicant desiring to file a competing application must submit to the Commission, on or before the specified comment date for the particular application, either a competing license or conduit exemption application that proposes to develop at least 7.5 megawatts in that project, or a notice of intent to file such an application. Any qualified small hydroelectric exemption applicant desiring to file a competing application must submit to the Commission, on or before the specified comment date for the particular application, sither a competing small hydroelectric exemption application or a notice of intent to file such an application. Submission of a timely notice of intent allows an interested person to file the competing license, conduit exemption, or small hydroelectric exemption application no later than 120 days after the specified comment date for the particular application. Applications for preliminary permit will not be accepted in response to this notice.
- A9. Notice of intent -- A notice of intent must specify the exact name, business address, and telephone number of the prospective applicant, include an unequivocal statement of intent to submit, if such an application may be filed, either (1) a preliminary permit application or (2) a license, small hydroelectric exemption, or conduit exemption application, and be served on the applicant(s) named in this public notice.

P-7791-001

UNITED STATES OF AMERICA FEDERAL ENERGY REGULATORY COMMISSION

Notice of Application Filed with the Commission (May 30, 1985)

Take notice that the following hydroelectric application has been filed with the Federal Energy Regulatory Commission and is available for public inspection:

Exemption (5 MW or Less) a. Type of Application: 7791-001 b. Project No: c. Date Filed: February 15, 1985 Hydroelectric Development, Inc. d. Applicant: Name of Project: Ashuelot Paper Company Dam e. On the Ashuelot River in Cheshire County, New Hampshire £. Location: g. Filed Pursuant to: Energy Security Act of 1980, Section 408, 16 U.S.C. \$\$2705 and 2708 as amended. James C. Katsekas, Rivers Engineering Corporation, 217 Rockingham Road, Londonderry, New Hampshire 03053 h. Contact Person: MUL 1 0 1985 i. Comment Date:

Comment Date: JUL 10 385
 Description of Project: The proposed run-of-river project would consist of: (1) the existing 18-foot-high and 144.5-foot-long concrete-capped timber crlb Ashuelot Paper Company Dam with a spillway creat elevation of 33.5. foot-high and 144.5-foot-long interval maximum pool elevation to 33.9. feet main sea level (mal); (2) the reinstallation of 3.5-foot-high flashboards to raise the normal maximum pool elevation to 33.9. feet main; (3) a small impoundment; (4) a new intake structure and powerhouse at the south end of the dam with 3 turbine-generator units with a total installed capacity of 870 kW; (5) a 100-foot-long tailrace; and (6) other apputenances. Interconnection facilities are available at the slue. Flashboards, 3.5 feet high, were utilized at the dam until 1960 creating a normal maximum pool elevation of 33.9 feet mais. Applicant owns all existing facilities. Applicant estimates an avarage annual generation of 3,300,000 kWh. The application was filed during the Applicant's preliminary permit term for the Ashuelot Paper Company Dam Project No. 7791.

k. Purpose of Project: Project energy would be sold to the Public Service Company of New Hampshire.

 This notice also consists of the following standard paragraphs: A1, A9, B, C, & D3a.

m. Purpose of Exemption: An exemption, if issued, gives the Exemptee priority of control, development, and operation of the project under the terms of the exemption from licensing, and protects the Exemptee from permit or license applicants that would seek to take or develop the project. Agency Comments - The U.S. Fish and Wildlife Service, the Mational Marine Fisheries Service, and the State Fish and Game agency(ies) are requested, for the purposes set forth in Section 408 of the Energy Security Act of 1980, to file within 50 days from the date of issuance of this notice appropriate terms and conditions to protect any fish and wildlife resources or to otherwise carry out the provisions of the Fish and Wildlife Coorination Act. General comments concerning the project and its resources are requested; hewever, specific terms and conditions to be included as a condition of exemption must be clearly identified in the agency letter. If an agency does not file terms and conditions within this time period, that agency will be presumed to have none. Other Federal, State, and local agencies are requested to provide any comments they may have in accordance with their duties and responsibilities. No other formal requests for comments will be made. Comments should be confined to substantive issues relevant to the granting of an exemption. If an agency does not file comments within 60 days from the date of issuance of this notice, it will be presumed to have no comments. One copy of an agency's comments must also be sent to the Applicant's representatives.

> Kenneth F. Plumb Secretary



B. <u>Comments, Protests, or Motions to Intervene</u> - Anyone may submit comments, a protest, or a motion to intervene in accordance with the requirements of the Rules of Practice and Procedure, 18 C.P.R. \$\$385.210, .211, .214. In determining the appropriate action to take, the Commission will consider all protests or other comments filed, but only those who file a motion to intervene in accordance with the Commission's Rules may become a party to the proceeding. Any comments, protests, or motions to intervene must be received on or before the specified comment date for the particular application. <u>Filing and Service of Responsive Documents</u> - Any filings must bear in all capital letters the title "COMMENTS", "NOTICE OF INTENT TO FILE COMPETING APPLICATION", "PROTEST", or "MOTION TO INTERVENE", as applicable, and the Project Number of the particilar application to which the filing is in response. Any of the above named documents must be filed by providing the original and those copies required by the Commission's regulations to: Kenneth F. Plumb, Secretary, Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426. An additional copy must be sent to: Pred E. Springer, Director, Division of Project Management Stranch, Office of Hydropover Licensing, Federal Energy Regulatory Commission, Room 208 RB at the above address. A copy of any notice of intent, competing application or motion to intervene must also be served upon each representative of the Applicant specified in the particular application.

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D3a.

Appendix B. - Contact List

Ashuelot River Hydro, Inc.

P.O. Box 194 Sullivan, NH 03445 (603) 847-9798

The following agencies and NGO were contacted in the process of assembling Ashuelot River Hydro's application for Low Impact Hydro Certification:

Mr. John Warner U.S. Fish & Wildlife Service 70 Commercial Street, Suite 300 Concord, NH 03301 (603) 223-2541

Mr. Gabe Greis N.H. Dept. of Fish & Game, Region 4 15 Ash Brook Court Keene, NH 03431 (603) 352-9669

Gregg Comstock, P.E. N.H. Dept. of Environmental Services Watershed Management Bureau P.O. Box 95, 29 Hazen Drive Concord, NH 03302 (603) 271-2983

Ms. Barbara Skuly Ashuelot River Local Advisory Committee 19 Spring St. Swanzey, NH 03446 (603) 352-0987

Note: The following added from FERC's mailing list:

Andy Goode, VP U.S. Programs Atlantic Salmon Federation 14 Maine Street, Suite 308, Brunswick, ME 04011

Ralph Abele Environmental Protection Agency One Congress Street Boston, Massachusetts 02114

Regional Director Northeast Regional Office-DOC/NOAA 1 Blackburn Dr Gloucester, Massachusetts 01930-2237

CHIEF ENGINEER NEW HAMPSHIRE WATER RESOURCES BOARD 29 Hazen Drive Concord, NH 03301-6504

Kevin Mendik NER Hydro Program Coord U.S. National Park Service 15 State Street, 10th floor Boston, MA 02109

BILL INGHAM New Hampshire Fish and Game Department 11 Hazen Dr Concord, NH 03301-6502

THOMAS QUARLES, Jr, CHAIRMAN NEW HAMPSHIRE RIVER COUNCIL PO Box 719 Manchester, NH 03105-0719

JONATHAN TRUEBE LAKESIDE ENGINEERING 4 Tuftonboro Neck Rd Mirror Lake, NEW HAMPSHIRE 03853-6357

Harry T Stewart, Director NH Department of Environmental Services 29 Hazen Dr Concord, NH 03301-6504

Christine A Godfrey US Army Corps of Engineers N E Div / Regulatory 696 Virginia Rd Concord, NH 01742-2718





United States Department of the Interior

FISH AND WILDLIFE SERVICE ECOLOGICAL SERVICES P.O. BOX 1518 CONCORD, NEW HAMPSHIRE 03301

REF: FERC No. 8235

Ms. H. Orianna Roth Rivers Engineering Corporation 217 Rockingham Road Londonderry, New Hampshire 03053

DEC 1 2 1984

act

RECEIVED DEC 1 4 1984

Dear Ms. Roth:

This responds to your recently submitted draft Exhibits A & E for the Lower Robertson Dam Project located on the Ashuelot River in Cheshire County, New Hampshire. These comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Based on our review of the exhibits and consultation with the New Hampshire Fish and Game Department, it appears that impacts on fish and wildlife resources can be adequately mitigated. Section $\exists O(c)$ of the Federal Power Act and Section 408 of the Energy Security Act require inclusion in the exemption of all terms and conditions that are prescribed by State and Federal fish and wildlife agencies to prevent loss of, or damage to, fish and wildlife resources, and to otherwise carry out the purposes of the Fish and Wildlife Coordination Act. Consistent with our responsibilities, the following terms and conditions are provided:

- The Exemptee shall provide an instantaneous minimum discharge below the project of at least 203 cfs (0.5 cfsm) or inflow to the project, whichever is less, to protect downstream aquatic resources.
- The Exemptee shall provide fish-passage facilities at this project when prescribed by the U.S. Fish and Wildlife Service and/or the New Hampshire Fish and Game Department.
- 5. The Exemptee shall notify the Fish and Wildlife Service in writing when the project commences operation. Such notice shall be sent within 30 days of start-up to Supervisor, Ecological Services, U.S. Fish and Wildlife Service, P.C. Box 1518, Concord, New Hampshire 03301.
- 4. The Exemptee shall allow public access to the project area for utilization of public resources, subject to reasonable safety and liability limitations.

- 5. The Exemptee shall, within six months of the date of issuance of an exemption from licensing, present to the Fish and Wildlife Service for approval a plan for monitoring instantaneous flow releases at this project. Following approval of the monitoring plan, the Exemptee shall then measure instantaneous flows and provide records of discharge at the project on a regular basis as per specifications of the Fish and Wildlife Service. Upon receiving a written request from the Exemptee, the U.S. Fish and Wildlife Service may waive the requirement for flow monitoring at this project provided the Exemptee satisfactorily demonstrates that the required flow will be discharged at all times.
- 5. The Exemptice shall allow the Fish and Wildlife Service to inspect the project area at any time while the project operates under an exemption from licensing to monitor compliance with their terms and conditions.
- 7. The Fish and Wildlife Service is reserved the right to odd 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. The Exemptee shall, within thirty (30) days of receipt, file with the Commission any additional terms and conditions imposed by the above agency.
- 8. The Examptee shall incorporate the afor mentioned fish and wildlife conditions in any conveyance -- by lease, sale or otherwise -- of his internets so hs to legelly assure compliance with said conditions for as long as the project operates under an exemption from licensing.

If you have any questions about the contents of this letter, please call "r. Bob Jobelrer of my staff, al (t) (t) az-2705.

In order to acknowledge receipt of this latter, please sign the enclosed copy and return he soon ha measured.

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STATE OF NEW HAMPSHIRE

FISH AND GAME DEPARTMENT

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CHARLES E BARRY

Fr. Kenneth Plumb, Secretary Federal Energy Regulatory Commission 815 North Capitol Street, N.E. Washington, D.C. 20426

Re. NH Dam #255.02 Lower Robertson Dam Ashuelot River, Winchester, NH Project No. 8235 COMMENTS

Dear Mr. Plumb:

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Thank you for the above referenced project. The New Hampshire Fish and Game (5 MV or less) for the above referenced project. The New Hampshire Fish and Game Department is providing comments pursuant to the Fish & Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. S61 et. seq.) and New Hampshire RSA 206:9 and 206:10.

FISH --- GAME

The New Hampshire Fish and Gama Department stipulates the following as binding conditions of the exemption.

- 1. That an instantaneous flow of 203 c.f.s. (0.5 CFSM) or inflow, whichever is less, be released at the dam.
- That upstream and/or downstream fish passage facilities be incorporated into, the project when deemed necessary by the New Hampshire Fish & Game Department, U. S. Fish & Wildlife Service and/or National Marine Fisharies Service.
- That the conditions of the exemption be transferred by sale or lease of the project in order to protect the interests of fish and wildlife.
- That the Exemptee notify rme Fish & Game Department and U. S. Fish & Wildlife Service when the project goes on line.
- 5. That reasonable access to the river for fishermen be provided at the project.
- 6. The Exempties shall, within six months of the date of issuance of the exemption from licensing, present to the Fish & Game for approval a plan for monitoring instantaneous flow releases at this project. Following approval of the monitoring plan, the Exemptee shall then measure instantaneous flows and provide records of discharge at the project on a regular basis as per specifications of the Fish and Game Department. Jpon receiving a written request from the Exemptee, the New Hampshire Fish S Game Department may waive the requirement for flow monitoring at this project provided the Exemptee satisfactorily demonstrates that the required flow will be discharged at all times.

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- 7. The Exemptee shall allow the Fish & Game Department to inspect the project area at any time while the project operates under an exemption from licensing to monitor compliance with their terms and conditions.
- 8. The Fish and Game Department is 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. The Exemptee shall, within thirty (30) days of receipt, file with the Commission any additional terms and conditions incosed by the apple Agency.

Sincerely yours.

Clark E. Barry

Charles E. Barry ⁴ Executive Director

CEB.WCI.emb cc: Fred Springer Gordon Reckett Thomas Bigford James C. Katsekas William C. Incham. Jr.

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UNITED STATES OF AMERICA FRDERAL ENERGY REGULATORY COMMISSION

Hydroelectric Development Incorporated Project No. 8235-006 New Hampshire

ORDER MODIFYING AND APPROVING STREAMFLOW GAGING PLAN (Issued May 16, 1995)

On January 26 and supplemented on April 3, 1995, Hydroelectric Development, Inc. (exemptee) filed a streamflow gaging plan, for Commission approval, to monitor instantaneous flow releases required under article 2 for the Lower Robertson Dam Project.

Article 2 requires the exemptee to comply with any terms and conditions that federal and state fish and wildlife agencies have determined necessary for the protection and enhancement of natural resources. By letters dated January 25, 1985 and June 14, 1985, the U.S. Fish and Wildlife Service (FWS) and the New Hampshire Fish and Game Department (NHFGD), respectively, stipulated the terms and conditions under article 2.

Condition No. 1 of the FWS and NHFGD letters stated that the exemptee must release a continuous minimum flow of 203 cubic feet per second (ofs), or inflow, whichever is less. Further, in order to monitor compliance with the flow releases, the exemptee was required to provide a streamflow monitoring plan to the agencies for their review before implementing the plan.

Background

By letter dated November 29, 1994 the exemptee notified the Commission that an approved streamflow gaging system has not been installed at the project. The exemptee stated that the proposed streamflow gaging system would be similar to the equipment recently installed at the exemptee's other project (FERC No. 7791-NH), located upstream, which was approved by Order Approving and Modifying Streamflow Gaging Plan, issued November 1, 1994.

By letter dated December 22, 1994, the Director, Division of Project Compliance and Administration (Director) responded to the exemptee's report concerning the delinquency to install a gaging system and the willingness to quickly resolve the matter. The Director requested that the exemptee provide the streamflow gaging plan to the FWS, NHFGD and the U.S. Geological Survey (USGS) for their review and comments. The Director further stated that the exemptee should incorporate the resource

¹ 69 FERC ¶ 62,090.

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agencies' comments into the final plan or provide an explanation, with any documentation or data to support the exclusion of the resource agency comments.

By letters dated January 17 and March 23, 1995 the exemptee filed a streamflow gaging plan with the Commission. The plan contained comment letters from the FWS, NHFGD and the USGS.

Exemptee's Streamflow Gaging Plan

The exemptee stated that water level pressure transducers have already been installed at the site. One is located in a stilling well upstream of the intake structure that measures headpond elevation, and a second transducer is located in the tailrace to measure tailwater elevation. Additionally, the exemptee stated that each turbine has a pressure transducer that reads kilowatt output which can be converted to cubic feet per second.

The exemptee stated that the project is operated by a computer that reads transducer elevational data in order to calculate inflow and outflow at the project every 15-minutes. The exemptee stated that whenever the flow requirements of article 2 are not met, the computer would indicate an alarm and initiate an automatic call-out to the plant operator and plant superintendent. The exemptee also explained that if the computer should fail, the call-out system would be activated automatically.

The exemptee proposed to recalibrate the pressure transducers every summer, generally in August when plant maintenance occurs, and to store the gaging data on-site for regulatory inspection. The exemptee stated that the plan would be implemented within 30 days following Commission approval.

Resource Agency Comments

By letter dated January 17, 1995, the exemptee submitted a draft streamflow gaging plan to the USGS, the FWS and the NHFGD. The resource agencies concurred with the exemptee's plan and recommended that streamflow data from the project be made available to the resource agencies within 30 days of a request and that periodic calibration checks be performed to determine if the headwater or tailwater elevations, as measured by the transducers, agree with predefined datum.

In the exemptee's supplemental filing, the exemptee stated that streamflow data would be made available to the resource agencies within 30 days of a request. The exemptee also stated that the accuracy of the flow monitoring calculations would be verified by taking current meter measurements downstream from the project.

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Recommendations and Conclusion

The exemptee proposed to recalibrate all transducers during the annual summer maintenance; however, that would not alert the exemptee, early on, to the common problem of drift associated with transducers. Staff gages affixed to the stilling wells, or nearby to the transducers, would serve as an early warning device by periodically comparing the headpond and tailwater transducer readings to an independent staff gage reading. Therefore, in order to produce more reliable data throughout the year, the exemptee should install staff gages or reference points on the stilling wells, or nearby to the transducers. The staff gages should be calibrated to correspond to specific transducer readings. The staff gages or reference points should be kept clean and in readable condition.

The exemptee proposed that anytime a flow requirement of article 2 is not met, the computer would automatically log the alarm and initiate a call-out to the project operator. However, no provisions were proposed to report run-of-river violations or minimum flow violations to the Commission. In order for the Commission to monitor the exemptee's compliance with article 2, the exemptee should file a report with the Commission, within 30 days from the date that data become available, indicating a violation. The report should, to the extent possible, identify the cause, duration, and severity of the violation, any environmental impacts resulting from the violation, and the measures implemented to correct the violation and ensure that similar violations do not recur. Based on the report and the Commission's investigation of the violation, the Commission should reserve the right to require modifications to project facilities and operations.

The proposed streamflow gaging plan would adequately monitor compliance with the run-of-river and minimum flow requirements. Implementation of the proposed and supplemented streamflow gaging plan, as modified above, would ensure the accurate recording of reservoir elevations and project discharges. These data would enable the Commission and resource agencies to monitor the exemptee's compliance with article 2, and should be approved.

The Director Orders:

(A) The streamflow gaging plan filed on January 26 and supplemented on April 3, 1995 for the Lower Robertson Dam Project, as modified by paragraphs B and C, is approved.

(B) The exemptee shall install staff gages or reference points on the stilling wells, or nearby to the transducers, that are calibrated to correspond to specific transducer readings. The staff gages or reference points shall be kept clean and in readable condition. (C) If a violation of the run-of-river mode of operation or the minimum flow requirement of article 2 occurs during the life of the project, Hydroelectric Development Incorporated (exemptee) shall file a report with the Commission, within 30 days from the date that data become available, indicating a violation. The report shall, to the extent possible, identify the cause, duration, and severity of the violation, any environmental impacts resulting from the violation, and the measures implemented to correct the violation and ensure that similar violations do not recur. Based on the report and the Commission's investigation of the violation, the Commission reserves the right to require modifications to project facilities and operation.

4

(D) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. § 385.713.

J. Mark Robinson Director, Division of Project Compliance and Administration NHDES

The State of New Hampshire

DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner



June 26, 2009

Bob King, P.E., Pres. Ashuelot River Hydro, Inc. P.O. Box 194 Sullivan, NH 03445

Dear Mr. King:

The purpose of this letter is to provide water quality monitoring recommendations as part of your efforts to receive Low Impact Hydropower Certification from the Low Impact Hydropower Institute. The monitoring plan outlined in this letter is designed to determine if the operation of the Lower Robertson Dam and the Ashuelot Paper Mill dam are impacting water quality in the adjacent sections of the Ashuelot River and if these waterbodies are meeting New Hampshire surface water quality standards.

Table 1 provides proposed sampling locations for the assessment units of concern.

Table 1.

14010 14			
Assessment Unit	Location	NHDES Station ID	Size/Acreage
NHIMP802010403-01	Lower Robertson Dam Impoundment	04-ASH	2328 ft./8.6 acres
NHRIV802010403-12	Downstream of Lower Robertson Dam	03T-ASH	2482 ft.
NHIMP802010403-02	Ashuelot Paper Mill Impoundment	03K-ASH	1005 ft./3 acres
NHRIV802010403-17	Downstream of Ashuelot Paper Mill Impoundment	03-ASH	3643 ft.

Recommended parameters and frequency of monitoring are provided in Table 2 below.

DES Web site: www.des.nh.gov P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095 Telephone: (603) 271-2457 • Fax: (603) 271-7894 • TDD Access: Relay NH 1-800-735-2964

June 26, 2009 Page 2 of 3

Table 2.		1	1		
Site ID	Location	Activity	Purpose	Parameters	Frequency
04-ASH	Recycle Way Bridge just upstream of Lower Robertson Dam	Section of Ashuelot River impounded by Lower Robertson Dam	Determine water quality impacts of river being impounded by Lower Robertson Dam	Continuous Dissolved Oxygen (mg/L and % Saturation) and Continuous Water Temperature (collected with Dataloggers)	At least 10 days of data collected at 15 minute increments during period of low flow ($\leq 3 \times 7Q10$) and high temperatures (preferably over 23 degrees C). Dataloggers should be set at the bottom of the epilimnion (if stratified) or at 25% depth if not stratified.
			÷	Instantaneous Dissolved Oxygen (mg/L and % Saturation) and Water Temperature Total Phosphorus and Chlorophyll-a	 2 vertical profiles collected on 2 days when continuous dataloggers are deployed. Profiles should be at 1 foot increments from surface to bottom 10 samples - once a week for 10 weeks (from July through
03T-ASH	1000 ft downstream of Lower Robertson Dam	Tailrace of Lower Robertson Dam	Determine water quality condition downstream of Lower Robertson Dam	Continuous Dissolved Oxygen (mg/L and % Saturation) and Continuous Water Temperature (collected with Dataloggers)	September) At least 10 days of data collected at 15 minute increments (Collect on the same days as data for 04- ASH)
03K-ASH	300 Feet upstream of Ashuelot Paper Mill Dam	Section of Ashuelot River impounded by Ashuelot Paper Mill Dam	Determine water quality impacts of river being impounded by Ashuelot Paper Mill Dam	Continuous Dissolved Oxygen (mg/L and % Saturation) and Continuous Water Temperature (collected with Dataloggers)	At least 10 days of data collected at 15 minute increments during period of low flow ($\leq 3 \times 7Q10$) and high temperatures (preferably over 23 degrees C). Dataloggers should be set at the bottom of the epilimnion (if stratified) or at 25% depth if not stratified.
				Instantaneous Dissolved Oxygen (mg/L and % Saturation) and Water Temperature Total Phosphorus and Chlorophyll-a	2 vertical profiles collected on 2 days when continuous dataloggers are deployed. Profiles should be at 1 foot increments from surface to bottom 10 samples - once a week for 10 weeks (from July through
03-ASH	1000 ft downstream of Ashuelot Paper Mill Dam	Tailrace of Ashuelot Paper Mill Dam	Determine water quality condition downstream of Ashuelot Paper Mill	Continuous Dissolved Oxygen (mg/L and % Saturation) and Continuous Water Temperature (collected with Dataloggers)	At least 10 days of data collected at 15 minute increments (Collect on the same days as data for 03K- ASH)

June 26, 2009 Page 3 of 3

A sampling plan should be submitted to DES for approval which includes sampling locations, parameters to be sampled, sampling and laboratory analysis protocols and quality control provisions. For each sampling station and event the following should be provided:

- Site map with longitudinal and latititudinal coordinates
- Site description including vegetation, flow conditions, and other any other site conditions that would potentially impact water quality
- Photographs of each monitoring location.

With regards to quality assurance/quality control, the following is recommended:

- During two sampling events for instantaneous measurements, replicate measurements should be done with meters and replicate samples collected for laboratory analysis.
- A suite of field blanks should be collected for laboratory analysis during one sampling event.
- Multiparameter dataloggers and handheld meters should be calibrated for dissolved oxygen before each sampling event on-site according to the manufacturer's instructions.
- Field sampling quality control should consist of 1) replicate analysis, 2) maintenance records, 3) field calibration and record of calibration, and 4) record of equipment used.
- Instrument and equipment maintenance should include: 1) checking field test kits to be sure all reagent are in good working order and are not beyond expiration dates, 2) replacing reagents in accordance with manufacturer's recommendations, 3) calibrating equipment before each sampling event, and 4) recording of maintenance and calibration activities.

During the sampling period the dam should be operating under normal operating procedures.

Finally, all data should be submitted to DES electronically and in a form that can be automatically uploaded into the DES Environmental Monitoring Database (EMD). Information on uploading data to the EMD can be found at <u>http://des.nh.gov/organization/divisions/water/wmb/emd/index.htm</u> or by contacting Andrew Cornwall at (603) 271-1152 or <u>Andrew.Cornwell@des.nh.gov</u>.

Once all of the data has been submitted, NHDES will determine if the applicable sections of the Ashuelot River are meeting water quality standards.

Should you have any questions regarding these recommendations or wish to arrange a meeting, please contact me at (603)271-2083 (ted.walsh@des.nh.gov). If desired, we can provide you with a copy of our protocols to use as a guide.

Sincerely,

Grag Canabal for

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

The exemptee proposes to install the facility during late July -August 2001. Construction duration is estimated at two weeks. To facilitate construction of the bypass, the project headpond will be drawn down from four to five feet, thereby eliminating the		The exemptee proposes to construct a downstream fish bypass on the bank side of the powerhouse that would consist of a collection box, located just behind an open section of trashrack. The box will connect to a 30-inch-diameter pipe, capable of discharging up to 40 cubic feet per second (cfs) of flow.	The exemptee's plan includes a description of the project, the facility to be constructed, and a schedule and mitigative measures. The plan also includes two design drawings, showing the proposed facility as described in the plan.	Exemptee's plan and drawings	Fish and Game Department (FGD), respectively, stipulated that upstream and downstream fish passage facilities must be incorporated into the project when prescribed by the FWS or the FGD. By letter dated November 3, 1995, the FWS informed the previous exemptee that a downstream fish passage facility was required to safely pass Atlantic salmon smolts.	agencies for the protection of fish and wildlife resources. By letters dated February 14 and June 14, 1985, the U.S. Fish and Wildlife Service (FWS) and the New Hampshire	Article 2 of the exemption from license, issued July 31, 1986, requires the exemptee to comply with any terms and conditions stimulated by federal or state resource	Background	On July 19, 2001, Algonquin Power (America) Inc. (exemptee) filed a downstream fish passage facility plan and functional design drawings pursuant to article 2 of the exemption from license for the Ashuelot Generating Station. The project is located on the Ashuelot River, near Winchester, New Hampshire.	ORDER APPROVING DOWNSTREAM FISH PASSAGE FACILITY PLAN (Issued July 20, 2001)		Algonquin Power (America) Inc. Project No. 7791-015	FEDERAL ENERGY REGULATORY COMMISSION	INITED STATES OF AMEDICA	96 FERC 1 20 0 6 0	A Gie)
(A) The exemptee's proposed downstream fish passage plan, filed July 19, 2001, as modified in paragraphs B, C and D, is approved.	The Director Orders:	disruptive and to protect downstream resources. Operation of the bypass should facilitate the safe downstream passage of salmon and the salmon restoration program for the Connecticut River basin. Accordingly, the exemptee's plan, as modified, should be approved.	Environmental impacts from construction of the project are expected to be minor and of short duration. Construction of the facility is scheduled during the low flow time of year and the drawdown during a period of limited, if any, fish movement through the area. Refilling of the impoundment post construction has been designed to be least	discharge from the bypass pipe.	The exemptee's plan fulfills the requirements of the conditions of its exemption from license. The exemptee consulted with the appropriate agencies and designed a facility that is similar to another facility on the Ashuelot River and generally meets the requirements of the FWS. The exemptee should, however, consider extending the pipe to ensure that emigrating salmon smolts do not impact the struts in the tailrace upon	Discussion	injured by impacting a strut. The FWS also agreed with the exemptee that the drawdown is a necessary construction method that will expedite construction of the bypass.	before the first strut in the tailrace. The FWS recommends that the pipe should be extended to discharge between the struts in the tailrace in such a manner that fish are not	The FWS noted that the functional design plans for the subject project were essentially similar to the facility developed at the Lower Robertson Project (FERC No. 8235), also located on the Ashuelot River, and stated that they do not object. The only concern expressed by the FWS was that the pipe shown on one of the drawings ends	By letter dated April 24, 2001, the FWS commented on the plans for the downstream fish bypass facility. The exemptee reported in its filing that the FGD had deferred to the FWS on specific concerns with the design of the bypass.	Agency comments	an annaise an can ann Brionnain.	need for construction of cofferdams. After completion of the facility, the exemptee would provide a minimum flow below the project equal to 0.5 cfs per square mile of drainage area during refilling of the impoundment	Project No. 7791-015 -2-		701.6-1

Appendix F. - Fish Passage

structure or operation of the downstream fish passage facility to ensure effective and safe structures. The Commission reserves the authority to require modifications in the smolts safely into the tailrace of the project and that the smolts do not impact project Project No. 7791-015 (C) The exemptee shall, prior to the start of construction, submit the plans and specifications package and a quality control and inspection program to the Regional Director. Authorization to start construction activities will be given by the Regional downstream fish passage. Commission may be filed within 30 days of the date of issuance of this order, pursuant to final specifications and locations of the completed fish passage facility. of completion of the downstream fish passage facility, as-built drawings depicting the Director after all preconstruction requirements are satisfied. 18 C.F.R. § 385.713. Ð (B) The exemptee shall ensure that the bypass pipe discharges Atlantic salmon (E) The exemptee shall file, with the Commission for approval within 90 days This order constitutes final agency action. Requests for rehearing by the Division of Hydropower Administration Group Leader Géorgé H. Taylo ψ and Compliance FEDERAL ENERGY REGULATORY COMMISSION WASHINGTON, D.C. 20426 OFFICIAL BUSINESS PENALTY FOR PRIVATE USE, \$300 s JUL 3 0 2001

Telephone No. (212) 273-5900

FAX No. (212) 631-8124

In reply refer to: P-8235-NH

NATDAN # - NH00276

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Downstream Fish Passage Plan Review

January 8, 1999

Mr. Sean Fairfield Algonquin Power Systems 2085 Hurontario Street, Suite 210 Mississauga, Ontario L5A 4G1

Dear Mr. Fairfield:

We received your letter of December 22, 1998 with attached plans for the construction of a downstream fish passageway at the Lower Robertson Project. From our review of the plans, it is our understanding that the construction will involve coring a hole through the downstream concrete wall of the right-most turbine intake bay to allow penetration of a 24-inch diameter pipe.

Based on our review, it has been determined the proposed construction as shown on the furnished plans would not affect the project from performing its intended function and is therefore acceptable. Authorization to perform the construction is granted upon obtaining approval from all required federal and local agencies, and obtaining the necessary permits.

It is assumed from our review of the plans that a cofferdam will not be required to perform the construction, nor will there be any ground-disturbance. Should a cofferdam be utilized or excavation be required, you must submit appropriate plans for our review prior to construction.

JAN 1 9 1999

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Your cooperation in this matter and continue interest in dam safety is appreciated. Should you have questions, please contact Mr. Richard Deubert at (212) 273-5933. Ship

Sincere

Anton J. Sidoti Director

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United States Department of the Interior

FISH AND WILDLIFE SERVICE New England Field Office 22 Bridge Street, Unit #1 Concord, New Hampshire 03301-4986

REF: FERC Nos. 7791 and 8235

October 15, 1998

DC: 2 2 1998

Mr. Sean Fairfield Algonquin Power Systems 2085 Hurontario Street, Suite 210 Mississauga, Ontario Canada L5A 4G1

Dear Mr. Fairfield:

As we discussed at our September 23, 1998 meeting, we have had our Regional Engineering Office review the downstream fish passage plans developed in September 1996 by Lakeside Engineering for the Ashuelot Paper and Lower Robertson projects, located on the Ashuelot River, New Hampshire.

Our engineering comments and recommendations are attached. In general, Lakeside Engineering's September 1996 plans are acceptable, except for the amount of flow that must be passed through the fish bypass facilities. Current criteria for passage devices would require a fish bypass flow of 40 cfs at each project. To accommodate this flow, the size of the bypass weir opening and perhaps the collection box will need to be increased and the opening to the bypass pipe needs to be expanded as described in the attachment. Alternatively, a second bypass system could be installed across the other side of the intake.

We recommend that the September 1996 drawings be modified to reflect the recommended design changes and that you forward the revised drawings for our review and comment, prior to submittal to the FERC for approval.

We appreciate this opportunity to comment. If you have any questions, please contact me at (603) 225-1411.

Sincerely,

John P. Warner Energy Coordinator New England Field Office

Attachment



United States Department of the Interior

FISH AND WILDLIFE SERVICE New England Field Office 70 Commercial Street, Suite 300 Concord, New Hampshire 03301-5087



JUL 18 2006

REF: FERC Nos. 7791 and 8235 Algonquin Power

Sean Fairfield Algonquin Power 2845 Bristol Circle Oakville, Ontario Canada L6H 7H7

Dear Mr. Fairfield:

This responds to the revised draft functional design drawings submitted to us by letter dated March 14, 2006. The revised plans are for upstream fish passage facilities at the Ashuelot and Lower Robertson Projects, located on the Ashuelot River in Cheshire County, New Hampshire. We have reviewed the plans and other issues raised in your letter and offer the following comments.

Generally, the revised drawings incorporate most of the comments we provided to you in our April 21, 2004 letter. However, a few significant issues remain to be resolved.¹

REVISED DESIGNS

Ashuelot Paper

The fish lift plans still do not conform to our standard design criteria for the target species:

- The lift should include a 3-foot-wide gated single entrance with a V-trap able to operate up to 30 cfs.
- The exit channel must be at least four feet deep at the point where the fish are dropped, and velocities in the exit channel must be at least 1.0-1.5 feet per second. This means that, if the exit channel remains six feet wide, a minimum of 24 cfs would have to flow through the channel to maintain a velocity of at least 1.0 f/s (at a depth of four feet).
- The transport flow intake screen is too small for the higher flow required through the exit channel. At the proposed transport flow of 10 cfs, the 40-square-foot screen would have a velocity of 0.25 f/s, which meets the criterion (velocity no greater than 0.5 f/s). However, increasing the transport flow to 24 cfs would necessitate enlarging the intake screen somewhat (approximately 8 square feet) in order to bring velocities down below 0.5 f/s.

July 12, 2006

¹ Please refer to the attached Memorandum from Curt Orvis, fish passage engineer at our Regional Office, for detailed comments on the design plans.

Lower Robertson

The Denil ladder plans conform to our standard design criteria, with the following exceptions:

- As proposed, one sidewall retains jagged sheet-pile facing. This will have to be replaced with a smooth vertical wall in order to accept the baffles.
- The turnpool should be four feet wide at all points. From the plans, it appears that the center wall should be extended into the turnpool to maintain a uniform width.
- The distance between baffles should be 2.5 feet rather than the 2.67 feet shown in the plans. This equates to a total of 55 baffles, or six more than in the proposed design.

STATUS UPDATE

In your March 14, 2006 letter you state, "It is anticipated that any decision to prescribe the construction of the upstream passages will be respective to the economic ramifications to the current operations and that no decision will be made based on the observance of inconsistent fish target numbers at the base of Fiske Mill dam." You also request the opportunity to re-evaluate other upstream fish passage technologies prior to any decision to mandate construction at the two facilities.

We are unclear what is meant by inconsistent target numbers. Regardless, the Service does consider the economics of fishway projects when reviewing passage design plans. However, passage facilities must meet minimum design criteria to ensure that the facility operates effectively. Service design criteria have developed over many years, based on experience and research. If new studies indicate an alternative design would be equally effective but cost less, we likely would allow its construction (assuming it had been adequately field tested).

By way of example, Algonquin earlier had proposed installing Alaska steeppass ladders instead of lifts or Denil ladders. Unfortunately, while one published study indicated decent passage of American shad through a steeppass, subsequent studies (using longer ladders with turnpools) have not yielded similar results. Therefore, we determined that a steeppass design would not work at the Ashuelot projects.

We encourage Algonquin to investigate cost-saving measures, such as using alternative building materials. However, both short- and long-term costs should be considered in choosing materials. A less expensive building material may cost more over time due to higher maintenance and replacement costs.

Regarding a construction schedule, upstream passage facilities at both projects will have to be constructed simultaneously, as there is little suitable habitat between the two projects. As you probably know, Fiske Mill is constructing their upstream Denil ladder this year. If construction stays on schedule, the fishway should be operational by spring of 2007. Passage will be triggered at the Algonquin projects based on the number of fish passing the Fiske Mill Project.

To derive trigger numbers for these projects, we consider the amount of suitable habitat available between the Fiske Mill Dam and the Ashuelot Paper Dam. There are approximately 10 acres of impounded habitat and 14 acres of free-flowing habitat in this section of river. Some of the freeflowing habitat is unsuitable for spawning due to excessive velocities. Therefore, we estimate that there are 15 acres of usable shad habitat. Using a production rate of 50 shad/acre,² this reach would be expected to support a maximum population of 750 shad. At this level, the habitat is considered to be saturated. This level of passage indicates a substantial population of shad migrating to the Ashuelot and successful passage at the Fiske Mill fishway, at which time upstream passage would be needed immediately. Given time for construction and permitting, passage facilities would need to be operational two years after reaching this trigger.

Another method for establishing a passage construction trigger uses 20% of the estimated shad production for a given reach, but allows time for population expansion prior to passage implementation. For the Ashuelot projects, 20% of the 750 shad population target is 150. This method assumes that if at least 150 shad spawn successfully in the Fiske Mill to Ashuelot Paper reach, their progeny would be expected to produce a return of adults to the system (3-6 years later) that would saturate the habitat. At this level of returns, providing additional time for final design and construction, coupled with additional time for Ashuelot River stock development, would be reasonable. Therefore, the alternate passage trigger would be the installation of passage facilities within four years from the passage of 150 shad above Fiske Mill Dam.

In conclusion, based on the calculation method we used for establishing the trigger number, the facilities will need to be to be operational either (1) within two years of Fiske Mill passing 750 shad,³ or (2) within four years of Fiske Mill passing 150 shad (whichever occurs first).

If you have any questions regarding these comments, please contact Melissa Grader of this office at (413) 548-9138, extension 18.

William J. newburger

William J. Neidermyer Assistant Supervisor, Federal Projects New England Field Office

Enclosure

 $\frac{1}{3}$ Two years allows sufficient time to secure the necessary permits and complete construction.

² Typical production rates for American shad range from a high of 118/acre to a low of 50/acre. Because the Ashuelot is a smaller system and its production potential is untested, we have used the more conservative rate of 50/acre.

Ashuelot River Hydro, Inc. P.O. Box 194 Sullivan, NH 03445 (603) 847-9798

The Secretary, FERC 888 First St. NE, Mail Code: PJ-12.3 Washington, D.C. 20426 July 27, 2008

RE: Upstream Fish Passage at FERC No. 8235 Lower Robertson and No. 7791 Ashuelot Hydroelectric Projects

Dear Secretary:

We are in receipt of your letter dated June 6, 2008 regarding upstream fish passage at the referenced projects. In response we wish to express our interest and enthusiasm in installing upstream passage in the near future. Our understanding is that fish passage at our Ashuelot project should be operational a year after the sooner of 750 shad through Fiske Mill in a single year or 150 shad through Fiske for four years running. Lower Robertson should be installed a year after Ashuelot. Please correct us if we are misinformed. We note the Fiske Mill lift is supposed to be operational this October. The spring 2009 shad run through Fiske should give all of us important additional data on the urgency of passage at our dams.

We have examined the fish passage designs and operational procedures produced by our predecessors at Algonquin Power. These seem workable to us, though we would defer to the experts at Fish & Wildlife regarding many details should we all agree to build these systems as currently depicted in the preliminary plans.

We are also investigating another method for fish passage offered by PRAqua of British Columbia. Their Pescalator is being used at U.S. F&W hatcheries and other facilities in the pacific northwest. Representatives of those installations have indicated good success, though they note problems with crowding the fish into the Pescalator. And we acknowledge that shad running rivers are quite different from salmon navigating hatcheries. We intend to visit a Pescalator installation this August in Seattle.

In preliminary discussions with John Warner of F&W, it is clear this system would not be accepted easily. Indeed we are not sure it is the best system. But we are considering alternatives that may have value at these sites as well as other sites throughout the region. We have calls into the Conte Lab about this alternative. Calls to the Keene, NH branch of NH Fish & Game were unanswered, though we will continue to try to reach that office. This fall, after visiting the Pescalator, we will ask for a meeting with representatives of the relevant agencies to discuss all the options. Please let us know if you have any questions.

Sincerely,

Robert E. King, President

Subject: Re: LIHI cert for Ashuelot and Lower Rob From: John_Warner@fws.gov Date: Thu, 16 Apr 2009 13:16:13 -0400 To: Bob King <bking@gaw.com>

Bob -- I just verified with Susi vonOettingen of this office that there are no dwarf wedgemussels or any other federally listed threatened or endangered species in the areas of your Ashuelot Paper or Lower Robertson projects that are impacted by the projects -- JW

John P. Warner, Energy/Hydropower Coordinator New England Field Office, U.S. Fish and Wildlife Service 70 Commercial Street, Suite 300 Concord, NH 03301 (603) 223-2541 - ext.15 (603) 223-0104 - FAX

www.fws.gov.northeast/newenglandfieldoffice Bob King

 king@gaw.com>

Bob King	Tojohn_warner@fws.gov			
<bking@gaw.com></bking@gaw.com>	сс			
04/15/2009 08:45 AM	SubjectLIHI cert for Ashuelot and Lower Rob			

John, any thoughts on this yet? We're pretty anxious to get the LIHI process started.... tnx, Bob

Hi John,

Thanks for the time today on the phone. As I explained, we are seeking Low Impact Hydro certification for our Lower Robertson (8235) and Ashuelot (7791) projects. You know Fred Ayers will be interested in fish passage and water quality issues, but I am writing to you specifically about threatened or endangered species which may be found in our project areas (as a citizen of the upper Ashuelot basin, I'm well aware of the dwarf wedge mussel). For the purposes of LIHI certification, I ask you for an email (or letter if you prefer) confirming that the mussel and other threatened/endangered species have not been found in the vicinity of our projects. In less of course, this is not true, in which case we'd want to know that!

best,

Bob King, P.E., Pres. Ashuelot River Hydro, Inc. P.O. Box 194 Sullivan, NH 03445 (603) 847-9798

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