APPENDIX 1-1
ORDER ISSUING LICENSE (MAJOR)
ISSUED DECEMBER 5, 1984

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Briar-Hydro Associates) Project No. 3240-001

ORDER ISSUING LICENSE (MAJOR)
(Issued December 5, 1984)

Briar-Hydro Associates (Applicant) has filed an application for a license under Part I of the Federal Power Act (Act) to construct, operate, and maintain the Rolfe Canal Project No. 3240. 1/ The project would be located on the Contoocook River in Merrimack County, New Hampshire, and would affect the interests of interstate or foreign commerce.

Notice of the application has been published and comments have been received from interested Federal, State, and local agencies. The State of New Hampshire was granted intervention to become a party to the proceeding in order to protect its interests in property within the project boundary. None of the commenting agencies or the intervenor objected to the issuance of this license.

Description of Project

The proposed project would consist of the existing 10-foot-high, 300-foot-long York Dam and 17-foot-high, 130-foot-long granite block Briar-Hydro Dam, two reservoirs, a new powerhouse containing two generating units with a total installed capacity of 3,360 kW, a 600-foot-long, 34.5-kV transmission line, and appurtenant facilities. A more detailed project description is contained in ordering paragraph (B).

Safety and Adequacy

The site was inspected by the New York Regional Office on October 21, 1982, and the York and Briar-Hydro Dams appear to be in sound and stable condition. Both dams are classified as having a low hazard potential. Failure of the dams under flood flows would not create

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1/ Authority to act on this matter is delegated to the Director, Office of Hydropower Licensing, under §375.314 of the Commission's regulations, 49 Fed. Reg. 29,369 (1984)(Errata issued July 27, 1984)(to be codified at 18 C.F.R. §375.314). This action may be appealed to the Commission by any party within 30 days of the issuance date of this order pursuant to Rule 1902, 18 C.F.R. §385.1902 (1983). Filing an appeal and final Commission action on that appeal are prerequisites for filing an application for rehearing as provided in Section 313(a) of the Act. Filing an appeal does not operate as a stay of the effective date of this order or of any other date specified in this order, except as specifically directed by the Commission.

a significant hazard to downstream life or property. It is concluded that the proposed structures would be safe and adequate if constructed in accordance with sound engineering practices and under the conditions of this license.

Fish Passage Facilities

Interior recommended that (1) prior to project construction, the Applicant consult with the U. S. Fish and Wildlife Service (FWS) and New Hampshire Fish and Game Department (FGD) regarding conceptual plans for upstream and downstream fish passage facilities to avoid later problems in retrofitting fish passage facilities at the project, and (2) approval of functional design drawings be required prior to the construction of fish passage facilities. FWS further recommended that fish passage facilities should be provided no later than 1 year following completion of passage facilities at the Sewalls Falls Dam (FERC No. 7216). 2/ The Applicant has agreed to the above recommendations of FWS. Because of the uncertainty associated with the pending application for license for Sewalls Falls, the Licensee is being required herein to provide fish passage facilities without regard to Sewalls Falls Dam. However, the Commission's authority is preserved to adjust the construction schedule of the fish passage facilities if the construction of Sewalls Falls Dam Project is authorized.

It is concluded that fish passage facilities at the project would protect and enhance the anadromous fishery resource planned for restoration in the Contoocook River and, therefore, Article 30 requires the Licensee to consult with FWS and FGD, and file for approval functional design drawings of fish passage facilities at the project. Article 30 also provides for a construction schedule for those facilities.

Interior also commented that as a consequence of salmon fry stocking in the upper reaches of the Contoocook River, downstream migration of salmon smolt through the Rolfe Canal Project area is expected.

In subsequent comments on a closely related project (Project No. 6689), Interior states that provisions for downstream passage of salmon smolt may be required prior to 1988, since salmon fry stocking in the upper Contoocook River may commence in 1984.

If salmon are introduced to the Contoocook River, provisions should be made for safe downstream passage of salmon smolt, prior to 1988. Therefore, Article 31 requires the Licensee to consult with State and Federal fishery agencies, and to provide for downstream passage of salmon smolt should it be necessary before 1988.

2/ An application for license for the Sewalls Falls Dam Project No. 7216 is pending before the Commission.

Minimum Flows

Interior recommended the following minimum flow schedule: (a) upon commencement of project operation, a release of 285 cubic feet per second (cfs) to be measured at the confluence of the Contoocook River and the outlet to Rolfe Canal, with at least 50 cfs of this flow released at York Dam; and (b) as soon as fish passage facilities are operational, a release of 400 cfs at York Dam during May and June, or during a 60-day period determined after consultation with FGD, to provide for the peak migration period of American shad at Sewalls Falls Dam. The Applicant has agreed to Interior's minimum flow schedule.

It is concluded that the proposed minimum flows are sufficient to protect and enhance the aquatic resources of the Contoocook River. Article 32 requires the Licensee to provide these flows. 3/

Recreation Access

Interior recommended that the Applicant consult with the City of Concord (City) regarding any impacts that could result from project construction on the City's future recreation plans in the vicinity of York Dam. The Applicant replied that it has had discussions with the City regarding its future park plans, which include the maintenance of a boat landing in the vicinity of the Rolfe Canal inlet, and has assured the City that it will take any steps necessary during project construction and operation to protect the boat landing.

Interior also recommended that, because annual runs of shad and salmon will likely develop on the Contoocook River, the Applicant should be required to provide access for public utilization of fish and wildlife resources whenever possible. Article 18 of the license provides for public recreational access to the project to the extent that public safety is not jeopardized.

Finding of No Significant Environmental Impacts

The Contoocook River in the vicinity of the project has been designated as a State recreational river and is listed on the Nationwide Rivers Inventory of Rivers that meet at least the minimum criteria for potential inclusion in the National Wild and Scenic Rivers System. The project would not adversely affect the values for which the river has been listed on the Inventory.

3/ The State of New Hampshire Water Supply and Pollution Control Commission has issued a water quality certificate on February 16, 1983, for the project, in accordance with Section 401 of the Federal Water Pollution Control Act.

Construction of the project would result in minor, short-term increases in noise, dust, and exhaust emissions from construction activities. There are no Federally-listed threatened or endangered species known to inhabit the project or nearby areas. The proposed project would have no effect on cultural resources, although Article 33 would ensure cultural resources protection should any be discovered during construction or in the event of any future development of the project.

On the basis of the record, and staff's independent environmental analysis, it is concluded that the issuance of a license for the project will not constitute a major Federal action significantly affecting the quality of the human environment.

Economic Feasibility

The project would operate run-of-river and generate an estimated 12,300,000 kWh annually. 4/ The project would be economically feasible based on selling project power at the avoided cost in the State of New Hampshire adjusted for escalation.

Property Interests

The State-owned York Dam and appurtenant facilities within the project boundary are integral parts of the proposed project. The Applicant has met with the State regarding the acquisition of sufficient property rights in the dam and canal. To date, no agreement has been reached. Under standard Article 5 (Form L-11), the Applicant would have five years to acquire all property rights necessary for project purposes. However, to ensure prompt development of hydroelectric generating capacity at the project 5/ and early resolution of the respective roles of the Applicant and the State with respect to the State-owned facilities, a separate article is included as to the timing and acquisition of rights in the State-owned facilities. Article 3§ of the license requires the Applicant to acquire sufficient property rights in the State-owned dam and appurtenant facilities within one year. The property rights acquired must be sufficient to allow the Commission to carry out its regulatory responsibilities under Part I of the Federal Power Act and also vest in the Applicant sufficient rights for it to carry out all project purposes. Any rights must be perpetual and transferable. 6/

4/ The proposed project would utilize a renewable resource that will save the equivalent of approximately 1,230 barrels of oil or 3,740 tons of coal per year.

5/ Article 26 of the license requires the Licensee to commence construction within two years of the issuance of this license and to complete construction within four years.

6/ See e.g. New York State Electric & Gas Corporation, 15 FERC ¶ 61,066 (1981), reh. denied, 16 FERC ¶ 61,176 (1981); New York State Electric & Gas Corporation, 23 FERC ¶ 61,034 (1983).

Other Aspects of Comprehensive Development

Penacook Hydro Associates (PHA) has filed an application for the proposed downstream Penacook Upper Falls Project No. 6689. 7/ Potential backwater during periods of high stream flows may adversely affect the generation of Project No. 3240. Based on the staff's analysis of the proposed developments and operating schemes, the backwater effect on the Rolfe Canal Project appears to be infrequent and minor in nature. Subsequently, PHA and BHA executed an agreement filed with the Commission on August 1, 1983. This agreement stated that PHA would perform studies in cooperation with Briar-Hydro to determine the extent that the backwater encroachment would affect the power production of the Rolfe Canal Project, and the optimum design that would maximize power generation for both projects, and to compensate Briar-Hydro Associates for any lost power generation. The proposed Rolfe Canal Project would make good use of the flow and fall of the Contoocook River and would be best adapted to the comprehensive development of the Merrimack River for beneficial purposes upon compliance with the terms and conditions of the license.

License Term

The proposed development of this project using an existing dam is similar to the relicensing of an existing licensed project at which a moderate amount of new development is proposed; therefore, consistent with Commission policy, a 40-year license term is reasonable in this instance. 8/

It is ordered that:

(A) This license is issued to Briar-Hydro Associates (Licensee), of Penacook, New Hampshire under Part I of the Federal Power Act (Act), for a period of 40 years, effective the first day of the month in which this order is issued, for the construction, operation, and maintenance of the Rolfe Canal Project No. 3240, located in Merrimack County, New Hampshire, on the Contoocook River, and affecting the interests of interstate or foreign commerce. This license is subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

7/ The Penacook Upper Falls Project No. 6689, application for license, filed by Penacook Hydro Associates on October 7, 1982. A companion order will be issued concurrently for this project.

8/ Village of Lyndonville, 7 FERC ¶61,324 (June 29, 1979).

(B) The Rolfe Canal Project No. 3240 consists of:

(1) All lands, to the extent of the Licensee's interests in those lands, constituting the project area, and enclosed by the project boundary. The project area and boundary are shown and described by a certain exhibit that forms part of the application for license and that is designated and described as:

Exhibit	FERC No. 3240-	Titled
G-1	5	Project Site Map
G-2	6	Project Map

(2) Project works consisting of: (a) a 300-foot-long, 10-foot-high diversion dam (York Dam); (b) a reservoir with negligible storage, a surface area of 50-acres, and normal water surface elevation of 346.0 feet NGVD; (c) a 7,000-foot-long, 75-foot-wide, and 9-foot deep power canal; (d) a 130-foot-long, 17-foot-high granite block generation dam (Brian-Hydro Dam); (e) a reservoir with surface area of 3-acres, having negligible storage, and a normal water surface elevation of 334.5 feet NGVD; (f) a powerhouse containing 2 generating units with a total installed capacity of 3,360 kW; (9) 100-foot-long, 4.16-kV generator leads; (h) the 4.16/34.5 kV 3.8 MVA three-phase transformer; (i) the 650-foot-long, 34.5-kV transmission line; and (j) appurtenant facilities.

The location, nature, and character of these project works are generally shown and described by the exhibit cited above and more specifically shown and described by certain other exhibits that also form a part of the application for license and that are designated and described as:

Exhibit A Parts 1(i) and (ii)

Exhibit	FERC No. 3240 -	Showing
F-1	1	General Drawing of Inlet Structure and Generating Plant
F-2	2	Preliminary Details, Canal Automatic Level Headgate Structure
F-3	3	Canal Profile
F-4	4	Details of Existing Dam

(3) All of the structures, fixtures, equipment, or facilities used or useful in the operation or maintenance of the project and located within the project boundary, all portable property that may be employed in connection with the project, located within or outside the project boundary, as approved by the Commission, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) Exhibits A, F, and G, designated in ordering paragraph (B) above, are approved and made a part of the license.

(D) This license is also subject to Articles 1 through 23 except Article 20 set forth in Form L-11 (revised October 1975), entitled "Terms and Conditions of License for Unconstructed Major Project Affecting the Interests of Interstate or Foreign Commerce," attached to and made a part of this license. The license is also subject to the following additional articles:

Article 24. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operation of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 25. The Licensee shall cooperate with the Licensee for Project No. 6689 in studies to determine the extent that any of Project No. 6689 backwater encroachment would effect the power production of the Rolfe Canal Project. Any changes to the operation of either project must be filed with the Commission. The Commission reserves the right to require changes to assure an adequate project.

Article 26. The Licensee shall commence construction of project works within two years from the issuance date of the license and shall complete construction of the project within four years from the issuance date of the license.

Article 27. Licensee shall file with the Commission's Regional Engineer and the Director, Office of Hydropower Licensing, one copy each of the final contract drawings and specifications for pertinent features of the project, such as water retention structures, powerhouses, and water conveyance structures, at least 60 days prior to the start of construction. The Director, Office of Hydropower Licensing may require changes in the plans and specifications to assure a safe and adequate project.

Article 28. The Licensee shall within 90 days of completion of construction, file in accordance with the Commission's rules and regulations revised Exhibits A, F, and G to describe and show the project as-built.

Article 29. The Licensee shall review and approve the design of contractor-designed cofferdams and deep excavations prior to the start of construction and shall ensure that construction of cofferdams and deep excavations are consistent with the approved design. At least 30 days prior to start of construction of the cofferdam, the Licensee shall file with the Commission's Regional Engineer and Director, Office of Hydropower Licensing one copy of the approved cofferdam construction drawings and specifications and a copy of the letter(s) of approval.

Article 30. Licensee shall no later than July 1, 1988, file for Commission approval functional design drawings of the proposed fish passage facilities at the Rolfe Canal Project, prepared after consultation with the New Hampshire Fish and Game Department and the U. S. Fish and Wildlife Service. Licensee shall provide upstream and downstream fish passage facilities at the Rolfe Canal Project within 1 year after completion of fish passage facilities at the downstream Garvin Falls Dam, the Hooksett Dam, the Amoskeag Dam, and the Pawtucket Dam; provided, however, that if Sewalls Falls is authorized to be constructed, the Commission may adjust the construction schedule. Further, Licensee shall file with the Commission within 6 months after construction of the Rolfe Canal Project fish passage facilities, as-built drawings.

Article 31. Licensee shall continue to consult with the U.S. Fish and Wildlife Service and the New Hampshire Fish and Game Department regarding the introduction of Atlantic salmon to the Contoocook River, and shall cooperate with these agencies in providing safe downstream passage of salmon smolt at the project, if salmon migrations occur prior to completion of the fish passage facilities required by Article 30.

Article 32. Licensee shall discharge from the Rolfe Canal Project the following continuous minimum flows, or the inflow to the project, whichever is less, for the purpose of protecting and enhancing aquatic resources in the Contoocook River: (a) 285 cubic feet per second (cfs) to be measured at the confluence of the Contoocook River and the outlet of Rolfe Canal; at least 50 cfs of this minimum flow shall be discharged from York Dam; and (b) as soon as project fish passage facilities are operational, 400 cfs from York Dam during May and June of each year, or for a 60-day period coordinated with the peak migration of American shad past the Sewalls Falls Dam; at other times of the year, flows specified in (a) shall be in effect. The Licensee shall contact the New Hampshire Fish and Game Department each year prior to May 1 to determine the timing of the 60-day, 400-cfs flow release from York Dam. These flows may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods for fishery management purposes upon mutual agreement between the Licensee and the New Hampshire Fish and Game Department.

Article 33. Licensee shall continue to consult and cooperate with the U. S. Fish and Wildlife Service, the New Hampshire Water Supply and Pollution Control Board, and the New Hampshire Fish and Game Department for the protection and development of the environmental resources and values of the project area. The Commission reserves the right to require changes in the project works or operation that may be necessary to protect and enhance those resources and values.

Article 34. Licensee shall, prior to the commencement of any future construction at the project, consult with the New Hampshire State Historic Preservation Officer (SHPO) about the need for any cultural resource survey and salvage work. The Licensee shall make available funds in a reasonable amount for any such work as required. If any previously unrecorded archeological or historical sites are discovered during the course of construction or development of any project works or other facilities at the project, construction activity in the vicinity shall be halted, a qualified archeologist shall be consulted to determine the significance of the sites, and the Licensee shall consult with the SHPO to develop a mitigation plan for the protection of significant archeological or historic resources. If the Licensee and the SHPO cannot agree on the amount of money to be expended on archeological or historic work related to the project, the Commission reserves the right to require the Licensee to conduct, at its own expense, any such work found necessary.

Article 35. Within one year from the date of issuance of the license, the Licensee shall file with the Commission evidence of its property rights in the State-owned York Dam. The property rights acquired must be sufficient for all project purposes, to allow the Commission to carry out and enforce the terms of the license and Part I of the Federal Power Act, and enable the Licensee to carry out its responsibilities under this license.

Article 36. The Licensee shall pay the United States the following annual charge, effective the first day of the month in which this license is issued:

> For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 4,480 horsepower.

Article 37. Pursuant to Section 10(d) of the Act, after the first 20 years of operation of the project under license, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. One half of the project surplus earnings, if any, accumulated after the first 20 years of operation under the license,

in excess of the specified rate of return per annum on the net investment, shall be set aside in a project amortization reserve account at the end of each fiscal year. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year after the first 20 years of operation under the license, the amount of that deficiency shall be deducted from the amount of any surplus earnings subsequently accumulated, until absorbed. One-half of the remaining surplus earnings, if any, cumulatively computed, shall be set aside in the project amortization reserve account. The amounts established in the project amortization reserve account shall be maintained until further order of the Commission.

The annual specified reasonable rate of return shall be the sum of the annual weighted costs of long-term debt, preferred stock, and common equity, as defined below. The annual weighted cost for each component of the reasonable rate of return is the product of its capital ratio and cost rate. The annual capital ratio for each component of the rate of return shall be calculated based on an average of 13 monthly balances of amounts properly includable in the Licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rates for long-term debt and preferred stock shall be their respective weighted average costs for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10 year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 38 . (a) In accordance with the provisions of this article, the Licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain other types of use and occupancy, without prior Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the uses and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The types of use and occupancy of project lands and waters for which the Licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the uses and occupancies for which it grants permission are maintained in good repair and comply with applicable State and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The Licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary State and Federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the Licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The Licensee may convey fee titles to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary State and Federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary Federal and State water quality certificates or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary Federal and State approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the Licensee must file a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G or K map may be used), the nature of the proposed use, the identity of any Federal or State agency official consulted, and any Federal or State approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraphs (c) or (d) of this article:

(1) Before conveying the interest, the Licensee shall consult with Federal and State fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project

recreational use; and (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit F or G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised Exhibit F or G drawings would be filed for approval for other purposes.

(E) The Licensee's failure to file a petition appealing this order to the Commission shall constitute acceptance of this license. In acknowledgment of acceptance of this order and its terms and conditions, it shall be signed by the Licensee and returned to the Commission within 60 days from the date this order is issued.

Quentin A. Edson
Director, Office of
Hydropower Licensing

Project No. 3240-001

IN TESTIMONY of its acknowledgment of acceptance of all of the terms and conditions of this order, Briar-Hydro Associates, this 18th day of December, 19 84, has caused its partnership name to be signed hereto by James H. Steenbeke, Jr. its General Partner and attested by Howard M. Moffett its Attorney.

BRIAR-HYDRO ASSOCIATES

By James H. Steenbeke, Jr.
GEN. PARTNER ~~President~~

Attest:

Howard M. Moffett
Attorney

(Executed in quadruplicate)

Form L-11
(Revised October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR UNCONSTRUCTED MAJOR PROJECT AFFECTING THE INTERESTS OF INTERSTATE OR FOREIGN COMMERCE

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its

judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project and for any subsequent alterations to the project. Construction of the project works or any feature or alteration thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and

across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a non-power licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for

the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall consult with the appropriate State and Federal agencies and, within one year of the date of issuance of this license, shall submit for Commission approval a plan for clearing the reservoir area. Further, the Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. Upon approval of the clearing plan all clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the

Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 22. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 23. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

APPENDIX 1-2
FERC LETTER DATED FEBRUARY 28, 1986

(10) DiNL

FEB 2 8 1986

Project No. 3240
Rolfe Canal Project
Friar-Hydro Associates

W File

Mr. Howard M. Moffett
Orr and Reno P.A.
One Eagle Square
P.O. Box 709
Concord, NH 03301

Dear Mr. Moffett:

We have reviewed your October 25, 1985, letter concerning the design changes of the Rolfe Canal Project, FERC No. 3240. Also considered was the additional information furnished during the January 21, 1986, meeting between Mr. Thomas Tarpey and Mr. Daniel Mahoney.

The proposed design changes will be made to facilities located in the off-stream existing Rolfe Canal and will not affect the flow regime of the Contoocook River. The changes will include moving the powerhouse approximately 900 feet downstream of the existing canal dam, constructing a new inlet control structure, and using a 14-foot buried penstock to convey water to the powerhouse. The rated installed capacity of the powerhouse will also be increased from 3,350 kW to 4,285 kW, an increase of 27.6%, and the hydraulic capacity will be increased from 1,600 cfs to 2,000 cfs, an increase of 25.0%. The minimum flow prescribed in the license for the Contoocook River remains unchanged.

The proposed changes will raise the level of the canal water surface elevation approximately 5 feet at the site of the proposed intake control structure. In addition, the proposed changes will result in bypassing approximately 1250 feet of the canal.

It is noted that your proposal has been reviewed by the U.S. Fish and Wildlife Service, the New Hampshire Department of Fish and Game, and the New Hampshire Water Resource Board and no objections have been raised. However, in addition to the mitigation measures included in the license, the following additional requirements have been stipulated by the environmental agencies:

1. A minimum of 5 cfs will be spilled at the intake control structure on a year-round basis to maintain habitat in the bypassed section of the canal.

2. After consultation with the U.S. Fish and Wildlife Service, and New Hampshire Department of Fish and Game, a system of timber weirs will be constructed in the bypassed reach of the canal to optimize the use of the bypass flow to preserve existing habitat.

An amendment to your license will not be necessary at this time. The above changes should be reflected in the plans and specifications and the revised as-built Exhibits A and F, submitted in accordance with Articles 27 and 28, respectively. Furthermore, at the time of approval of the as-built Exhibits A and F, the license will be amended to include the minimum flow and mitigative measures described above.

Sincerely,

Ronald A. Corso

Ronald A. Corso, Director
Division of Inspections

OHL/DINS
Mahoney, D.J./rp
02/06/86

cc: DINS, NYRO, FILES, DEA, RIMS, Mahoney

ORR AND RENO
PROFESSIONAL ASSOCIATION
ONE EAGLE SQUARE
P. O. BOX 709
CONCORD, NEW HAMPSHIRE 03301-0709
TELEPHONE 603-224-2381

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DUDLEY W. ORR
ROBERT H. RENO
OF COUNSEL

October 25, 1985

Mr. Ronald Corso
Federal Energy Regulatory Commission
825 North Capitol Street, N.E.
Room 108 RB
Washington, D.C. 20426

RE: Briar-Hydro Associates Project No. 3240-001

Dear Mr. Corso:

On December 5, 1984, Briar-Hydro Associates (Briar-Hydro) was issued a license (major) by order of the Federal Energy Regulatory Commission to construct, operate and maintain the Rolfe Canal Project (No. 3240) in Penacook, New Hampshire.

Subsequent to issuance of the order, Briar-Hydro has completed the final engineering work necessary to construct its proposed facility. In the course of that engineering work it was determined that a reconfiguration of the proposed project would be desirable. Briar-Hydro desires to relocate the powerhouse approximately 900 feet downstream from its original location and install a 14-foot diameter buried penstock to carry water from the intake canal to the powerhouse. This modification would substantially reduce the amount of rock excavation required in the tailrace, permitting a more economic construction plan. The modification would also result in an increase in head with accompanying increases in capacity and energy, without additional inundation of lands. All of the project's facilities will be constructed on an existing man-made canal, which encompasses both the intake and tailrace canals.

Attached as Exhibit I is a plan showing the project reconfiguration, designated on the plan as Alternate A. (Under the configuration in Briar-Hydro's application, the powerhouse would have been located at the point labeled "exist dam" on Exhibit I.) Exhibit IV is a table showing how the change affects various project parameters.

This reconfiguration has been reviewed and approved by appropriate state and federal fish and wildlife agencies who have determined this plan to be more desirable than the original project configuration. Exhibits II and III hereto state the concurrence of New Hampshire Fish and Game Department and U.S. Fish and Wildlife Service with the revised plan. Briar-Hydro will follow the suggestions contained in those letters.

The land upon which we propose to construct the penstock is owned by Briar Pipe Associates, which also owns other land that will be used in connection with the project. James Steenbeke, Jr., managing partner of Briar Pipe Associates, has no objection to the proposed reconfiguration, and thus the new plans do not require the consent of any additional private landowners.

Accordingly, Briar-Hydro Associates requests confirmation that no further authority is required to modify construction plans and specifications of the Rolfe Canal Project and to construct and operate the Project as shown in Exhibit I.

Sincerely yours,

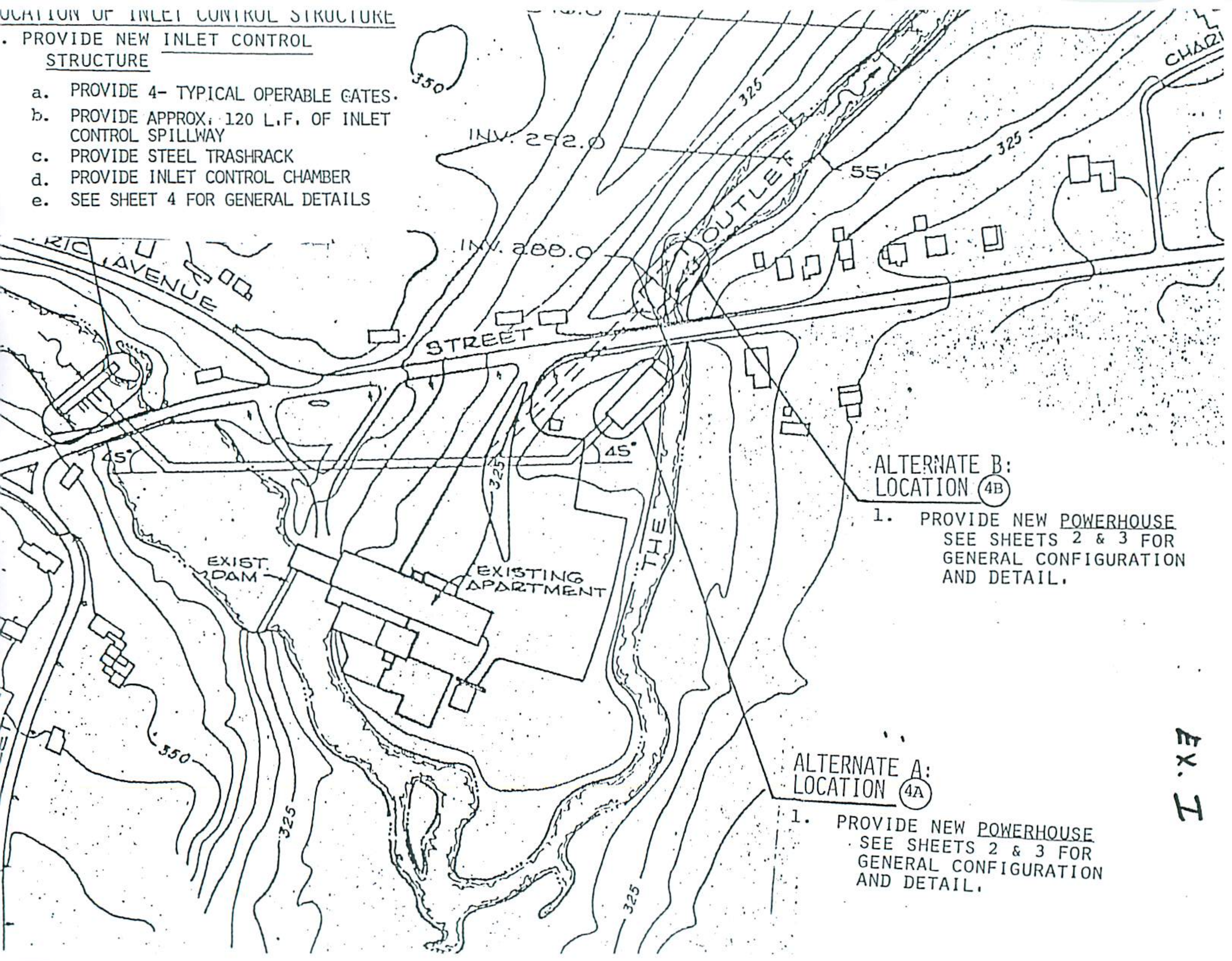
BRIAR-HYDRO ASSOCIATES
By Its Attorney:

Howard M. Moffett

Howard M. Moffett

Orr and Reno P.A.
One Eagle Square
P.O. Box 709
Concord, New Hampshire 03301

HMM/jlw
Attachments


OCATION OF INLET CONTROL STRUCTURE
. PROVIDE NEW INLET CONTROL STRUCTURE
a. PROVIDE 4- TYPICAL OPERABLE GATES.
b. PROVIDE APPROX. 120 L.F. OF INLET CONTROL SPILLWAY
c. PROVIDE STEEL TRASHRACK
d. PROVIDE INLET CONTROL CHAMBER
e. SEE SHEET 4 FOR GENERAL DETAILS
350
INV. 292.0
INV. 288.0
325
55'
OUTLET
CHAR
AVENUE
STREET
45°
45°
THE
EXIST. DAM
EXISTING APARTMENT
350
ALTERNATE B: LOCATION 4B
1. PROVIDE NEW POWERHOUSE SEE SHEETS 2 & 3 FOR GENERAL CONFIGURATION AND DETAIL.
ALTERNATE A: LOCATION 4A
1. PROVIDE NEW POWERHOUSE SEE SHEETS 2 & 3 FOR GENERAL CONFIGURATION AND DETAIL.
Ex. I

EX. II

STATE OF NEW HAMPSHIRE
FISH AND GAME DEPARTMENT

CHARLES E. BARRY
EXECUTIVE DIRECTOR

34 Bridge Street
Concord, N. H. 03301
(603) 271-3421

June 7, 1985

Thomas A. Tarpey
27 Albin Street
Concord NH 03301

REF. N.H. Dam #51.94
Briar Hydroelectric Project
Contoocook River
Concord N.H.
FERC No. 3240

Dear Mr. Tarpey:

Thank you for the opportunity to comment on your proposed amendment to FERC license for the Briar Hydroelectric Project on the Contoocook River in Concord, New Hampshire. The New Hampshire Fish and Game Department is providing comments pursuant to the Fish and Wildlife Coordination Act 48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.) and New Hampshire RSA 206:9 and 206:10.

The Fish and Game Department has determined that the proposed amendment will have less impact on fish and wildlife in that approximately 2200 feet of river channel will not be excavated to accommodate tailrace flows. The Department recommends that in order to protect aquatic habitat in the 2200 foot bypassed reach, existing water levels be maintained and a series of weirs be constructed in the channel to assure that the existing habitat is maintained. During project construction coordination and consultation with fish and wildlife agencies should be continued. All other conditions of the license shall remain in effect.

If you have any questions, please contact Fish and Wildlife Ecologist William Ingham, Jr., at 271-2501.

Sincerely yours,

Charles E. Barry

Charles E. Barry
Executive Director

nkc
cc: Gordon Beckett, Supervisor
New England Area Office
U.S. Fish and Wildlife Service

EX III

United States Department of the Interior

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

REF: FERC #3240

JUN 7 1985

Mr. Thomas A. Tarpey, Jr.
27 Albin Street
Concord, New Hampshire 03301

Dear Mr. Tarpey:

We have reviewed the plan to modify the proposed Rolfe Canal Hydroelectric Project, located on the Contoocook River in Merrimack County, New Hampshire. We understand that the modification calls for moving the location of the powerhouse approximately 2,200 feet downstream in the power canal. There would also be a diversion of flows via a penstock from a point above the Briar Pipe dam to the new powerhouse.

The section of the power canal that would be bypassed and adjacent riparian areas provide habitat for resident fish and wildlife resources. While the original plans called for dredging this canal section to accommodate project discharges, diversion of all flows would have an adverse impact. We note that you recognize this potential impact, and have proposed to maintain a flow between the intake structure and powerhouse, and to construct a series of weirs to maintain existing water levels in the canal.

Your plans to mitigate potentially adverse impacts resulting from the new powerhouse location appear to be acceptable. However, you should maintain close coordination with us and the New Hampshire Fish and Game Department in determining design criteria for the weirs and in establishing an acceptable instream flow release for the bypassed reach.

If you have any questions or require further assistance, please contact Mr. Gordon Russell of my staff at (603) 224-2585.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor
New England Area

Exhibit IV

Comparisons

	Project per Application	Reconfigured Project
Reservoir Elevation (Feet MSL)	334.5	340
Net Head (Feet)	25.5	28
Nameplate Capacity (Kw)	3360	4000
Energy Output (Gwh)	12.3	14.5
Hydraulic Capacity (Cfs)	1600	1685
Minimum Flow (Contoocook River)(cfs)		
May-June	400	400
July-April	50	50

ORR AND RENO
PROFESSIONAL ASSOCIATION
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DUDLEY W. ORR
ROBERT H. RENO
OF COUNSEL

October 25, 1985

Mr. Ronald Corso
Federal Energy Regulatory Commission
825 North Capitol Street, N.E.
Room 108 RB
Washington, D.C. 20426

RE: Briar-Hydro Associates Project No. 3240-001

Dear Mr. Corso:

On December 5, 1984, Briar-Hydro Associates (Briar-Hydro) was issued a license (major) by order of the Federal Energy Regulatory Commission to construct, operate and maintain the Rolfe Canal Project (No. 3240) in Penacook, New Hampshire.

Subsequent to issuance of the order, Briar-Hydro has completed the final engineering work necessary to construct its proposed facility. In the course of that engineering work it was determined that a reconfiguration of the proposed project would be desirable. Briar-Hydro desires to relocate the powerhouse approximately 900 feet downstream from its original location and install a 14-foot diameter buried penstock to carry water from the intake canal to the powerhouse. This modification would substantially reduce the amount of rock excavation required in the tailrace, permitting a more economic construction plan. The modification would also result in an increase in head with accompanying increases in capacity and energy, without additional inundation of lands. All of the project's facilities will be constructed on an existing man-made canal, which encompasses both the intake and tailrace canals.

Attached as Exhibit I is a plan showing the project reconfiguration, designated on the plan as Alternate A. (Under the configuration in Briar-Hydro's application, the powerhouse would have been located at the point labeled "exist dam" on Exhibit I.) Exhibit IV is a table showing how the change affects various project parameters.

This reconfiguration has been reviewed and approved by appropriate state and federal fish and wildlife agencies who have determined this plan to be more desirable than the original project configuration. Exhibits II and III hereto state the concurrence of New Hampshire Fish and Game Department and U.S. Fish and Wildlife Service with the revised plan. Briar-Hydro will follow the suggestions contained in those letters.

The land upon which we propose to construct the penstock is owned by Briar Pipe Associates, which also owns other land that will be used in connection with the project. James Steenbeke, Jr., managing partner of Briar Pipe Associates, has no objection to the proposed reconfiguration, and thus the new plans do not require the consent of any additional private landowners.

Accordingly, Briar-Hydro Associates requests confirmation that no further authority is required to modify construction plans and specifications of the Rolfe Canal Project and to construct and operate the Project as shown in Exhibit I.

Sincerely yours,

BRIAR-HYDRO ASSOCIATES
By Its Attorney:

Howard M. Moffett

Howard M. Moffett

Orr and Reno P.A.
One Eagle Square
P.O. Box 709
Concord, New Hampshire 03301

HMM/jlw
Attachments

EX. D

STATE OF NEW HAMPSHIRE

FISH AND GAME DEPARTMENT

CHARLES E. BARRY
EXECUTIVE DIRECTOR

34 Bridge Street
Concord, N. H. 03301
(603) 271-3421

June 7, 1985

Thomas A. Tarpey
27 Albin Street
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Briar Hydroelectric Project
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The Fish and Game Department has determined that the proposed amendment will have less impact on fish and wildlife in that approximately 2200 feet of river channel will not be excavated to accommodate tailrace flows. The Department recommends that in order to protect aquatic habitat in the 2200 foot bypassed reach, existing water levels be maintained and a series of weirs be constructed in the channel to assure that the existing habitat is maintained. During project construction coordination and consultation with fish and wildlife agencies should be continued. All other conditions of the license shall remain in effect.

If you have any questions, please contact Fish and Wildlife Ecologist William Ingham, Jr., at 271-2501.

Sincerely yours,

Charles E. Barry

Charles E. Barry
Executive Director

nkc
cc: Gordon Beckett, Supervisor
New England Area Office
U.S. Fish and Wildlife Service

EX III

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

REF: FERC #3240

JUN 7 1985

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27 Albin Street
Concord, New Hampshire 03301

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STATE OF NEW HAMPSHIRE

FISH AND GAME DEPARTMENT

CHARLES E. BARRY
EXECUTIVE DIRECTOR

34 Bridge Street
Concord, N. H. 03301
(603) 271-3421

November 18, 1985

Thomas A. Tarpey, Agent
Briar Hydro Associates
27 Albin Street
Concord NH 03301

REF. N.H. Dam #51.02-.04
Rolfe Canal Hydro Project
Contoocook River
Concord, N.H. 03301
FERC Project No.: 3240

Dear Mr. Tarpey:

Thank you for your letter of November 15 regarding the above referenced hydro project. The NH Fish and Game Department is providing comments pursuant to the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.) and New Hampshire RSA 206:9 and 206:10.

In your letter you state that the hydraulic capacity of the project is to be increased from 1600 CFS to 2000 CFS; however, all other aspects of the project including the agreed upon minimum flow releases in the Contoocook River and the bypassed section of the old tailrace canal will remain the same.

The Fish and Game Department has determined that the proposed increase in hydraulic capacity will not have a significant impact on the fish and wildlife resources and therefore no additional mitigation will be required.

If you have any questions, you may contact Fisheries and Wildlife Ecologist, William Ingham, Jr. at 271-2501.

Sincerely yours,

Charles E. Barry

Charles E. Barry

cc: Gordon Beckett, USFWS
Thomas Bigford, NMFS
William Ingham, NHFGD

United States Department of the Interior

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

Mr. Thomas A. Tarpey
27 Albin Street
Concord, New Hampshire 03301

NOV 15 1985

Dear Mr. Tarpey:

This is in response to your letter, dated November 15, 1985, regarding design changes at the Rolfe Canal Hydroelectric Project, located on the Contoocook River in Merrimack County, New Hampshire. The following comments are provided in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

You state that the hydraulic capacity is to be increased to 2,000 cfs from 1,600 cfs. All other aspects of the project, including required instream flow releases would remain unchanged.

We do not believe that the increase in capacity will have a significant effect on fish and wildlife resources. Consequently, it should not be necessary to modify or provide additional mitigation measures.

If you have any questions or require additional assistance, please contact Mr. Gordon Russell of my staff at (603) 224-2585.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor
New England Area

CC: RO/HR Reading File
NMFS, Gloucester
EPA, Boston
NHFG
Merrimack River Coordinator
ES: GRussell:jd:11-15-85:834-4797

APPENDIX 1-3
NEW HAMPSHIRE WATER RESOURCE BOARD LEASE
DATED FEBRUARY 20, 1986

LEASE AGREEMENT

This Lease, dated this 20th day of February, 1986, is by and between the New Hampshire Water Resources Board, a public corporation and an agency of the State of New Hampshire, hereinafter called the "Board" or "Lessor", and Briar-Hydro Associates, a New Hampshire limited partnership, hereinafter called the "Lessee".

WITNESSETH

WHEREAS, New Hampshire Revised Statutes Annotated (hereinafter, "RSA") Chapter 481-B-1 authorized the Board to acquire and maintain the York Dam (Dam No. 51.02) and related structures and all rights appurtenant to the York Dam and related structures located on the Contoocook River and the so-called Outlet or Rolfe Canal in the City of Concord (Village of Penacook), New Hampshire (hereinafter, the "Dam Facilities");

WHEREAS, the Governor and Council of the State of New Hampshire (hereinafter, the "Governor and Council") and the Board have determined that the redevelopment and use of the Dam Facilities for the production of hydroelectric power is beneficial to and in the best interest of the State;

WHEREAS, RSA 481:8 and action by the Governor and Council on June 19, 1981 authorized the Board to lease the Dam Facilities; and

WHEREAS, the Board has selected Briar-Hydro Associates to be the Lessee of the Dam Facilities upon the terms and conditions set forth in this Lease;

NOW, THEREFORE, for and in consideration of the mutual covenants, conditions, and agreements herein contained and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereby agree as follows:

1- PREMISES. For purposes of this Lease, the term "Premises" shall include the entire real property at the Dam Facilities as more particularly described in Exhibit A attached hereto, which Exhibit is incorporated herein by this reference, together with the following:

(a) the Dam Facilities;
(b) all of Lessor's water, flowage and dam rights at or associated with the Dam Facilities;
(c) all other rights and easements necessary to carry out the purposes set forth in this Lease; and
(d) any and all present or future civil works, structures, and improvements located on the Premises, including, without limitation, all structures adapted for the production of

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hydroelectric power, such as the spillway, abutments, gates, all existing features, and all civil works as constructed or reconstructed under the terms of this Lease.

2- AMENDMENT OF DESCRIPTION. Lessee and Lessor may make, by written amendment to this Lease, such minor adjustments in the description of the Premises as may subsequently be found necessary to achieve the purposes of this Lease.

3- PURPOSES. This Lease is being executed to permit Lessee to use the Premises (including the water power created by the York Dam) in connection with its development, construction and operation of a hydroelectric power production facility on the so-called Outlet or Rolfe Canal off the Contoocook River (the "Project"). Lessee's use of the Premises shall include (a) the above purposes; (b) such other purposes as may be set forth in the FERC License issued on December 5, 1984 (FERC Project No. 3240), as the same may be amended from time to time (the "FERC License"); and (c) such other purposes as are not inconsistent with the terms of this Lease and the Board's statutory responsibilities to protect the public interest, so long as Lessee's rental payments and repair obligations under this Lease are not reduced thereby. The development, construction and operation of the Project as it relates to the Premises shall be carried out in accordance with and subject to the conditions set forth in the permits (including the FERC License) issued in connection therewith and with this Lease.

4- COOPERATION. Within the scope of their respective obligations hereunder, Lessor and Lessee shall cooperate to achieve the purposes of this Lease. Such cooperation shall include, but not be limited to, (a) keeping the other party reasonably informed as to all matters relating to the achievement of the purposes of this Lease, and (b) the performance of the parties' obligations under this Lease. Furthermore, Lessee agrees to take all steps necessary to make Lessor a co-licensee under the FERC License and Lessor agrees to cooperate with Lessee in such matter.

5- LEASE, EFFECTIVE DATE, TERM, AND RENEWAL.

(a) Lessor hereby leases the entire Premises described in Section 1 to Lessee for a term which shall expire on the date which is fifty (50) years from the effective date of this Lease, subject to the provisions of subparagraph (c) below and to the termination provisions contained herein.

(b) This Lease and all obligations of Lessor and Lessee hereunder shall become effective upon approval of this Lease by the Governor and Council.

(c) Provided there is legal authority therefor, this Lease may be renewed, at the option of the Lessee and subject to the approval of the Board and the Governor and Council, on a

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year-to-year basis or longer term, each of which shall not exceed the original term of this Lease. This renewal option shall be exercised by the Lessee in writing not later than 120 days before the expiration of the original term or any renewal term of this Lease.

6- EARLY TERMINATION OF LEASE.

(a) Within six (6) months from the effective date of this Lease, Lessee will undertake to satisfy itself as to the status of Lessor's title to the Premises and the extent of Lessor's existing rights relating to the Premises to permit the development, construction and operation of the Project. If, during said six (6) month period, Lessee determines (i) that Lessor does not hold good, marketable, and insurable title to the Premises, or (ii) that there are questions concerning the existence of any rights relating to the Premises that are necessary to facilitate the Project, the parties agree to extend said period for a reasonable time to allow Lessee to take, or request Lessor to take, such curative action as may be necessary. Lessor agrees to cooperate fully in the taking of any such curative action; provided, that all out-of-pocket expenses incurred with respect to the same shall be the obligation of the Lessee (if incurred by Lessor, after first obtaining Lessee's prior approval). If, during the period(s) of time provided above, any defect in title or questions as to Lessor's rights are not cured or resolved to Lessee's satisfaction, then Lessee shall be entitled to terminate this Lease.

(b) Notwithstanding anything to the contrary set forth in this Lease, Lessee shall have the full right and option to terminate this Lease by giving Lessor written notice thereof upon the occurrence of any one (1) or more of the following events:

(i) A denial or refusal of any federal, state or local agency to issue any license, permit or approval necessary for Lessee to develop, construct and/or operate the Project or any such license, permit or approval is revoked.

(ii) the inability of Lessee, on or before June 30, 1986, to purchase, lease or otherwise acquire any necessary real property, easements, rights-of-way, water, flowage or dam rights, or other rights for the development, construction and/or operation of the Project, on such terms and conditions as are acceptable to Lessee;

(iii) if, within two (2) years from the effective date of this Lease, Lessee's leasehold interest in the Premises, or any mortgage or security interest therein, is not insurable at a reasonable cost, or if a title insurance binder issued in connection therewith contains any nonstandard exceptions to Lessee's ownership of good and marketable leasehold title to the Premises;

(iv) if, prior to completion of construction of the Project, Lessee is unable to secure financing on terms acceptable to the Lessee for the development, construction and operation of the Project;

(v) if within two (2) years from the effective date of this Lease, the Lessee is unable to obtain insurance pursuant to Section 16(b), at a reasonable cost.

(c) Upon termination of this Lease as permitted by subparagraphs (a) or (b) above, Lessee shall have no further obligations for rental payments or otherwise hereunder, except for obligations accrued prior to the date of termination.

(d) In addition to Lessee's rights to terminate this Lease as provided in subparagraphs (a) and (b) above, Lessee shall also be entitled to terminate this Lease at any time and for any reason, if Lessee shall give Lessor written notice of termination of this Lease and shall pay Lessor a final rental payment equal to the sum of (i) the pro rata share of the then-present calendar year's annual rental installment computed as of the date of said notice, plus (ii) an additional payment equal to two (2) years' rental installments based on the average annual rental payments having been paid to Lessor to the date of termination.

(e) If, solely by reason of Lessee's fault, Lessee does not procure the necessary federal and state licenses and permits within two (2) years from the effective date of this Lease, then the Lessor shall have the sole option to terminate this Lease at the end of such two (2) year period with no remaining obligation of any kind on the part of Lessor. Termination of this Lease pursuant to this paragraph shall be made in writing and shall become effective immediately upon receipt by Lessee.

(f) If this Lease is terminated at any time prior to completion of construction, Lessee will make available to Lessor copies of all studies, reports, or other documents prepared by or on behalf of Lessee in connection with the Premises.

7- RELATED RIGHTS AND OBLIGATIONS IN THE PREMISES.

(a) In addition to its rights and possession, use, operation and occupancy of the Premises, Lessee shall also have the following rights:

(i) the right to construct, reconstruct, modify, repair, and use all areas within the Premises and all structures and improvements located or to be located on the Premises, as may be necessary for (A) the production of hydroelectric power by the Project, (B) the construction,

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reconstruction, repair and/or operation of any part of such structures and improvements, and (C) any planning in connection therewith; and

(ii) the exclusive benefit of, and right to use, all available head and water flows at the York Dam, as well as all other water, flowage and dam rights owned by Lessor and associated with the Premises.

(b) Lessor also agrees (i) to grant Lessee and utility companies, easements or other rights in property and public ways owned or controlled by Lessor in order to permit necessary utility services to be supplied to the Premises, and (ii) to permit the interconnection necessary for the sale and delivery of any electric power generated at the Premises; provided always, that the location of all such installations shall be subject to the prior approval of Lessor (such approval not to be unreasonably withheld) and in accordance with the reasonable requirements of Lessor with respect to appearance, safety, and public convenience.

(c) Lessee shall operate the Premises consistent with the terms of the FERC License held by Lessee, and with the other licenses and permits issued in connection therewith. Lessor reserves the right to enter the Premises and to undertake any necessary activities for the purpose of assuring compliance with the FERC imposed conditions that relate to the Premises where required to avoid the loss of that License.

(d) Lessor shall have the right to inspect and to enter the Premises pursuant to subparagraph (c) at reasonable times and in such a manner so as to reduce to a minimum interference with Lessee's operation and use thereof; provided, however, that in the event of situations requiring immediate actions, Lessor's right of entry and inspection shall be absolute and unquestioned.

(e) Nothing contained in this Lease shall be construed to relieve Lessee of the duty to perform all of the obligations contained in the FERC License.

(f) Nothing contained in this Lease shall be construed to relieve Lessee of the duty to perform all of the obligations contained in Order No. 51.46H issued by the Board on January 8, 1986.

(g) Lessor and Lessee shall have the right to pass over any existing or subsequently constructed access roads to or across the Premises.

(h) Lessor and Lessee agree to add the plans and specifications of any structures or improvements constructed or reconstructed on the Premises under the terms of this Lease to this Lease, in order that the descriptions of the Premises shall remain as accurate as possible.

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8- QUIET POSSESSION.

(a) Lessor convenants and warrants that:

(i) it has full right and lawful authority to enter into this Lease for the full term set forth and for any renewal or extension hereof;

(ii) all legal requirements for the execution hereof have been complied with; and

(iii) the Board and the State of New Hampshire are lawfully seized of the entire Premises and have good, marketable, and insurable title thereto, free and clear of all tenancies, liens, mortgages, security interests and encumbrances.

(b) Lessor further covenants and warrants that if Lessee shall discharge the obligations herein set forth to be performed by it, then Lessee shall have and enjoy, during the term and any renewal or extension hereof, the quiet and undisturbed possession of the Premises, and the appurtenant rights thereto, for the uses herein described, without interference, hindrance or ejection.

9- LICENSES, PERMITS, CONSTRUCTION.

(a) Lessee shall make application for all necessary and appropriate exemptions, certificates, permits, and approvals of local and state agencies and FERC and Lessor agrees to fully cooperate and assist Lessee therewith. Said exemptions, certificates, permits, and approvals shall include, but are not limited to, the FERC License and a determination relative to the need for a water quality certificate as prescribed by Sec. 401 of the Clean Water Act.

(b) At the earliest opportunity, Lessee shall submit its construction, reconstruction, and repair plans relating to the Premises to Lessor for Lessor's approval, and Lessee shall not proceed with such construction, reconstruction, or repair until Lessor has approved such plans. Lessor's review of such plans shall be confined to such review as may be necessary to protect the Premises from damage and to discharge Lessor's contractual and statutory obligations. Lessor shall respond to Lessee within thirty (30) days from the date of receiving the plans, except for any proceedings held pursuant to RSA Chapter 482, as to which the time limits allowed therein shall be applicable.

10- RENT.

(a) For the purposes of this section, the following terms shall be defined as follows:

(i) The term "Gross Revenue" shall mean the money received by Lessee from the sale of electrical power produced by the Project.

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(ii) The term year one (1) will commence at the time the Project begins Commercial Operations.

(iii) The term "Commercial Operations" shall mean the date on which Lessee first produces and delivers electrical power from the Project to the purchasing party.

(b) The following are the schedule of lease payments to be made to the Lessor:

Year	Percent of Gross Revenue
1	1.0%
2	1.2%
3	1.4%
4	1.6%
5	1.8%
6	2.0%
7	2.2%
8	2.4%
9	2.6%
10	2.8%
11	3.0%
12	3.2%
13	3.4%
14	3.5%
15-30	3.5%

(i) After the thirtieth year, and therefore at the end of the term of the rate order issued by the New Hampshire Public Utilities Commission, if the audited budget for operations and maintenance of the Partnerships does not exceed twenty-five percent (25%) of Gross Revenue, the annual lease payment to the Lessor will be an amount equal to ten (10%) percent of Gross Revenue. If the audited budget for operations and maintenance does exceed twenty-five percent (25%) of Gross Revenue, then the annual lease payment will be reduced as follows: for every percentage point by which the audited budget for operations and maintenance exceeds 25% of Gross Revenue, Leassee will reduce the annual lease payment by .25% of Gross Revenue.

(ii) Said audits shall be conducted by an independent auditor to be mutually agreed upon by Lessor and Lessee.

(c) At any time or times during the term of this Lease, Lessee may request from Lessor a waiver or deferral of any or all amounts owed as rent to Lessor for any rental period under this Lease. Such request shall be in written form and shall be documented sufficiently to allow Lessor to determine whether or not such request is warranted. Within sixty (60) days of Lessor's receipt of such a request, Lessor will notify Lessee in writing regarding Lessor's determination of whether or not to grant Lessee's request in full or in part and any conditions with respect thereto.

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(d) In the event of any actual or proposed sale, assignment, conveyance, lease, or other transfer by Lessee of its rights under this Lease and/or in the Project to an unrelated party, either Lessee or said party may request from Lessor a readjustment in the rent to be paid under the terms of this Lease subsequent to such transfer. Such request shall be in the form of a written proposal, sufficiently documented to allow Lessor to determine whether or not such request is warranted. Within sixty (60) days of Lessor's receipt of such proposal, Lessor will notify Lessee and/or said party, as the case may be, in writing, regarding Lessor's determination of whether or not to grant such request; provided, that Lessor agrees not to withhold its consent if the projected present value (computed at the discount rate then approved for use of Public Service Company of New Hampshire by the New Hampshire Public Utilites Commission) of the total rent to be paid to Lessor over the then remaining term of this Lease under the terms of such proposal is greater than or equal to the projected present value of the total rent otherwise payable to Lessor under the terms of this Lease as then in effect.

11- CONSTRUCTION, REPAIRS, AND MAINTENANCE.

(a) Within eighteen (18) months from the effective date of this Lease, Lessee shall commence Project construction. Lessee shall be responsible for all damages caused to the Premises by Lessee's construction activities, including all labor, materials, and equipment costs involved in any repairs necessitated by any such damage.

(b) Lessee shall, at all times during the term of this Lease, and at Lessee's own cost and expense, keep and maintain in good condition and repair, all parts of the Premises utilized by Lessee, and Lessee shall use all reasonable precautions to prevent waste, damage, or injury to the Premises.

(c) Upon the expiration or termination of this Lease, Lessee shall quit and surrender the Premises in good condition and repair, ordinary wear and tear expected.

(d) After the commencement of construction, Lessee shall have the right, at its own cost and expense, to construct on the Premises such improvements and to make such alterations to the Premises as Lessee shall determine to be proper in connection with the development, construction, and operation of the Project; provided, that the same shall be in compliance with all applicable federal, state, and local reqirements.

(e) Within six (6) months after completion of construction, Lessee shall remove all temporary structures from the Premises.

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12- TITLE TO IMPROVEMENTS AND EQUIPMENT.

(a) Until the expiration or termination of this Lease, title shall remain solely in Lessee to any improvements, alternations, equipment, or other items erected or installed by Lessee on the Premises.

(b) Except as specifically set forth in subparagraph (c) below, upon any expiration or termination of this Lease, title to all equipment located on the Premises shall remain in Lessee, and Lessee, at its own cost and expense, may remove any of all such equipment. Alternatively, Lessee, at its option, may elect not to remove any such equipment, and, upon any such election, title to any such equipment shall vest in Lessor and Lessee shall have no further obligations to Lessor with respect thereto.

(c) Notwithstanding the provisions of subparagraph (b) above, if and only if the term of this Lease should expire (not including an early termination of this Lease as a result of a default hereunder, an election to terminate by Lessee as provided herein, or any other reason), at the end of the original term or any renewal or extension thereof, then Lessor, at its option, shall be entitled to purchase any equipment which is owned by Lessee and which is located on the Premises, at the fair market value thereof. Such option must be exercised by Lessor giving Lessee written notice thereof thirty (30) days prior to the expiration of this Lease. Said notice shall state the item or items of equipment which Lessor desires to purchase, Lessor's determination of the fair market value of each item listed, and the name and address of an appraiser selected by Lessor. Upon receipt of said notice, Lessee shall have thirty (30) days in which to reject Lessor's determination of the fair market value as to any one or more of the items listed. Upon rejection of Lessor's determination of the value of any of the items, Lessee shall give Lessor written notice thereof, together with a list of the disputed items, Lessee's determination of the fair market value of each such item, and the name and address of an appraiser selected by Lessee. Upon receipt of such notice of rejection, Lessor shall have fifteen (15) days in which to reject Lessee's determination of the fair market value of the items listed as disputed by Lessee. Upon Lessee's receipt of written notice of rejection by Lessor of Lessee's determination of the value of the remaining items in dispute, the two appraisers selected shall select a third appraiser and the three appraisers thus chosen shall determine the value of the remaining items in dispute, which determination shall be final and binding upon the parties. Each party shall be responsible for the cost of its respective appraiser, and both parties shall share equally the cost of the third appraiser. Lessor's above purchase option shall specifically not apply to equipment which is leased by Lessee from, or which is owned by, a third party, regardless of whether said third party is a shareholder,

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partner, officer, director, or employee of, or is otherwise related to, Lessee or is an affiliated or related company or other entity of or to Lessee; provided, however, that Lessor shall be entitled to directly approach said third party to negotiate a purchase of said equipment. Until the expiration of this Lease and Lessor's exercise of its above purchase option, title to any equipment that might become subject to said purchase option shall remain solely in Lessee, and Lessee shall be entitled to buy, sell, lease, mortgage, encumber, substitute, and otherwise dispose of and deal freely with any such items of equipment without regard to Lessor's above purchase option.

(d) Notwithstanding the above, all buildings, structures and equipment essential to the structural integrity of the Premises shall not be removed from the Premises and shall be left in suitable repair, reasonable wear and tear excepted.

13- ASSIGNMENT, SUBLETTING AND FINANCING.

(a) Right to Assign or Sublet. Lessor agrees that Lessee may, with Lessor's written consent, said consent not to be unreasonably withheld, assign or sublet the Premises; provided, that any such assignee or sublessee shall have agreed with Lessor to perform all of Lessee's covenants and obligations hereunder. Lessor agrees to respond to Lessee's requests for a proposed assignment or sublease within sixty (60) days from the receipt thereof. Notwithstanding the above, Lessee shall be entitled to assign this Lease, without Lessor's consent, to a corporation, partnership or other entity directly or indirectly controlled by, controlling or under common control with, Lessee and which agrees with Lessor to perform all of Lessee's covenants and obligations hereunder; provided, however, that any assignment pursuant to this subparagraph (a) shall release Lessee from any further liability hereunder only if Lessee has obtained Lessor's approval thereof, which approval Lessor agrees not to unreasonably withhold.

(b) Financing. Lessor agrees that Lessee may mortgage, assign, transfer, lease, or otherwise create security interests (including, without limitation, sale and leaseback arrangements) in this Lease and/or the Premises, in order to secure indebtedness incurred by Lessee to finance the Project or to secure Lessee's obligations to a third party under a lease of the Premises; provided, that (i) any such encumbrance shall not be permitted to extend beyond the expiration date of this Lease; (ii) a copy (or notice) of any such mortgage, assignment, transfer, lease, or other security interest, together with the name and address of the holder thereof (hereinafter, the "Secured Party", which term shall also include any purchaser at any foreclosure sale), is duly recorded in the Merrimack County Registry of Deeds, if required by other provisions of law; and (iii) in the event of foreclosure, the purchaser thereof shall succeed to Lessee's interest therein, subject to the provisions of subparagraph (c) (i) below.

(c) Rights of Secured Party. In the event that Lessee shall create mortgages, assignments, transfers, leases, or other security interests in the Premises as permitted by subparagraph (b) above, then Lessor hereby agrees for the benefit of the Secured Party that:

(i) No Secured Party shall be liable under the terms and conditions of this Lease unless and until such Secured Party shall have exercised its rights to succeed to Lessee's interests hereunder by giving written notice thereof to Lessor, nor shall any Secured Party be liable thereafter nor for any default or breach of this Lease before Lessee's interests hereunder become vested in said Secured Party.

(ii) Lessor will, upon serving Lessee with any notice of default, simultaneously serve a copy of such notice upon the Secured Party, and no such notice to Lessee shall be effective unless a copy is so served upon the Secured Party.

(iii) In the event of any default by Lessee hereunder, or under the terms of the mortgage, lease, or other security interest, the Secured Party shall have the right to perform any of Lessee's covenants or to cure any defaults by Lessee hereunder, or to exercise any election, option, or right conferred upon Lessee by the terms of this Lease.

(iv) Lessor will not terminate this Lease for any default of Lessee (A) if within a period of one hundred twenty (120) days after the expiration of the period of time within which Lessee might cure said default under the provisions of this Lease, said default is cured or caused to be cured by the Secured Party, or (B) if within a period of ninety (90) days after the expiration of the period of time within which Lessee might commence to eliminate the cause of such default under the provisions of this Lease, the Secured Party commences to eliminate the cause of such default and proceeds diligently therewith; provided, that this subparagraph shall not apply to the obligation to pay rent, as to which the Secured Party is subject in the same manner as Lessee.

(v) Lessor will not terminate this Lease if the Secured Party takes possession of the Premises upon default by Lessee under the terms of the mortgage, lease, or other security interest; provided, that the rent due and payable under this Lease shall continue to be paid and the other covenants, conditions, and agreements of this Lease on Lessee's part to be kept and performed shall continue to be kept and performed by the Secured Party.

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(vi) No exercise of any right, privilege, or option available to Lessee to cancel or terminate this Lease, nor any modification or amendment to this Lease, shall be effective without the prior written consent of the Secured Party; provided, that in the event the Lessor has the unilateral right to terminate this Lease, the Lessor need not obtain the prior written consent of the Secured Party, to do so. Nothing in this sub-paragraph shall deprive the Secured Party of its right to notice and all other rights (including the right to cure) provided herein.

(vii) Lessor agrees that it will, if requested by Lessee in writing, make such amendments to this Lease as are reasonably required by FERC or any other federal, state or municipal government, agency or organization having jurisdiction of the Project or by a Secured Party to facilitate the creation of mortgages, leases, or other security interests permitted hereunder, provided that the rent and other financial interests of Lessor are not impaired thereby. No amendment to this Lease shall be valid unless made in writing and signed by the parties.

14- TAXES, OTHER CHARGES, FEES, ETC. Lessee shall be responsible for real estate taxes assessed for and with respect to the Premises only (including assessments for betterments or improvements for all tax periods fully or partially included in the term of this Lease), or, at Lessee's option, any payments in lieu thereof pursuant to RSA 362-A:6, as amended, or otherwise. In accordance with RSA 72:23,I (1975 Supp.), Lessee shall pay all properly assessed real and personal property taxes no later than the due date, unless Lessee is in good faith contesting the same or seeking an abatement thereof.

15- PAYMENT FOR UTILITIES. Lessee shall pay promptly as and when the same become due and payable all charges for water, steam, heat, gas, hot water, electricity, light, power, and other services used by Lessee in connection with the Premises during the term of this Lease.

16- INSURANCE.

(a) Lessee shall, with respect to the Premises, provide, at Lessee's expense, and keep in force during the term of this Lease, general liability insurance with a good and solvent insurance company or companies, reasonably satisfactory to Lessor, in the amount of at least $1,000,000 with respect to injury or death to any one person and $1,000,000 with respect to damage to property, or, alternatively, a combined single limit of $1,000,000. Such policy or policies shall include Lessor as an additional named insured.

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(b) Commencing with construction of the Project, Lessee shall keep all existing structures, and all structures and improvements built or erected by Lessee on the Premises insured against the risk of fire and other perils, commonly called extended (all risk) coverage in an amount not less than eighty percent (80%) of the current replacement cost thereof. Any such insurance policy or policies shall name Lessor as an additional named insured, as its interest may appear, provided that in no event shall Lessor be entitled to any proceeds of such insurance policies attributable to structures, improvements, equipment or fixtures built or erected by the Lessee on the Premises.

17- MUTUAL REPRESENTATIONS.

(a) Lessor represents and warrants to Lessee that this Lease and the execution hereof have been duly authorized by all necessary action on the part of Lessor and its governing bodies.

(b) Lessee represents and warrants to Lessor that this Lease and the execution hereof have been duly authorized by all necessary action on the part of the Lessee.

18- DAMAGE CLAUSE. If the Premises and/or the Project shall be damaged, in whole or in part, by fire, casualty or action of public authority in consequence thereof, then:

(a) The rent hereinbefore reserved, or a just and proportionate part thereof according to the nature and extent of the damage sustained, shall be suspended or abated upon the mutual consent of Lessor and Lessee or their respective legal representatives (said consent not to be unreasonably withheld) until (i) the damage shall have been repaired, (ii) the Premises and/or the Project are restored substantially to their condition at the time of the damage, and (iii) the production of hydroelectric power resumes.

(b) If the Premises and/or the Project are, by such damage, rendered unsuitable for Lessee's use, then this Lease may be terminated by Lessee or its legal representative. Any such election shall be made in writing within ninety (90) days after such damage or destruction occurs, and this Lease shall terminate in accordance therewith as of the date of such damage or destruction.

(c) In the event of any damage or destruction, and this Lease is not to terminate as aforesaid, then the terms and conditions of this Lease shall remain unaltered, subject to the provisions of subparagraph (a) above, provided that in such case Lessee shall be entitled to all proceeds of insurance, whether payable to Lessor or Lessee, as a result of such damage or destruction.

B 1551P0141

19- DAM FAILURE. Notwithstanding the provisions of Sections 7(d) and 18 above, in the event of an imminent or actual failure of the York Dam (the "Dam"), the Lessor has the right to immediately re-enter onto the Premises for the purposes of making all necessary repairs to the Dam. In the event the Lessor repairs the Dam, the Lessee shall reimburse the Lessor for the reasonable cost of such repairs that were necessitated by Lessee's failure to maintain the Dam in good condition and repair, as required by Section 11(b) above. To the extent it is practical and reasonable, the Lessor shall first afford the Lessee the opportunity to make any such repairs itself. In other than emergency situations, before making any such repairs, Lessor shall obtain Lessee's prior written consent (which consent shall not be unreasonably withheld) and shall provide such plans and other information about the proposed repairs as Lessee may reasonably request. Such repairs shall be only those required to restore the Premises to their original sound and serviceable condition. Lessor shall not have the right to make significant improvements to the Premises under this sub-paragraph, but nothing herein shall be interpreted as limiting any of the Lessor's powers as provided by law.

20- INDEMITY.

(a) Lessee does hereby agree to defend, indemnify, and save Lessor, its officers, employees and agents, harmless from and against any and all claims, losses, actions, damages, liabilities, and expenses (including, without limitation, reasonable legal fees) in connection with the loss of life, personal injury, and/or damage to property arising out of, or alleged to have arisen out of, any occurrence in, upon, and/or at the Premises occasioned by or resulting from (i) the occupancy or use by Lessee of the Premises or any part thereof, or (ii) by any act or omission of Lessee, its agents, contractors, or employees.

(b) Subject to subsection (c) below, Lessor does hereby agree to defend, indemnify, and save Lessee, its partners, officers, employees and agents, harmless from and against any and all claims, losses, actions, damages, liabilities, and expenses (including, without limitation, reasonable legal fees) in connection with the loss of life, personal injury, and/or damage to property arising out of, or alleged to have arisen out of, any occurrence in, upon, and/or at the Premises or other property of Lessor occasioned by or resulting from (i) the occupancy or use by Lessor of the Premises or any part thereof; (ii) any act or omission of Lessor, its agents, contractors, or employees; or (iii) any other cause whatsoever with the sole exception of those for which Lessor is to be indemnified by Lessee pursuant to subsection (a) above.

B 1551P0142

(c) Lessor's indemnification obligations pursuant to subsection (b) above shall only be enforceable and binding upon Lessor to the extent that Lessor's obligations thereunder (including, without limitation, the obligation to defend) are insured by a contractual liability or like insurance policy issued by a financially responsible insurance company licensed in the State of New Hampshire and approved by Lessee. The premium for such policy shall be the sole obligation of Lessee. Lessor agrees to cooperate with Lessee in obtaining or renewing any such policy during the term of this Lease (including without limitation, immediatly advising Lessee of all notices or other communications received by Lessor with respect to any such policy).

(d) No provision in this Section 20 is intended to be, nor shall it be interpreted by either party to be, a general waiver of sovereign immunity; provided, that this subsection (d) shall not operate to relieve the Board and the State of New Hampshire from the limited obligation of indemnity set forth above.

21- LESSEE'S DEFAULT.

(a) If:

(i) Lessee neglects or fails to pay the rent and such default shall continue for a period of ninety (90) days;

(ii) Lessee neglects or fails to pay the real estate taxes (or payments in lieu thereof) payable pursuant to Section 14 hereof once the same become due and payable; provided that Lessee reserves unto itself all rights and remedies generally available to a person responsible for the payment of such real estate taxes (or payments in lieu thereof);

(iii) Lessee neglects or fails to perform or observe any of the other covenants, terms, provisions or conditions on its part to be performed or observed (except any such covenant, term, provision or condition which the neglect or failure to perform or observe does not materially affect Lessor's rights under this Lease and which does not give rise to any material liability or loss of revenue on the part of Lessor) and such default shall continue for a period of sixty (60) days from the date that written notice of such default is received by Lessee from Lessor;

(iv) the estate hereby created shall be taken on execution or by other process of law;

(v) a receiver, guardian, conservator, trustee in voluntary or involuntary bankruptcy, or other similar officer is appointed to take charge of all or any substantial part of the Lessee's property by a court of competent jurisdiction, and, in the case of an involuntary proceeding, said proceeding is not terminated within sixty (60) days; or

B 1551P0143

(vi) proceedings shall be commenced to dissolve or liquidate Lessee;

then, and in any of the said cases, Lessor lawfully may, upon the expiration of the notice periods provided herein, terminate this Lease by giving to Lessee at least thirty (30) days' written notice of such termination; provided, however, that, in the event that Lessor gives notice of a default of such a nature that it cannot reasonably be remedied within the notice period, other than a failure to pay rent as specified above, then such default shall not be deemed to continue so long as Lessee, after receiving such notice, proceeds to remedy the default as soon as is reasonably possible and continues diligently to take all steps necessary to complete such remedy within a reasonable period of time under the prevailing circumstances. Notwithstanding any such purported default, Lessor shall not have such right of termination if a Secured Party shall cause to be cured, within the time periods set forth in Section 13(c)(iv), all defaults of Lessee hereunder, whether in the payment of rent or the performance of any other agreement, which are then reasonably susceptible of being cured by the Secured Party, and shall continue to cause such rent to be paid and Lessee's other agreements to be performed.

(b) In the event of a judicially-enforced termination of this Lease following the occurrence of an event of default, as provided by and in accordance with subsection (a) above, Lessee shall be responsible for liquidated damages as more particularly set forth in this subsection. Said liquidated damages shall, at Lessor's sole option, be either (i) Lessee's payment to Lessor of an additional one (1) year's rental installment based on the average of the annual rental payments paid to Lessor to the date of termination; provided, that said additional rental installment shall not exceed five percent (5%) of the long term average annual gross revenue for the Project calculated at Lessee's then current contracted price for power; or (ii) Lessee's transfer to Lessor of all unencumbered equipment which is owned by Lessee and which is located on the Premises. For purposes of (i) above, the long term average annual gross revenue shall be based on "period of record flows" recorded at the USGS Penacook Gauge No. 088000 on the Contoocook River, such period to be not less than thirty (30) years unless agreed to in writing by Lessee. With respect to (ii) above, Lessee shall only be required to transfer equipment and only equipment which is owned by Lessee and which is not subject to any mortgage, security interest, or other lien. Said equipment shall specifically not include equipment which is leased by Lessee from, or which is owned by, a third party; regardless or whether said third party is a shareholder, partner, officer, director, or employee of, or otherwise related to, Lessee or is an affiliated or related company or other entity of or to Lessee. Until the termination of this Lease as provided above, title to any equipment that might become subject to Lessee's

aforesaid option shall remain solely in Lessee, and Lessee shall be entitled to buy, sell, lease, mortgage, encumber, substitute, and otherwise dispose of and deal freely with any such items of equipment without regard to said option.

22- LESSOR'S DEFAULT. If Lessor shall fail to perform any of its obligations set forth herein and such failure shall continue for more than thirty (30) days after written notice by Lessee to Lessor thereof (or such lesser period as may be appropriate to protect Lessee's leasehold interest or to preserve or protect persons or property from injury), Lessee may, in addition to any other remedy specified herein or available to it by law or otherwise, (i) correct such failure to perform and deduct the cost thereof (including without limitation reasonable attorneys' fees) from the installments of lease payments thereafter coming due or (ii) in the case of a material default by Lessor, terminate this Lease upon giving Lessor ten (10) days' written notice thereof, whereupon all obligations of Lessee and all lease payments due from Lessee hereunder shall cease as of the date of such termination.

23- FORCE MAJEURE. In the event Lessor or Lessee shall be delayed, hindered in, or prevented from the performance of any act required hereunder, except the payment of rent, by reason of fire, floods, storms, or other casualties, acts of God, strikes, labor troubles, inability to procure materials, failure of power, riots, insurrection, declared or undeclared acts of war, the act or failure to act of the other party, or any other event beyond such party's control, the affected party shall give the other party written notice of the duration thereof, and then the performance of such act shall be excused for the period of delay occasioned thereby and the period for the performance of any such act shall be extended for a period equivalent to the period of the delay occasioned thereby.

24- EMINENT DOMAIN.

(a) Taking. If the Premises, and/or the Project, or such portion thereof as to render the balance unsuitable for the purposes of Lessee, shall be taken by condemnation or by right of eminent domain, then either party, upon ninety (90) days' prior written notice to the other, shall be entitled to terminate this Lease.

(b) Apportionment. Notwithstanding any contrary provision of law, the award granted for any taking of all or any part of the Premises shall be fairly and equitably apportioned between the Lessor and the Lessee, based on their percentage interests in the proportion taken on the Premises. Lessor and Lessee agree to cooperate in applying for and in prosecuting any claim for an award for any such taking.

B 1551P0145

(c) Termination and Abatement. In the event that this Lease is terminated as a result of such taking, the terms of this Lease shall cease and come to an end as of the date of such taking, with the same force and effect as if such date had originally been set forth as the expiration of the term hereof, and any rental payments in advance shall be promptly refunded by Lessor to Lessee. If this Lease is not terminated as result of such taking, a fair and just proportion of the rent thereafter payable shall be suspended or abated, depending upon the extent to which the Lessee may be required to discontinue its business in the Premises and/or the Project and depending upon the nature and extent of the taking.

25- MISCELLANEOUS PROVISIONS.

(a) Recordation. Lessor and Lessee shall execute a "Notice of Lease", conforming to the standards of New Hampshire RSA 477:7-a and reasonably acceptable in form to both parties and their counsel, which notice shall be recorded in the Merrimack County Registry of Deeds.

(b) Headings. The article, Section, paragraph, and subparagraph headings throughout this instrument are for convenience and reference only, and the words contained therein shall in no way be held to explain, modify, amplify, or aid in the interpretation, construction or meaning of the provisions of this Lease.

(c) Succession; Binding Agreement. Except as otherwise set forth herein, all of the terms and provisions of this Lease shall be binding upon and shall inure to the benefit of the heirs, executors, administrators, successors, and assignees of the respective parties thereto. All of the terms and provisions of this Lease which are binding upon the Board (or Lessor) shall also be binding upon the State of New Hampshire and its agencies.

(d) Exhibits. Each exhibit attached to this Lease shall be incorporated into and be part of this Lease. If any exhibit referred to in this Lease shall not be attached hereto at the time of execution of this Lease, or if any such exhibit shall be incomplete, then any such exhibit may be later attached or completed by mutual consent of the parties evidenced by their respective initialing of such exhibits, and such exhibits shall, as later attached or completed, for all purposes be deemed a part of this Lease as if attached hereto or completed at the time of execution thereof.

(e) Merger. This agreement, including all exhibits attached hereto, constitutes the entire agreement between the parties, and all prior understandings, agreements, and representations have been merged herein.

(f) Waiver. The waiver by either party of any breach of this Lease shall not be deemed to be a waiver of a subsequent breach of the same or any other covenant, condition, or term of this Lease.

(g) Amendment of Lease. This Lease may be modified or amended only by an instrument in writing signed by all parties hereto. If both parties hereto agree in writing to such modification or amendment, then such modification or amendment shall be executed by both parties and shall become part of this Lease. In approving this Lease, the Governor and Council thereby authorize Lessor to make subsequent minor amendments hereto which shall not require further approval by the Governor and Council.

(h) Severability. If any term or provison of this Lease, or the application thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, the remainder of this Lease, or the application of such term or provision to persons or circumstances other than to those which it is held invalid or unenforceable, shall not be affected and each term and provision of this Lease shall be valid and be enforced to the fullest extent permitted by law.

(i) Governing Law. This Lease and the performance thereof shall be governed and interpreted exclusively by the laws of the State of New Hampshire.

(j) Notices. Any notice or other communication required or permitted hereunder shall be in writing and shall be deemed to have been duly given when delivered in hand against receipt to such party or mailed by certified or registered mail, postage prepaid, return receipt requested, addressed:

(i) if to Lessor:
Water Resources Board
P.O. Box 2008
Concord, NH 03301-2008
Attn: Delbert F. Downing
Chairman

with a copy to:
New Hampshire Attorney
General's Office
State House Annex
Concord, NH 03301

(ii) if to Lessee:
Briar Hydro Associates
c/o Essex Hydro Associates
99 North State Street
Concord, NH 03301
Attn: Thomas A. Tarpey

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with a copy to: Essex Hydro Associates
89 State Street, Suite 1400
Boston, MA 02109
Attn: Richard A. Norman

and to: Orr and Reno
One Eagle Square
P.O. Box 709
Concord, NH 03301-0709
Attn: Howard Moffett, Esq.

or to such other address as shall by like notice by sent to the other party.

(k) Counterparts. This Lease may be executed in counterparts, each of which shall be an original, but all of which shall constitute one and the same instrument.

(l) Mechanics Liens. Lessee agrees to promptly take steps to discharge or cause to be discharged (either by payment or the filing of a necessary bond, the contesting of an attachment, or otherwise) any mechanic's, materialman's or similar lien placed against the Premises, arising out of any payment due for labor, services, materials, supplies or equipment which may have been furnished to or for the Lessee, its contractors or subcontractors.

(m) Progress Reports. Lessee shall submit to Lessor written quarterly progress reports detailing the Lessee's progress in constructing the Project, and in bringing the Project on line.

(n) Third Parties. Except as specifically provided in Section 13 hereof, the parties hereto do not intend to benefit any third parties and this Agreement shall not be construed to confer any such benefit.

26- COMPLIANCE WITH THE LAW. Lessee shall comply promptly with all laws, regulations, rules, requirements, and orders of federal, state, and other public authorities, any local board of fire underwriters and similar organizations having jurisdiction which are applicable to the Premises. Lessor agrees to cooperate with Lessee in connection with the foregoing, and agrees to execute any filing or petition which may be required in its name as owner of record of the Premises and which may be necessary or convenient, in the opinion of Lessee, to the development, construction and/or operation of the Project, provided that Lessor, in its judgment, determines that such execution or filing is of beneficial use.

27- SHORTAGE CRISES. Pursuant to the express provisions of RSA 481:8, III, as amended, in the event of a shortage crisis, as determined by the Governor and Council, in either the water

resources of the State of New Hampshire or the capacity to fulfill the electrical requirements of the State of New Hampshire, then the Governor and Council may suspend the terms of this Lease (but only to the extent that hydroelectric power generated at the Premises is provided outside of the State of New Hampshire) in order to fulfill the needs and requirements of the citizens of the State of New Hampshire.

28- EXECUTION AGAINST LESSOR'S PROPERTY. Nothing in this Lease shall be deemed to be a waiver by Lessor of the benefit of the provisions of RSA 481:6-C with respect to levy and sale, execution, or other judicial process against property of Lessor.

29- NO WAIVER OF SOVEREIGN IMMUNITY. No provision in this Lease is intended to be, nor shall it be, interpreted by either party to be a waiver of sovereign immunity; provided, that this provision shall not operate to relieve Lessor or the State of New Hampshire from their obligations set forth herein.

30- EMERGENCY ACTION PLAN. If, by virtue of Lessee's construction, operation or maintenance of the Project, a Flood or Emergency Action Plan (the "Plan") is required by FERC (pursuant to FERC Order No. 122, Docket No. RM80-31, issued January 21, 1982) or any other agency having jurisdiction, then Lessee agrees to prepare the Plan and to pay the cost thereof.

31- CERTIFICATES. Upon its execution of this Lease, Lessee shall attach hereto a Certificate of Authority to execute and be bound by this Lease, together with a Certificate of Registration with the New Hampshire Secretary of State, all as required by RSA 5:18-a.

B 1551P0149

IN WITNESS WHEREOF, the parties hereto have executed this Lease as of the date first above written.

NEW HAMPSHIRE WATER RESOURCES BOARD

By: Delbert F. Downing
Delbert F. Downing, Chairman

BRIAR-HYDRO ASSOCIATES

By: [signature]
General Partner

STATE OF NEW HAMPSHIRE
COUNTY OF

On this, the 12 day of February, 1986, beore me the udnersigned offer, personally appeared Delbert F. Downing, who acknowledged himself to the the Chairman of the Water Resources Board, a public corporation created by the State of New Hampshire, and that he, as Chairman, being authorized to do so, executed the foregoing instrument for the purposes therein contained.

Before me:

[signature] A Knowlton
~~NOTARY PUBLIC~~/JUSTICE OF THE PEACE

My Commission expires: 5-23-88.

STATE OF NEW HAMPSHIRE
COUNTY OF

On this, the 5th day of February, 1986, before me, the undersigned officer, personally appeared James H. Steenbeke, Sr. who acknowledged himself to be a General Partner of Briar-Hydro Associates, a New Hampshire limited partnership, and that he, as such Partner, being authorized to do so, executed the foregoing instrument for the purposes therein contained.

Before me:

Howard M Moffett
NOTARY PUBLIC/JUSTICE OF THE PEACE

My Commission expires: 1/29/91.

Approved by Attorney General this 10th day of February, 1986 as to form, substance and execution, subject to substitutions at a later date of final certificates by the partnership.

ASSISTANT ATTORNEY GENERAL

At the meeting on February 20, 1986, the Governor and Council determined that the proposed project will be of public use and benefit and within the authority conferred upon the Board, and approved execution of this Lease.

Dep. SECRETARY OF STATE
ON BEHALF OF THE GOVERNOR
AND COUNCIL

CERTIFICATION

The undersigned Secretary of the New Hampshire Water Resources Board (the Board) does hereby certify that at a meeting of the Board held on the 30th of JANUARY, 1986, said Board voted affirmatively as follows:

> Upon motion made and seconded, it was voted to approve the lease with Briar-Hydro Associates to develop the hydropower at The York Dam and to authorize Delbert F. Downing, Chairman to execute said lease on behalf of the Board.

I further certify that the above vote is official and still in force and effect and that Delbert F. Downing is Chairman of the Board as of the 12th of FEBRUARY, 1986.

NEW HAMPSHIRE WATER RESOURCES BOARD

Irene B. Laskarose
WITNESS

Peter B. Hance
PETER B. HANCE, SECRETARY

STATE OF NEW HAMPSHIRE
COUNTY OF MERRIMACK

The foregoing instrument was acknowledged before me this 12th day of February, 1986, by Peter B. Hance, Secretary of the New Hampshire Water Resources Board.

Before me:

Sarah G. Dawson
NOTARY PUBLIC

My Commission expires: Feb 1990

B 1551P0152

EXHIBIT A

Premises. For purposes of this Lease, the term "Premises" shall include the rights and easements over certain tracts or parcels of land in the City of Concord, Merrimack County and State of New Hampshire situated along and near the Contoocook River in the vicinity of the former Contoocook River Park, the canal and "Outlet", together with all rights and easements pertaining to the construction, reconstruction, repair, maintenance operation and inspection of certain dams, dikes, structures, abutments, gates and other improvements used or useful in the production of hydroelectric power, and all of Lessor's water, flowage and dam rights, as conveyed to the Lessor by deed of the City of Concord dated October 3, 1967, and recorded in Merrimack County Records at Book 1015, Page 435, or as may be hereafter acquired by the Lessor, including, without limitation, the following structures and all such rights appurtenant thereto: York Dam, New Hampshire Water Resources Board (NHWRB) No.51.02, Outlet Dam, NHWRB No. 51.03; Water Control Structure, NHWRB No.51.43 and Canal Dike NHWRB No.51.45.

MERRIMACK COUNTY RECORDS
Recorded Feb.28,11-35A.M.1986

Note Lease

NH Water Resources Bd

Brear - Hydro

MERRIMACK COUNTY RECORDS
Received Feb.28,11-35A.M.1986
Recorded Lib.1551,Fol.129
Examined;

Kathi L. Guay
Register

11-36
Gallagher, Callahan & Gartrell
Box 1415
Concord NH.

Appendix 1-4 FERC Order Amending License Article (Issued September 25, 1986)

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Rolfe Canal Project — Project No. 3240-006

ORDER AMENDING LICENSE ARTICLE

(Issued September 25, 1986)

On August 5, 1986, Briar-Hydro Associates (licensee) filed an application for amendment of the license for the Rolfe Canal Project, to amend article 30 to reflect an agreement between Public Service of New Hampshire (PSNH) and the state and federal fishery agencies regarding the construction of fish passage facilities at mainstem dams on the Merrimack River. 1/ The Rolfe Canal Project is located on the lower Contoocook River, which is a tributary stream proposed for anadromous fish restoration and that enters the Merrimack River upstream of the fifth mainstem dam.

The revision of article 30 will provide for construction of fish passage facilities at the Rolfe Canal Project on a schedule consistent with the agreement on mainstem fish passage, and based on the success of the anadromous fish restoration program on the Merrimack River.

The Director orders:

(A) Article 30 of the license is amended to read:

Article 30. The licensee, within 2 years after the annual passage of 15,000 adult American shad through the fish passage facilities at the Garvins Falls Project (FERC No. 1893), or through the fish

---

1/ The agreement is entitled, A Comprehensive Plan for Provision of Anadromous Fish Passage Measures and Facilities at PSNH's Merrimack-Pemigewasset River Hydroelectric Dams, FERC Project Nos. 1893, 2456, and 2457, and was signed by PSNH, the New Hampshire Fish and Game Department, the Massachusetts Division of Fisheries and Wildlife, the Massachusetts Division of Marine Fisheries, the National Marine Fisheries Service, the U.S. Forest Service, and the U.S. Fish and Wildlife Service.

facilities of the proposed Sewalls Fall Project (FERC No. 7216) if constructed, but in no case later than July 1, 2004, shall file for Commission approval functional design drawings of fish passage facilities for the Rolfe Canal Project, prepared after consultation with the New Hampshire Fish and Game Department and the U.S. Fish and Wildlife Service. The licensee shall provide upstream and downstream fish passage facilities at the Rolfe Canal Project within 5 years after the annual passage of 15,000 adult American shad through the fish facilities at the Garvins Falls Dam, or Sewalls Falls Dam if constructed, consistent with the agreement entitled, A Comprehensive Plan for Provision of Anadromous Fish Passage Measures and Facilities at PSNH's Merrimack-Pemigewasset River Hydroelectric Dams, FERC Project Nos. 1893, 2456, and 2457. Further, the licensee shall file as-built drawings of the Rolfe Canal Project fish passage facilities within 6 months after completion of construction.

(B) This order is issued under authority delegated to the Director and is final unless appealed to the Commission under Rule 1902 within 30 days from the date of this order.

Richard T. Hunt

Richard T. Hunt
Director, Office of
Hydropower Licensing

Appendix 1-5 New Hampshire Water Supply and Pollution Control Commission Letter (Dated February 16, 1983)

29 401 Permit

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

February 16, 1983

Ms. Kathleen Goodrich
Department of the Army
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Attention: NEDOD

Subject: REQUEST BY BRIAR HYDRO ASSOCIATES TO DREDGE TO INCREASE THE FLOW IN THE ROLFE CANAL FOR A HYDROELECTRIC PROJECT, WASHINGTON STREET, ROLFE CANAL, CONTOOCOOK RIVER, PENACOOK-CONCORD, NEW HAMPSHIRE

Dear Ms. Goodrich:

This will certify that on review of the subject request, the Commission has determined that the project described in the request will be in conformance with applicable New Hampshire laws and that, to the best of its knowledge, no federal limitation applicable to the proposed project has been established under sections 301(b), 302, 303, 306, or 307 of the Federal Water Pollution Control Act (P.L. 92-500), as amended to date. This certification is furnished pursuant to sections 401(a)(1) and 401(d) of the Act, and included herewith and made a part hereof are state permits issued pursuant to NHRSA 149:8-a (supp) and NHRSA 483-A (supp).

Very truly yours,

Ronald B. Towne

Ronald E. Towne
Chief Water Pollution Biologist

RET/csc
Enclosures
cc: Mr. W. J. Naulty, USCG
Mr. Russell A. Nylander, P.E., WS&PCC
Mr. Stephen H. Roberts, P.E., WS&PCC
Mr. Paul Ambrosino, Council on Energy
E. Tupper Kinder, Esquire, Assistant Attorney General
Briar Hydro Associates

Appendix 2-1 New Hampshire Department of Environmental Services Water Quality Testing Protocol (2012)

The State of New Hampshire
Department of Environmental Services
Thomas S. Burack, Commissioner

Celebrating 25 Years of Protecting New Hampshire's Environment

June 8, 2012

Stephen Hickey
Essex Hydro Associates, LLC
55 Union Street, 4th Floor
Boston, MA 02108

RE: Water Quality /Quantity Monitoring Recommendations for Low Impact Hydropower Institute Certification of the Rolfe Canal Hydroelectric Project (FERC No. 3240)

Dear Steve:

We understand that Briar Hydro Associates is applying for Low Impact Hydropower Certification from the Low Impact Hydropower Institute (LIHI) for the Rolfe Canal Hydroelectric Project (FERC No. 3240), on the Contoocook River in Concord, New Hampshire. We further understand that to receive LIHI certification, you need a statement from the New Hampshire Department of Environmental Services (DES) stating that the project is not causing or contributing to violations of state water quality standards. Table 1 provides the current assessment status of the parameters of concern included in the monitoring plan outlined in a later section of this letter. The information provided in Table 1 is derived from DES's draft 2012 305(b)/303(d) report.

Table 1. 2012 Assessment Status for Water Quality Parameters at the Rolfe Canal Hydroelectric Project

Assessment Unit	Location	Parameter	2010 305(b)/303(d) Assessment Status	
NHIMP700030507-09	Rolfe Canal Hydroelectric Dam Impoundment	Dissolved Oxygen (mg/L)	No Data	
		Dissolved Oxygen (% Saturation)	No Data	
		Chlorophyll-a	**Primary Contact Recreation**	**Aquatic Life Use**
			No Data	No Data
		Total Phosphorus	No Data	
		Water Temperature	No Data Not Applicable^	
NHIMP700030507-06	Downstream of Rolfe Canal Hydroelectric Dam	Dissolved Oxygen (mg/L)	Fully Supporting	
		Dissolved Oxygen (% Saturation)	Fully Supporting	
		Chlorophyll-a	**Primary Contact Recreation**	**Aquatic Life Use**
			Fully Supporting	Data
		Total Phosphorus	Data	
		Water Temperature	Data Not Applicable^	
		Flow	No Data	

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

In order for DES to determine if the subject hydroelectric project is causing or contributing to water quality standard violations, additional monitoring and information is needed. In general, data / information is needed to address the following water quality concerns that are typically associated with hydropower projects:

1. Impact on ambient water quality criteria;
2. Impact of pond fluctuations on aquatic habitat;
3. Maintenance of adequate minimum flows to protect downstream aquatic life; and
4. Adequate upstream and downstream fish passage.

Specifics are provided below:

1. Water Quality

Water quality parameters most vulnerable to hydroelectric projects typically include dissolved oxygen (DO), temperature, chlorophyll-a and total phosphorus. Water quantity is also a concern, primarily downstream of the dam and is of significant concern for projects with a bypass reach. Samples are typically taken upstream and downstream of the dam and when appropriate in the bypass reach. Based on our current understanding of the project, the following is recommended.

Table 2 provides proposed water quality sampling locations for the river segments of concern. Recommended parameters and frequency of monitoring are provided in Table 3 below. Figure 1, which is included at the end of this letter, depicts the project area and proposed monitoring locations.

Table 2. Recommended Sampling Locations for Water Quality Monitoring - Rolfe Canal Hydroelectric Dam

Assessment Unit	Location	NHDES Station ID	Size/Acreage
NHIMP700030507-09	Rolfe Canal Hydroelectric Dam Impoundment	03K-CTC	4 acres
NHIMP700030507-06	Downstream of Rolfe Canal Hydroelectric Dam – Bypass Reach	03F-CTC	~2100 feet
	Downstream of Rolfe Canal Hydroelectric Dam Bypass Reach - Downstream of Powerhouse	03C-CTC	11 acres

Table 3. Recommended Water Quality Monitoring Plan for the Milton Hydroelectric Dam

Site ID	Location	Purpose	Parameters	Frequency
03K-CTC	~300 feet upstream of Rolfe Canal Hydroelectric Dam	Determine water quality impacts of river being impounded by the Rolfe Canal Hydroelectric 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 (≤3 x 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	2 vertical profiles collected on 2 days when continuous dataloggers are deployed. Profiles should be at 1 foot increments from surface to bottom
			Total Phosphorus and Chlorophyll-a	10 samples - once a week for 10 weeks (from May 24 through September 15)
03F-CTC	Rolfe Canal Hydroelectric Dam Bypass Reach	Determine water quality and quantity impacts in bypass reach	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 (≤3 x 7Q10) and high temperatures (preferably over 23 degrees C).
			Discharge	3 measurements taken during period of low flow (≤3 x 7Q10) during normal operation of the project.[A]
03C-CTC	~500 feet downstream of end of bypass reach and power house	Determine water quality condition downstream of the Rolfe Canal Hydroelectric Dam and associated bypass reach	Instantaneous Dissolved Oxygen (mg/L and % Saturation) and Continuous Water Temperature	3 instantaneous measurements taken on separate days during period of datalogger deployments in stations 03F-CTC and 03K-CTC. Measurements must be taken before 8:00 A.M. and during period of low flow (≤3 x 7Q10) and high temperatures (preferably over 23 degrees C).
			Total Phosphorus and Chlorophyll-a	3 samples taken on days when station 03K-CTC is also sampled (from May 24 through September 15)
			Discharge	3 measurements taken during period of low flow (≤3 x 7Q10) during normal operation of the project.[A]

[A] Discharge measurements for stations 03F-CTC and 03C-CTC should be taken within one hour of each other. NHDES discharge standard operating procedure should be utilized.

Prior to sampling, a sampling plan should be submitted to DES for approval which includes sampling locations, parameters to be sampled, sample timing and frequency, sampling and laboratory analysis protocols and quality control provisions. DES can provide examples of sampling plans upon request.

For each sampling station and event the following should be provided:

- Site map with longitudinal and latititudinal coordinates
- Site description including weather, vegetation, flow conditions, and 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 replicate samples should collected for laboratory analysis.
- 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 reagents 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.
- Chain of custody forms and information regarding laboratory standard methods should be submitted to DES with the data.

The sampling plan should also specify that water quality and quantity data will be collected under critical low flow/high water temperature conditions. The United States Geologic Services maintains a stream gage (USGS 01085500) in West Hopkinton, NH on the Contoocook River. Data from this gage can be used to estimate when the Contoocook River is flowing below 3 x 7Q10 low flow conditions. The 3 X 7Q10 value for USGS stream gage 01085500 is 108 cfs. During the sampling period the Rolfe Canal Hydroelectric Dam should be operating under normal operating procedures.

Finally, the plan should specify that 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 http://des.nh.gov/organization/divisions/water/wmb/emd/index.htm or by contacting Melanie Titus at (603) 271-1152 or Melanie.Titus@des.nh.gov.

2. Pond Fluctuation

Pond fluctuations due to operation of hydroelectric projects can negatively impact aquatic habitat and aquatic life. To determine the impact of pond fluctuations on aquatic life, the following is typically needed:

a. A description and schematic of the project including the dam height, length, control structures and elevations, crest elevation, flashboard elevations, and impoundment depth, elevation, area and volume at full pool, normal and maximum drawdown elevations;
b. Timing, frequency, duration and magnitude of drawdowns
c. Historical water level fluctuations over the past 5 years
d. Map of fringing wetlands preferably delineated from high-resolution aerial photography
e. An estimate of the average and maximum percent of the littoral zone (preferably based on accurate bathymetry) that is dewatered as well as average and maximum duration of dewatering for each quarter of the calendar year

3. Minimum Flows

To determine if adequate flow to support aquatic life is provided downstream of the facility, the following is typically needed:

a. Minimum flow requirements through the penstock and bypass reach;
b. Information on how the minimum flows were determined:
c. Information on how compliance with minimum flow requirements is determined; and
d. Documentation proving compliance with minimum flow requirements for the past five years.

Based on the data received, additional analyses may be required.

4. Fish Passage

To address fish passage concerns, DES will need notification from the New Hampshire Fish and Game Department (NHFG) and the U.S. Fish and Wildlife Service (USFWS) stating that they are satisfied with upstream and downstream fish passage provisions associated with the subject project. Copies of correspondence with NHFG and USFWS should be provided to DES. Contact information is provided below.

Carol Henderson
NH Fish and Game Department
11 Hazen Drive, Concord, NH 03301
603-271-3511
carol.henderson@wildlife.nh.gov

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
John_Warner@fws.gov

Once all of the data has been submitted, NHDES will make a determination regarding compliance of the project with NH water quality standards.

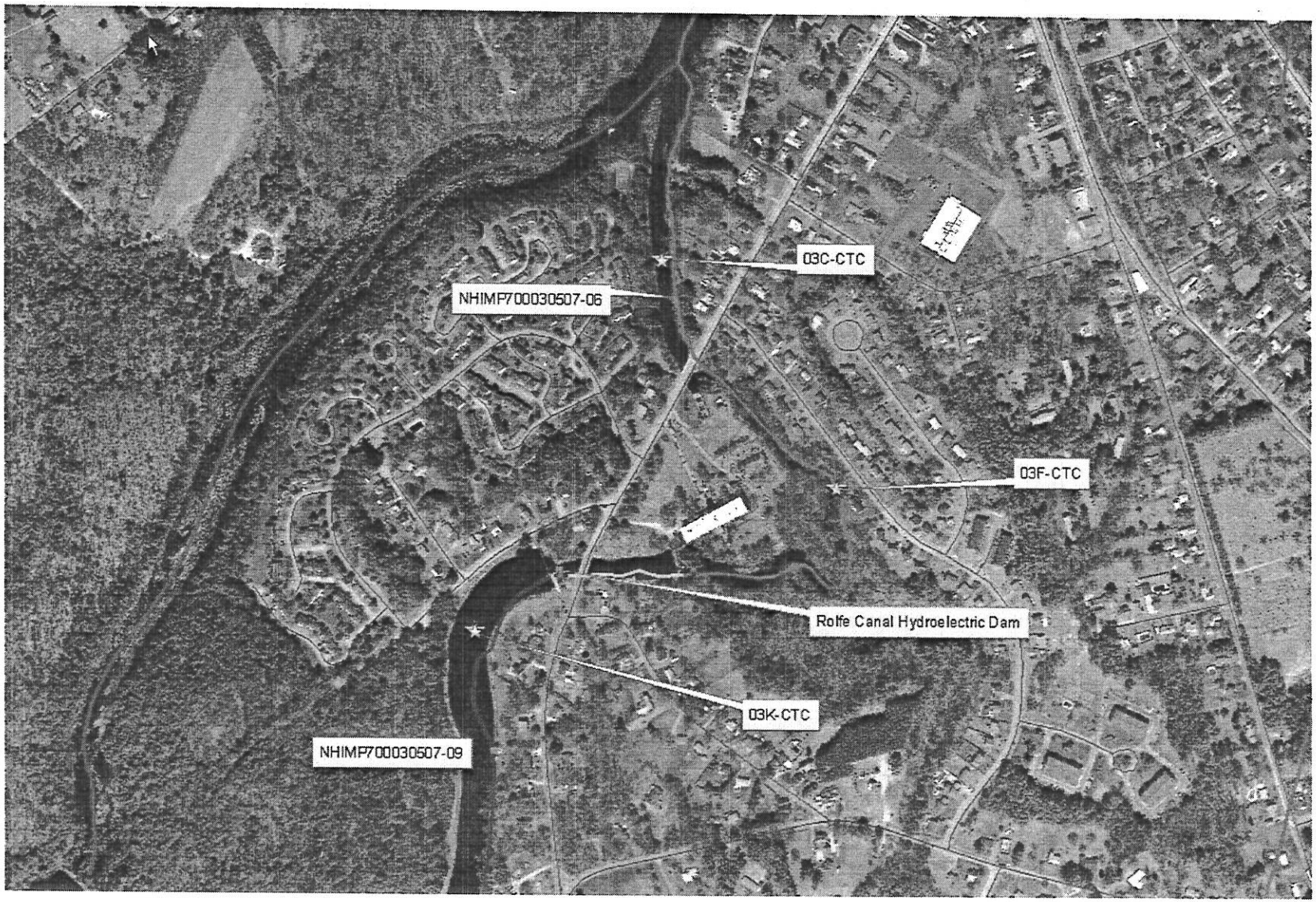
Should you have any questions regarding these recommendations or wish to arrange a meeting, please contact me at (603)271-2083 (ted.walsh@des.nh.gov).

Sincerely,

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

cc: Melanie Titus, NHDES
Fred Ayer, LIHI
Carol Henderson, NHFG
John Magee, NHFG
John Warner, USFWS

Figure 1. Project Area and Proposed Monitoring Locations – Rolfe Canal Hydroelectric Dam, Contoocook River – Concord, NH



Appendix 2-2 New Hampshire Department of Environmental Services Water Quality Testing Results – Determination of "No Effect" of Project Operations on WQ (2012)

The State of New Hampshire
Department of Environmental Services
Thomas S. Burack, Commissioner

Celebrating 25 Years of Protecting
New Hampshire's Environment

December 31, 2012

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

RE: Water Quality Status of the Contoocook River for Low Impact Hydropower Institute Certification of the Rolfe Canal Hydroelectric Project (FERC No. 3240), Contoocook River

Dear Fred:

Briar Hydro Associates (BHA) has applied for Low Impact Hydropower Certification from the Low Impact Hydropower Institute (LIHI) for the Rolfe Canal Hydroelectric Project (FERC No. 3240) on the Contoocook River in Penacook, NH. We understand that to receive LIHI certification, you require a statement from the New Hampshire Department of Environmental Services (DES) stating that the project is not causing or contributing to violations of state water quality standards. On June 8, 2012, DES sent BHA a letter stating what would be needed to determine if the Contoocook River in the vicinity of the Rolfe Canal hydroelectric project was or was not attaining water quality standards. In specific, the following was stated: "In order for DES to determine if the subject hydroelectric project is causing or contributing to water quality standard violations, additional monitoring and information is needed. In general, data / information is needed to address the following water quality concerns that are typically associated with hydropower projects:

1. Impact on ambient water quality criteria and thresholds;
2. Impact of pond fluctuations on aquatic habitat;
3. Maintenance of adequate minimum flows to protect downstream aquatic life; and
4. Adequate upstream and downstream fish passage."

The purpose of this letter is to provide you with our assessment of data and information received from BHA in response to our letter of June 8, 2012 and, our conclusions as to whether or not the Rolfe Canal Hydroelectric Project is causing or contributing to New Hampshire surface water quality standard violations.

With regards to water quality, BHA collected water quality data for dissolved oxygen, water temperature, total phosphorus, chlorophyll-a, and discharge. Monitoring locations in the bypass reach (03F-CTC) and in the downstream section of the river (03C-CTC) were monitored continuously for a minimum 10 day period in August/September 2012 for water temperature and dissolved oxygen using multi-parameter dataloggers. DES specified that the multi-parameter continuous water quality data should be collected under critical low flow/higher water temperature conditions. The continuous water quality data submitted by BHA was collected when the Contoocook River was flowing below 3 x 7Q10 conditions of 108 cfs and daily average water temperature exceeded 23° F, which meet the conditions set by DES. BHA has stated that during the collection of the continuous water quality data the Rolfe Canal Hydroelectric Project was operating under normal operating procedures. Instantaneous measurements were taken for water temperature and dissolved oxygen in the impoundment (03K-CTC). In addition, between June and

August 2012, ten samples from stations 03K-CTC and 03C-CTC were collected and tested by the DES laboratory for total phosphorus and chlorophyll-a.

DES has assessed the water quality data collected in 2012, and based on this assessment concludes that the water quality in the impoundment and downstream section of the Contoocook River, under the dam's current operating conditions, do not appear to be violating existing water quality criteria or thresholds for dissolved oxygen, phosphorus and chlorophyll-a. In the June 8, 2012 letter DES provided the assessment status for the parameters of concern for the reaches of the Contoocook River upstream and downstream of the Rolfe Canal Hydroelectric Project. Table 1 provides an update to the current assessment status of the river reaches in question for the parameters collected this summer. Our assessments were based on the methodology described in the DES Consolidated Assessment and Listing Methodology (CALM)[1]. This information will be used in the next Section 305(b)/303(d) Water Quality Assessment report which is expected to be issued by DES in early 2014. Please note that the assessment status listed in Table 1 could change if water quality criteria or thresholds change and/or if additional data collected between now and the 2014 report indicate water quality violations. For example, data collected at lower flows and/or higher temperatures might result in a different assessment.

Table 1. Assessment Status for Water Quality Monitoring Parameters - Rolfe Canal Hydroelectric Project

Assessment Unit	Location	Parameter	Designated Use	Assessment Status based upon summer 2011 sampling
NHIMP700030507-09	Rolfe Canal Dam Impoundment	Dissolved Oxygen (mg/L)	Aquatic Life	Fully Supporting
		Dissolved Oxygen (% Saturation)	Aquatic Life	Fully Supporting
		Chlorophyll-a	Primary Contact Recreation	Fully Supporting
			Aquatic Life	Indeterminate[A]
		Total Phosphorus	Aquatic Life	Indeterminate[A]
		Water Temperature	Aquatic Life	No numeric criteria[C]
NHIMP700030507-06	Downstream of Rolfe Canal Hydroelectric Dam – Bypass Reach	Dissolved Oxygen (mg/L)	Aquatic Life	Fully Supporting
		Dissolved Oxygen (% Saturation)	Aquatic Life	Fully Supporting
		Water Temperature	Aquatic Life	No numeric criteria[C]
NHIMP700030507-06	Downstream of Rolfe Canal Hydroelectric Dam Bypass Reach - Downstream of Powerhouse	Dissolved Oxygen (mg/L)	Aquatic Life	Fully Supporting
		Dissolved Oxygen (% Saturation)	Aquatic Life	Fully Supporting
		Chlorophyll-a	Primary Contact Recreation	Fully Supporting
		Total Phosphorus	Aquatic Life	No numeric criteria[B]
		Water Temperature	Aquatic Life	No numeric criteria[C]

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

minimum flow. BHA will continue to release the required 5cfs per their FERC license in the tailrace of the old Briar Pipe Factory.

Regarding the issue of fish passage, DES was provided with documentation from BHA and Carol Henderson of NHFG indicating that they concur with the recommendations of John Warner of USFWS regarding upstream and downstream fish passage. For the purposes of LIHI certification BHA concurs with implementing fish passage measures for American eel when prescribed by USFWS and agree to undertake such consultations, design development, and construction in a timely manner after notification of such necessity by the USFWS.

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

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

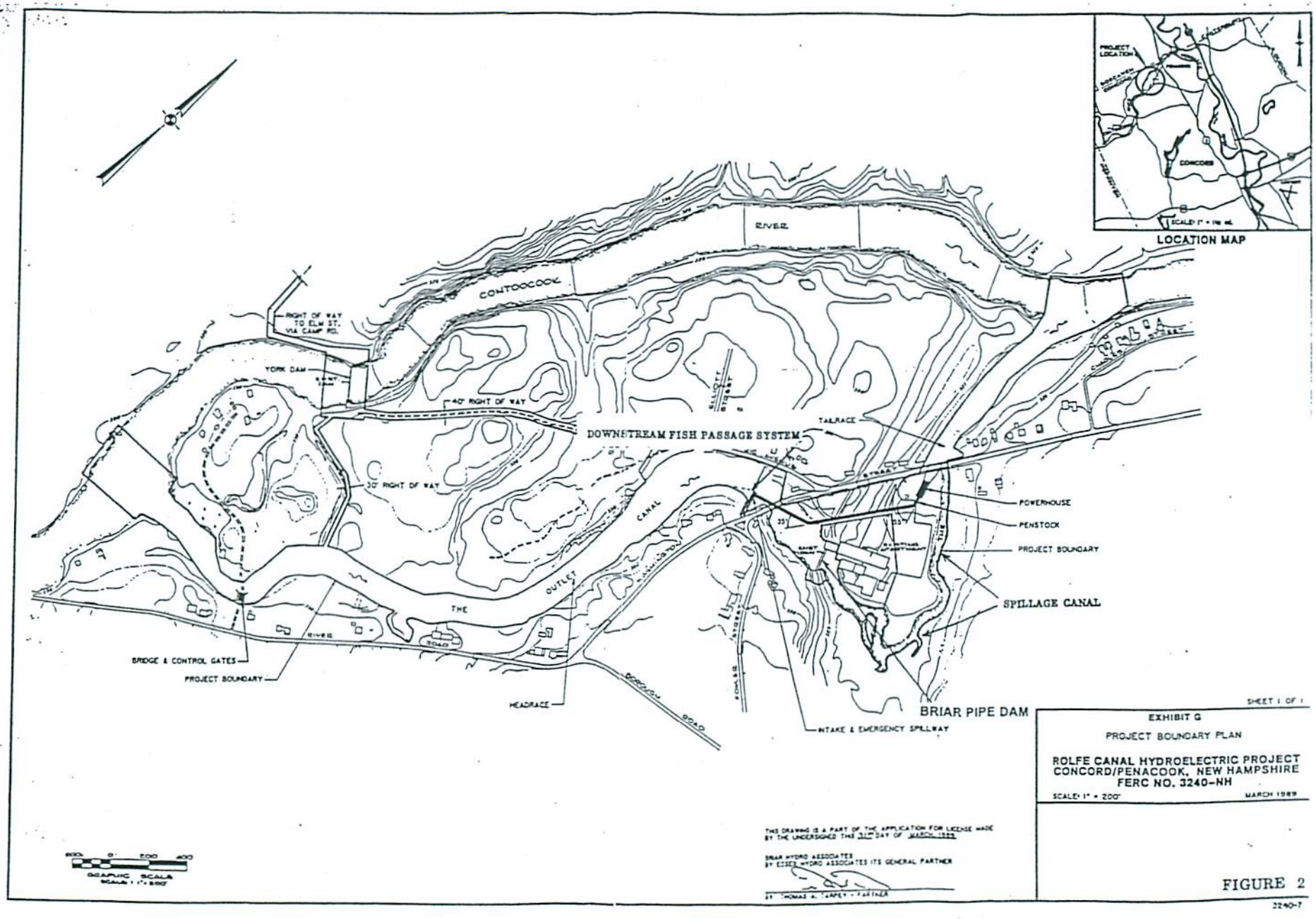
Sincerely,

Ted Walsh

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

Cc (via email): Steve Hickey, Essex Hydro Associates, LLC
Carol Henderson, NHFG
John Magee, NHFG
John Warner, USFWS
Pat Mcilvaine, LIHI

APPENDIX 3-1
PROJECT BOUNDARY MAP



SHEET 1 OF 1

EXHIBIT G

PROJECT BOUNDARY PLAN

ROLFE CANAL HYDROELECTRIC PROJECT
CONCORD/PENACOOK, NEW HAMPSHIRE
FERC NO. 3240-NH

SCALE: 1" = 200' MARCH 1989

FIGURE 2

3240-7

Appendix 3-2 Recreational Facilities: Map showing Boat Ramp Location

ROLFE CANAL HYDROELECTRIC PROJECT
BOAT RAMP AERIAL VIEW

Appendix 4-1 NHFG & USFWS Consultation Re: Downstream Fish Passage (Salmon & Herring)

Elise Anderson

From:	Warner, John
Sent:	Thursday, April 27, 2017 7:28 AM
To:	Elise Anderson
Cc:	Rosset, Julianne; Dave Sherman
Subject:	Re: Downstream Fish Passage at Briar Hydro (Contoocook River)

Elise - That is not 100% correct. It is correct that you no longer need to operate the DS passage devices for Atlantic salmon smolts in the spring. Regarding river herring (or shad for that matter) , stocking of the Contoocook can occur under current management plans and if so, operation of DS bypasses would be needed. I am copying Matt Carpenter who may be able to shed light on that program and prospects for ensuing years - JW

On Tue, Apr 25, 2017 at 12:44 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

Hi John,

We wanted to get confirmation from you on something you mentioned to us when we met in person. We understood that you will not require downstream fish passage for smolts and herring at the Penacook Lower, Upper and Rolfe Canal projects (Briar Hydro). I think this was due to USFWS's suspension of fish stocking efforts in this waterway. Could you confirm via email to us that we are no longer required to operate downstream fish passage at these projects?

Thank you-

Elise Anderson

Environmental and Regulatory Analyst

Essex Hydro

55 Union Street, 4th Floor

Boston, MA 02108

Tel: (617) 367-0032

Fax: (617) 367-3796

Elise Anderson

From: Carpenter, Matthew
Sent: Friday, July 21, 2017 11:28 AM
To: Elise Anderson
Subject: RE: Downstream Fish Passage at Briar Hydro (Contoocook River)

Hi Elise,
No, we did not get to it this year. The high flows limited our access to fish this spring.
Thanks,
Matt

From: Elise Anderson [mailto:eanderson@essexhydro.com]
Sent: Friday, July 21, 2017 11:03 AM
To: Carpenter, Matthew; Warner, John
Cc: Rosset, Julianne
Subject: RE: Downstream Fish Passage at Briar Hydro (Contoocook River)

Hi Matt,
I wanted to check in with you again on your advice below. Have you been able to stock river herring on the Contoocook river as planned?
Thanks,
Elise

From: Carpenter, Matthew [mailto:Matthew.Carpenter@wildlife.nh.gov]
Sent: Friday, April 28, 2017 2:25 PM
To: Elise Anderson; Warner, John
Cc: Rosset, Julianne; Dave Sherman
Subject: RE: Downstream Fish Passage at Briar Hydro (Contoocook River)

Hi Elise,
We do plan to stock river herring in the Contoocook River when fish are available. I will be able to let you know if we were able to stock adult river herring in the Contoocook River by early June. If we do stock adult river herring this spring, then downstream passage will need to be provided starting in late summer.
Thanks,
Matt

From: Elise Anderson [mailto:eanderson@essexhydro.com]
Sent: Thursday, April 27, 2017 3:23 PM
To: Warner, John; Carpenter, Matthew
Cc: Rosset, Julianne; Dave Sherman
Subject: RE: Downstream Fish Passage at Briar Hydro (Contoocook River)

Thanks John.

I didn't see Matt copied, so I added him. Matt can you tell us the status of river herring management on the Contoocook and prospects for future years?

Thank you-

Elise Anderson

From: Warner, John [mailto:john_warner@fws.gov]
Sent: Thursday, April 27, 2017 7:28 AM
To: Elise Anderson
Cc: Rosset, Julianne; Dave Sherman
Subject: Re: Downstream Fish Passage at Briar Hydro (Contoocook River)

Elise - That is not 100% correct. It is correct that you no longer need to operate the DS passage devices for Atlantic salmon smolts in the spring. Regarding river herring (or shad for that matter) , stocking of the Contoocook can occur under current management plans and if so, operation of DS bypasses would be needed. I am copying Matt Carpenter who may be able to shed light on that program and prospects for ensuing years - JW

On Tue, Apr 25, 2017 at 12:44 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

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We wanted to get confirmation from you on something you mentioned to us when we met in person. We understood that you will not require downstream fish passage for smolts and herring at the Penacook Lower, Upper and Rolfe Canal projects (Briar Hydro). I think this was due to USFWS's suspension of fish stocking efforts in this waterway. Could you confirm via email to us that we are no longer required to operate downstream fish passage at these projects?

Thank you-

Elise Anderson

Environmental and Regulatory Analyst

Essex Hydro

55 Union Street, 4th Floor

Boston, MA 02108

Tel: (617) 367-0032

Fax: (617) 367-3796

Appendix 4-2 Rolfe Canal and Penacook Lower Falls 2017 Eel Passage Operations Plan

BRIAR HYDRO ASSOCIATES
c/o ESSEX HYDRO ASSOCIATES, LLC
55 UNION STREET, 4TH FLOOR
BOSTON, MASSACHUSETTS 02108

TELEPHONE: +617-367-0032
FAX: +617-367-3796
E-MAIL: briar@essexhydro.com

July 10, 2017

John Warner, Assistant Supervisor of Federal Activities
U.S. Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301

RE: Rolfe Canal and Penacook Lower Falls 2017 Eel Passage Operations Plan

Dear Mr. Warner,

This letter concerns progress made to date on the design and construction of downstream eel passage and a plan for monitoring upstream eel passage at the Penacook Lower Falls and Rolfe Canal hydroelectric projects in 2017 and 2018.

Downstream – Silver Eel Screen & Traps

On June 13, 2017, following a collaborative design review process, U.S. Fish and Wildlife Service ("USFWS") approved Briar Hydro Associates ("BRHA") to move forward with construction of a screen and traps for downstream eel passage to be located at the first gate inlet of Rolfe Canal. BRHA and agency staff agreed that due to the novelty of the design application in New England, the screen and associated traps will need to undergo testing when it is deployed. Based on the results of this testing, operational or structural changes may be required in future years.

BRHA intends to begin site preparation work in August 2017 to utilize the low water season for construction activities that require access to areas that are normally inaccessible during the spring high water season. BRHA intends to have the eel screen operational by the beginning of the 2018 downstream passage season, on or before August 1, 2018. As an interim approach, as of July 10, BRHA has installed fyke nets at Rolfe Canal for downstream trapping and monitoring for the remainder of 2017.

Upstream – Irish Elver Ladder & Traps

Finally, USFWS staff conducted a site visit at Penacook Lower Falls on June 23, 2017 to evaluate potential locations for upstream Irish traps and eel ladders in the bypass reach. BRHA has manufactured Irish elver traps and installed these onsite with USFWS staff as of June 30, 2017. Thereafter, BRHA made minor changes to the placement of the ramps so that USFWS staff was satisfied that the ramps showed promise of being able to catch eels if present. A tentative

date for an eletrofishing survey of the bypass reach in the vicinity of the ladders has been scheduled for July 20, 2017. This will be followed by a night survey to observe locations where eels are attempting to move upstream.

Please contact Elise Anderson at (617) 367-0032 if you have questions or concerns regarding this plan.

Sincerely,
BRIAR HYDRO ASSOCIATES,
By: Essex Hydro Associates, L.L.C.
General Partner

/s/

Andrew Locke
President

Elise Anderson

From: Warner, John
Sent: Wednesday, July 12, 2017 3:02 PM
To: Elise Anderson
Cc: Smithwood, Doug; Matthew A Carpenter; Dave Sherman; Julianne Rosset; Michael_bailey; Eric Truebe
Subject: Re: Electrofishing and Night Survey of Lower Penacook

Hi Elise - on DS eel trap, I guess theres no choice but look to 2018, so that will have to work - jw

On Mon, Jul 10, 2017 at 1:45 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

Hi Doug,

Glad you and Dave were able to discuss findings to date and strategy. I am available June 20th and would find it interesting to observe and assist if needed. I have attached an update to the letter documenting our plan and progress to date with these activities.

John, are you in agreement that the attached approach is acceptable to the service for 2017? Particularly the downstream passage part, where we will be beginning site work this August 2017 to prepare for installing the screen in early 2018. It is unfortunately looking to be impossible to fabricate and install a screen in time for 2017 downstream migration. We currently have fyke nets in place as we have done in previous years.

Happy to meet or discuss further as needed.

Thanks,

Elise

Essex Hydro Associates

(617) 367-0032

From: Smithwood, Doug [mailto:doug_smithwood@fws.gov]
Sent: Monday, July 10, 2017 12:28 PM
To: Matthew A Carpenter; Dave Sherman; Elise Anderson; Julianne Rosset; Michael_bailey; John Warner; Doug Smithwood
Subject: Electrofishing and Night Survey of Lower Penacook

Hi Matt and others,

Talked to Dave Sherman earlier today and they have not yet caught any eels in either of their eel ladders. Dave will be doing some modifications this week. I think the ladder are very well situated and show some promise of being able to catch eels if present.

Would like to arrange to do an electrofishing survey followed by a night survey on Thursday, July 20th. Am relying on Matt Carpenter to lead up the electrofishing and want to focus on the bypass reach to see if eels are in the vicinity of the eel ladders. After electrofishing, I would like at least some of us to stay and do a night survey so we can see if we can determine locations where eels are trying to climb.

Please let me know if you will be able to help out.

Thanks,

Douglas A. Smithwood

Fishery Biologist

Central New England Fish and Wildlife Conservation Office

U.S. Fish and Wildlife Service

151 Broad Street

Nashua, New Hampshire 03063

Telephone: (603) 595-1371

Cell: (603) 897-9620

Fax: (603) 595-0957

--

John P. Warner
Assistant Supervisor, Migratory Fish/Hydropower
New England Field Office, U.S. Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, NH 0330-5087
phone: 603-223-2541, Ext. 6420
fax: 603-223-0104

Appendix 4-3 NHFG & USFWS Consultation Record Re: Eel Passage Operations at Rolfe Canal and Penacook Lower Falls

Elise Anderson

From: Warner, John
Sent: Monday, March 27, 2017 11:27 AM
To: Elise Anderson
Cc: Smithwood, Doug; Carpenter, Matthew; Rosset, Julianne; Dave Sherman; Eric Truebe; Jon Truebe; Michael Bailey; Bryan Sojkowski
Subject: Re: Summary of 2/2 Agrency Meeting and Proposed Eel Screen Design for Feedback

Follow Up Flag: Follow up
Flag Status: Flagged

Elise - We received technical review comments on the proposed eel screen and trap at Rolfe Canal from Alex Haro who had contacted Olle Calles, a Swedish researcher for his review and from Bryan Sojkowski, our fishway engineer -

The comments we received are appended below. There are some concerns noted, primarily related to debris loading and cleaning although they all endorse the overall design concept. We recommend that you/John Trube review and consider the comments below in preparing functional design drawings -

-- Let me know if questions - JW

Olle Calles:

1. So they are proposing a perforated steel plate instead of a rack? Will that not lead to a significant head loss over the screen?

2. I would also suspect the screen to be easily clogged up? Is the idea to clean the screens by lowering them towards the bottom? We have a similar design, which did not work well in regards of cleaning. The sweeping flow was not enough to clean the lowered screens, but then we also had quite low approach velocities at that site. I think debris will build up on the perforated plates until they become completely blocked and will have to be manually cleaned.

3. As you know we have had high guidance efficiencies with both inclined (35°) 18 mm racks and more recently angled (30°) 15 mm racks with horizontal bars, so without knowing any details that would be my preferred screen designs. BUT that was for eels range 510–1060 mm (I don't know about the size range of your eels)

4. Entrances – the single bar (as they have) worked well for us. We still had branches and stuff getting trapped in the entrances, so it is important to easily access them for cleaning.

5. The trapping business is a challenge, we quickly abandoned the nets and replaced them with boxes that work reasonably well. The final version of the cages had removable boxes made of perforated steel (see attached photos). So the multiple funnels and removable box sounds like a good idea.

Those were my immediate concerns, please let me know if I can contribute more in some way.

Alex Haro:

I have similar responses to Olle. The punch plate will accumulate more debris than flow-oriented bars will, but no material will be "debris-free". Even the wedge-wire bypass sampler at Holyoke (with very high sweeping velocity) accumulates leaves under normal operating conditions when the leaf load is high, to the point of being inoperable. I would perhaps ask the project owners to have a "plan B" for replacing the punch plate with another material should debris loading/cleaning be a problem. I assume debris on the screen is expected to accumulate at the top (downstream end) of the screen at the water line and be removed by hand (i.e., raked over the top of the screen); this might have to be done more frequently than daily if debris loads are high. The big question is whether sweeping velocities will be sufficient to preclude debris accumulation on the submerged part of the screen. Every angled screen/perf-plate structure I have seen has this problem under some set of conditions, regardless of angle, area, sweeping/normal velocity, etc. Also, if the screen loads sufficiently, water level may rise to the point where it goes over the top of the screen, making it ineffective for intercepting eels.

The trap box design is as yet untested. It is also perf-plate and will load with debris, perhaps to unmanageable levels if loading is high. With a high leaf load this could happen in less than an hour, in which case it will require constant cleaning or just suspension of operation. Sticks, etc. may injure eels in the traps if they accumulate. I have some concern that eels will be able to escape the traps back upstream; flow through the trap will also vary with loading; there is not much depth in the traps in the "fishing position". Tops of the traps appear to be open; if the screen is lowered for cleaning then eels can escape, so traps must be emptied before every screen lowering.

Some other details are lacking, but I am assuming this is a preliminary design. It appears eels are to be collected out of the traps "by hand" and transported downstream in tanks/trucks, etc. daily via "engaging the resource agencies in trap and truck efforts". This will be a considerable amount of effort and responsibility for whoever takes it on. Also, what happens during very high flow events - will the trap not be operated?

There is concern over freezing conditions impacting operation of the trap. The solution proposed is to not operate it after October 15, but most eel runs in New England go well into November.

Overall, this is not a novel design (i.e., the concept is working in Europe) but it has some design variations and our North American environments (flows, debris load) might be different. If it operates as expected and debris is not much of an issue, it could be quite effective. I would recommend that the design be pursued, but that folks expect unknown/unforseen operational issues to occur and be ready to react to them with retrofits if necessary.

Bryan Sojkowski

No additional comments from me. Alex pointed out my main concern of eels being able to escape upstream through the funnels. The design even calls them out as "reducing" escapement. Could they implement PVC pipe on the bottom as has been used within eel traps as refuge but close the pipe off with a piece of aluminium (cut at the same diameter as the pipe) with a one-way hinge. This way eels can go in but not out? Just a thought. Other than that I agree with the previous comments.

On Fri, Mar 10, 2017 at 1:11 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

Thanks for your comments. I emailed Alex from USGS for his feedback too.

April 11th works for us too. I will send a calendar invite.

We need to discuss your questions a bit more internally and with our engineer, but I expect we can clean the racks daily (or more) as needed throughout the season to prevent clogging if needed.

Elise

From: Smithwood, Doug [mailto:doug_smithwood@fws.gov]
Sent: Wednesday, March 08, 2017 6:41 PM
To: Carpenter, Matthew
Cc: Elise Anderson; Rosset, Julianne; Warner, John; Dave Sherman; Eric Truebe; Jon Truebe; Michael Bailey
Subject: Re: Summary of 2/2 Agrency Meeting and Proposed Eel Screen Design for Feedback

Elise, although I have not talked to Alex about his issues, I do think debris loading might be a big issue with the eel compartment of the trap. Since silver eel migration coincides with leaf fall we have had clogging issues with our other silver eel traps. How often will this structure be services? We need to clean our screens last

thing in the afternoon and first thing the next morning to manage leaf load. Is there a plan B if clogging becomes an issue? Is there any way to put in a self cleaning device either in the initial installation or as a retrofit after installation if clogging becomes an issue?

On another note, it is my understanding that this device will serve as the method for passing silver eels around all three of your facilities. Has there been any thoughts about determining its capture efficient? If eels are somehow getting downstream to your other two facilities it would be good to know.

Finally, can we make Tuesday, April 11 as our official date for the site visit?

Douglas A. Smithwood

Fishery Biologist

Central New England Fish and Wildlife Conservation Office

U.S. Fish and Wildlife Service

151 Broad Street

Nashua, New Hampshire 03063

Telephone: (603) 595-1371

Cell: (603) 897-9620

Fax: (603) 595-0957

On Wed, Mar 8, 2017 at 9:23 AM, Carpenter, Matthew <Matthew.Carpenter@wildlife.nh.gov> wrote:

Hi Elise,

I don't have his comments. I just heard him mention it at a meeting a few weeks ago. Your best bet is to contact him directly. Here is his email:

Alexander J Haro (aharo@usgs.gov)

Thanks,

Matt

From: Elise Anderson [mailto:eanderson@essexhydro.com]
Sent: Monday, March 06, 2017 2:03 PM

To: Carpenter, Matthew; Smithwood, Doug
Cc: Rosset, Julianne; Warner, John; Dave Sherman; Eric Truebe; Jon Truebe; Michael Bailey

Subject: RE: Summary of 2/2 Agrency Meeting and Proposed Eel Screen Design for Feedback

Thanks. No I don't believe I received anything from Alex – Could you share those comments if you have them?

Elise

From: Carpenter, Matthew [mailto:Matthew.Carpenter@wildlife.nh.gov]
Sent: Monday, March 06, 2017 1:22 PM
To: Smithwood, Doug; Elise Anderson
Cc: Rosset, Julianne; Warner, John; Dave Sherman; Eric Truebe; Jon Truebe; Michael Bailey
Subject: RE: Summary of 2/2 Agrency Meeting and Proposed Eel Screen Design for Feedback

Hi Elisa,

I am available on the 11th and the 13th. I still think that some night surveys would be useful, in addition to the trapping effort. It may help answer some questions about the performance of the traps. Below are the lengths in mm of the eels that we captured in an electrofishing survey last summer, just downstream of the dam. A surprising number of smaller eels were captured in the survey. Sixteen of the 27 eels captured were less than 200 mm. It is possible that eels of this size might be seen at night just below the dam. Occasional night surveys may also lead to adjustments in location or operation of the traps. As far as the silver eel trap goes, I have no comments on the design. The concept seems like it has potential. I think Alex Haro had some concerns, possibly related to managing debris. Have you received any comments from Alex?

AE	502
AE	342
AE	336
AE	313
AE	291
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AE	245
AE	222
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AE	208
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AE	186
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AE	176
AE	168
AE	167
AE	165
AE	159
AE	153
AE	150
AE	148
AE	146
AE	123
AE	117
AE	113

Thanks,

Matt

From: Smithwood, Doug [mailto:doug_smithwood@fws.gov]
Sent: Thursday, March 02, 2017 6:49 PM
To: Elise Anderson
Cc: Rosset, Julianne; Warner, John; Dave Sherman; Eric Truebe; Jon Truebe; Michael Bailey; Carpenter, Matthew
Subject: Re: Summary of 2/2 Agrency Meeting and Proposed Eel Screen Design for Feedback

Hi Elisa,

I agree that it would be important to do a site visit with Dave since I based my proposal on Google Earth images and there is multiple variables that will determine if this plan has a good possibility of working out that only can be determined by a site visit. I propose that we meet onsite on April 11,12 or 13th. I do want to make sure that Matt Carpenter is available.

Regarding your silver eel trap- I am very hopeful also that we can get this trap online for the 2017 passage season. I am hopeful that this trap will be able to provide us with additional eels for our telemetry study.

Douglas A. Smithwood

Fishery Biologist

Central New England Fish and Wildlife Conservation Office

U.S. Fish and Wildlife Service

151 Broad Street

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Fax: (603) 595-0957

On Thu, Mar 2, 2017 at 10:56 AM, Elise Anderson <eanderson@essexhydro.com> wrote:

Apologies – one minor edit. Thanks again.

Elise Anderson

From: Elise Anderson [mailto:eanderson@essexhydro.com]
Sent: Thursday, March 02, 2017 10:56 AM
To: 'Smithwood, Doug'
Cc: 'Rosset, Julianne'; 'Warner, John'; Dave Sherman; 'Eric Truebe'; 'Jon Truebe'; 'Michael Bailey'; 'Matt Carpenter'
Subject: RE: Summary of 2/2 Agrency Meeting and Proposed Eel Screen Design for Feedback

Hi Doug,

Thanks for your proposal. We discussed this and are generally in favor of trapping methods in lieu of night time observations and the Irish traps seem interesting. However, we think it would be helpful to discuss some of the constraints at the site during an onsite meeting. Could we look to get a date on the calendar for a site visit to continue this discussion? I can coordinate with Dave if you could send some dates that work for your staff, I am thinking April is a good timeframe.

Also, Julianne told me the review process of the eel screen design would begin after March 6th. We are hopeful to get feedback/approval on the screen design by mid-March so we can get a solution in place by the 2017 passage season.

Thanks,

Elise Anderson

Environmental and Regulatory Analyst

Essex Hydro

55 Union Street, 4th Floor

Boston, MA 02108

Tel: (617) 367-0032

Fax: (617) 367-3796

From: Smithwood, Doug [mailto:doug_smithwood@fws.gov]
Sent: Thursday, February 16, 2017 11:18 AM
To: Elise Anderson
Cc: Rosset, Julianne; Warner, John; Dave Sherman; Eric Truebe; Jon Truebe; Michael Bailey; Matt Carpenter

Subject: Re: Summary of 2/2 Agrency Meeting and Proposed Eel Screen Design for Feedback

Hi Elise,

Matt Carpenter has talked about upstream eels passage at your projects on the Contoocook River. Attached is a proposal that we would like your thoughts on. I question if night surveys will be effective because of the low eel density expected in the area. I would however like to work with you to do an electrofishing survey of the bypass reach during the passage season. This would help inform us if the operation (as presented in the proposal) is effective in attracting eels into the bypass reach. After we have had time to look at and discuss this proposal I would like us to meet on site in the early spring to go over the details. I would appreciate your (and Dave's) response to this proposal. In particular, I would like to know if it is expected that you will need to do a large release into the bypass reach because of flood events during the passage season.

Douglas A. Smithwood

Fishery Biologist

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Fax: (603) 595-0957

On Thu, Feb 16, 2017 at 10:10 AM, Elise Anderson <eanderson@essexhydro.com> wrote:

Thanks. I've added this to #3. Also attached are more detailed flow duration curves.

May we presume that the design is under review with USFWS and we will receive a formal response back after engineering review is completed? Any sense of timeline for this review?

Thank you.

Elise Anderson

From: Rosset, Julianne [mailto:julianne_rosset@fws.gov]
Sent: Thursday, February 16, 2017 9:50 AM
To: Elise Anderson
Cc: Warner, John; Dave Sherman; Eric Truebe; Jon Truebe; Doug Smithwood; Michael Bailey; Matt Carpenter

Subject: Re: Summary of 2/2 Agrency Meeting and Proposed Eel Screen Design for Feedback

Hi Elise,

Just writing to add additional comments regarding item # 3 (upstream passage: proposal to continue night time observations). While what is written is correct, we would like to note that Briar Hydro is responsible for the

upstream eel survey work, regardless of whether the NHFGD can help BRHA find a seasonal employee. Additionally, the Service recommends that BRHA work with Matt Carpenter and Doug Smithwood to come up with an appropriate upstream passage survey protocol, one that potentially incorporates temporary traps and/or creating attraction flows to facilitate the survey.

Thanks so much.

Kind regards,

Julianne

Julianne Rosset

USFWS New England Field Office

70 Commercial Street, Suite 300

Concord, NH 03301

603-227-6436

julianne_rosset@fws.gov

On Tue, Feb 14, 2017 at 4:34 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

Thanks John for reviewing.

Attached is a revised version of the summary with accepted changes.

Also attached are USGS monthly flow charts for the site for September-November. These charts have the 38 year median values shown as triangles.

We would have had to open the other gates (#1 and #2, which will be without an eel screen) (or spilled) during the last week of October, but the 38 year median values are less than the 800 cfs single screen expected flows allowed.

November gets closer to the median values approaching 800 cfs.

Elise

From: Warner, John [mailto:john_warner@fws.gov]
Sent: Monday, February 13, 2017 2:22 PM
To: Elise Anderson
Cc: Rosset, Julianne; Dave Sherman; Eric Truebe; Jon Truebe; Doug Smithwood; Michael Bailey; Matt Carpenter
Subject: Re: Summary of 2/2 Agrency Meeting and Proposed Eel Screen Design for Feedback

ok - Rule 1 - attach the attachment

On Mon, Feb 13, 2017 at 2:16 PM, Warner, John <john_warner@fws.gov> wrote:

Hii Elise - Thanks for the trap info and meeting summary. Attached is s track change version of the meeting notes with some comments that I think better reflect our discussions. -- jw

On Wed, Feb 8, 2017 at 12:24 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

Thanks again for taking the time to meet with us to discuss eel passage at Rolfe Canal/Penacook Upper and Penacook Lower last week.

Attached is a summary of what we discussed and our design proposal for the eel screen. Please review and let me know if you disagree with anything or if you find something missing you would like to add. Attached also is an electronic copy of the proposed design for your review.

We need to document that we are adequately complying with fish passage requirements to both NH DES and LIHI. For this reason, we kindly request to receive a response to this email stating that the items discussed represent satisfactory progress and continued improvement of eel passage at these hydro projects – if possible.

Best,

Elise

Rolfe Eel Screen: (Smithwood Comments)

1. How to evaluate capture efficiency given unknown baseline population of eel

   Comments: I don't think there is a need for a baseline or that we will ever have such a thing as a baseline. My thought is that you want to determine how many of the silver eels approaching the Rolfe Canal Project are being captured in the eel trap. One way to do this might be to capture eels in the trap, tag them (with PIT tags or telemetry tags) and release them several kilometers above the project. The number of tagged eels that are recaptured could give you some indication of the capture efficiency of the trap.

2. Rack vs perforated steel plate – issues with head loss over the screen
   a. What is Plan B for replacing the punch plate if debris loading becomes an issue.

   Comments: I asked out engineer about the open space difference between the punch plate from your plans and 3/4" spaced racks. There was not a significant difference in the amount of opens space between the two. I think that there is frequently a problem with head differential during this time of year because of leaf loading and that the condition is solved by frequent raking. Putting ¾" spaced trash racks in gate #1 or #2 or both might be a good plan B for both leaf loading and allowing the trap to be fishable over 800 cfs.

2. Clogging issues, manual cleaning necessary for traps and screens – frequency

   Comments: Deploying a well cleaned trap as late in the afternoon as possible and servicing the trap first thing in the morning might be the best answer.

4. Modifications to trapping boxes to address concerns:
   a. Funnels
   b. PVC pipe with one-way hinge to prevent exit
   c. Leaf loading causing injury to trapped eels
   d. Emptying the box daily

   Comments: I don't know if the changes will make it better and I worry that they might make things worse. The funnel seems like it would be much more likely to clog that the fins that you had on the original design. The rubber flap over the funnel might keep eels from going into the trap at all. It seems like the modifications in your new design could be implemented later if the original design doesn't work. Wouldn't this be a fairly easy retrofit? I do like the idea of having some PVC refugia pipes available for use. In our eel traps the eels are always in the pipes and not out in the open.

   Also, I liked the pivot point of the screen at the bottom of the ramp like it was in the original drawing. Won't the screen with the pivot near the middle just cause the bottom of the screen to load up during the day when it is in the nonfishing position? If so, I would think this would be very hard to clean. What happens if a tree comes through? How would you lower the screen out of the way to pass the tree?

5. Concern for the Potential for high flows above 800 cfs
    a. ¾" spaced trash racks in front of gates 1 & 2, is this feasible?
    b. Alternative for night time shut down when flows exceed 800 cfs?
    c. Angled boom to divert trash from the screen to the racks over gates 1&2

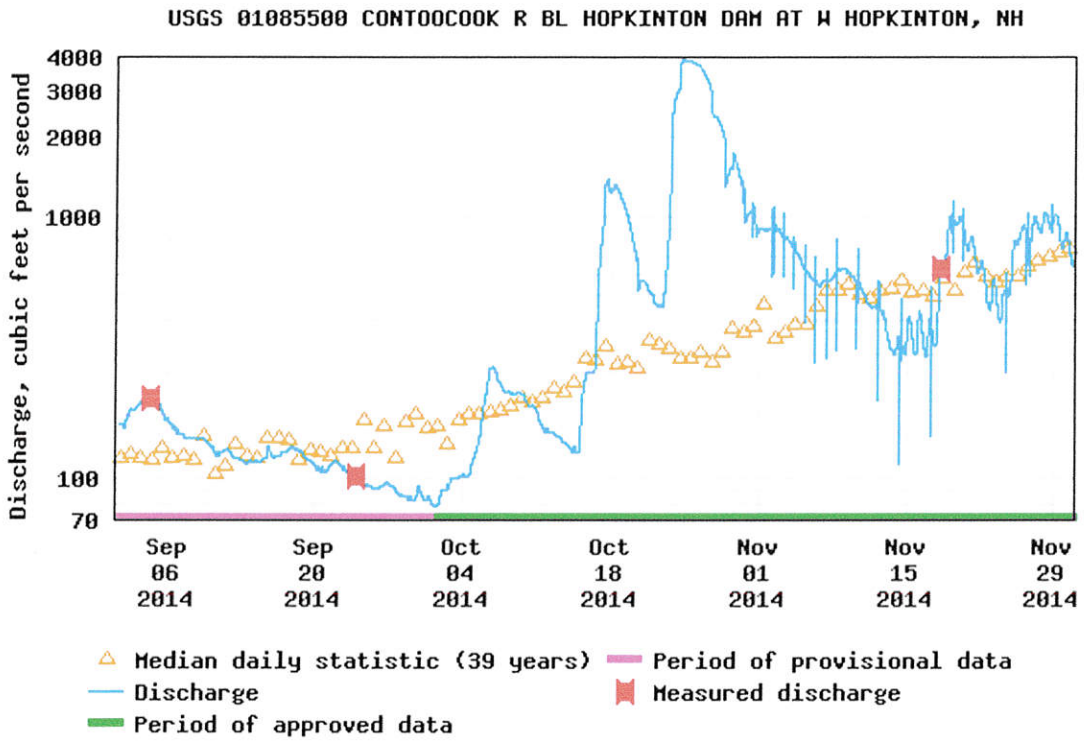
    Comments: The hydrographs below for the fall of 2014 and 2015 show that high flow events exceed the 800 cfs capacity of the eel trap frequently. These high flow events are when I think silver eels are most likely to outmigrate. I think it is important to make the trap fishable above 800 cfs. It seems to me that putting in 3/4" trashracks in one or both of the unused gates might be an easy solution. If you did decide to shutdown during the high flow events I think you would need to shutdown all three of your projects until there was no more spill over the dam (below 800 cfs). If you put in trashracks in one or both of the open gates you could wait to see if an angled boom is necessary to stop excessive debris loading in the eel trap.

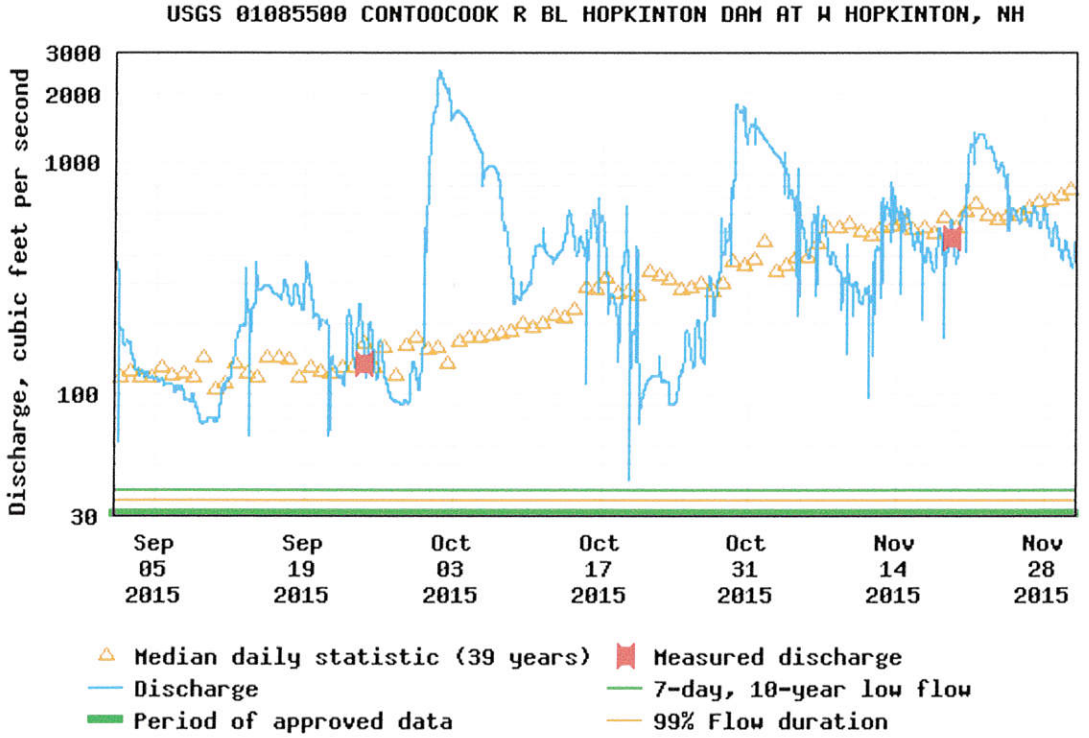
6. Any potential issues with guidance efficiencies with the current angle of the screen as proposed

Comments: I think the trap has good potential to catch eels as long as the screens are installed tight and have no voids. If there are voids, the eels will find them!

7. Timing of trap operations – suspending operation October 15 vs November 15th, freezing?

Comments: For the first year or two, when we do not have any information on the passage season, I would like the trap to be operated as late as possible. Silver eels typically stop moving when the water temp gets below 4 degrees C., which I would assume would occur at the earliest in the beginning of November.


USGS 01085500 CONTOOCOOK R BL HOPKINTON DAM AT W HOPKINTON, NH
Discharge, cubic feet per second
4000
3000
2000
1000
100
70
Sep 06 2014
Sep 20 2014
Oct 04 2014
Oct 18 2014
Nov 01 2014
Nov 15 2014
Nov 29 2014
Median daily statistic (39 years)
Discharge
Period of approved data
Period of provisional data
Measured discharge


USGS 01085500 CONTOOCOOK R BL HOPKINTON DAM AT W HOPKINTON, NH
Discharge, cubic feet per second
3000
2000
1000
100
30
Sep 05 2015
Sep 19 2015
Oct 03 2015
Oct 17 2015
Oct 31 2015
Nov 14 2015
Nov 28 2015
Median daily statistic (39 years)
Discharge
Period of approved data
Measured discharge
7-day, 10-year low flow
99% Flow duration

Elise Anderson

From: Smithwood, Doug
Sent: Tuesday, May 16, 2017 6:14 PM
To: Elise Anderson
Cc: Warner, John; Jon Truebe; Dave Sherman; Rosset, Julianne; Michael Bailey; Matt Carpenter; Bryan Sojkowski; Andrew Locke; Eric Truebe; Alexander Haro
Subject: Re: Eel Screen Design - Rolfe Canal/Penacook Falls

Hi Elise,
Could not open the 3 d view either. Have a few questions that I hope you can answer.

1. It seems that the actual capture chamber part of the trap is 1 foot deep, 2 feet wide and 2.5 feet long. It this enough space to hold eels? Is there any flow into the capture chamber to both attract eels into it and provide some fresh flow?
2. What are the constraints that preclude a screen/trash rack from being put in bays one or two or both? Don't think median flow is what we want to look at. Think we want to look at peak flows and how often peak flows will surpass the 800 cfs level especially after rain events when eels are more likely to migrate.
3. If we did go into shutdown mode during high flows, I think it should be all three projects. What would be the passage route be during a shutdown? Would eels have a safe route? plunge pools?
4. Is there any alternative to not being able to fish the trap during flows above 800 cfs? For example, if there was 1000 cfs, could we spill 200 cfs over the crest of the dam where eels are not likely to go and still fish the trap with 800 cfs? The dominant flow would still be into the trap.
5. It is my experience that water temperature much more than time of year is a better indicator of the end of the fall eel migration. When water temperature gets below 10 C it seems like silver eels stop moving. I would not want ice damage to occur to this important trap when the likelihood of catching eels if very low. Would like others thoughts.
6. I think we need plan on being present during the evenings after a big rain event in September and early October to evaluate the traps performance and make sure that eels are safe in the capture chamber. Would not want a situation where we find dead eels in the morning from a situation that we could have corrected if we where there during the evening.

Elise, I hope I don't always seem critical of your, John and Eric's design. I am very excited about the possibilities for this trap.

Douglas A. Smithwood
Fishery Biologist
Central New England Fish and Wildlife Conservation Office
U.S. Fish and Wildlife Service
151 Broad Street
Nashua, New Hampshire 03063
Telephone: (603) 595-1371
Cell: (603) 897-9620
Fax: (603) 595-0957

On Tue, May 16, 2017 at 2:04 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

Hi John-

I am able to open it, so I believe the file is working.

Is there a yellow bar that appears at the top of the .pdf when you open it, requesting you to enable permissions? Mine says "*3D content has been disabled. Enable this feature if you trust this document*" – and you can select "options", trust document "one time only" or "forever". Once I do this, I am able to view the 3d features (takes a few seconds to load). If that doesn't work, maybe it could be the version of Adobe you are using. I am using Adobe Acrobat reader DC 2017 version.

Let me know if you still have issues – or anyone else too?

From: Elise Anderson [mailto:eanderson@essexhydro.com]
Sent: Tuesday, May 16, 2017 10:54 AM
To: 'Warner, John'; 'Jon Truebe (jtruebe@lakesideengineering.net)'; Dave Sherman; 'Rosset, Julianne'; 'Doug Smithwood'; 'Michael Bailey'; 'Matt Carpenter'; 'Bryan Sojkowski'
Cc: Andrew Locke; 'Eric Truebe'
Subject: Eel Screen Design - Rolfe Canal/Penacook Falls

Hi Everyone,

Attached for your review is the latest redesign of the downstream eel screen for Rolfe Canal. Also attached is a 3D PDF of the arrangement with a basic animation that will hopefully help clarify some of the operations when viewed in addition to the drawings. (Note that the 3D PDF can be zoomed / panned with the mouse.)

The main change from the previous version is the separation of the entire trap box and transition from the main screen. Although there is not a trap entrance in line with the majority of the river flow, we feel that there will be flow entering the trap and eels will search along the downstream edge of the screen to find the entrance. This allows our operators to tend the trap by bringing the trap box up on rails up to a platform, without bringing the entire screen up. A much steeper angle on the screen is now gained when backflushing, and the seal between the trap box and screen is easier and more reliable. The trap box is no longer subject to submergence.

Another change is the addition of a top, vertical screen projecting up from the downstream edge of the main screen. We had a concern that eels would climb up and over the top edge of the screen in the original design. This new screen has the ability to hinge down and flush debris accumulated behind the top screen. This is much faster than backflushing the main screen, reducing non-fishing time. The top edge of the top screen would be maintained at 12" above the water surface. The main screen can still tilt to backflush debris as well.

Using the top screen, there is more of the main screen underwater since it does not have to extend above the surface.

The trap box is similar to the previous design, except with the funnel opening directly to the screen. Access to the funnel and trap box is now much better to clean debris and remove eels. There is a winch to raise the trap box up along the rails. The rails are now vertical, and a platform is incorporated to reduce impact on bridge traffic.

In response to Brian's questions, the screen will not be overtopped. The new design does not have a cutout in the screen, but the eels enter the trap off the top of the screen. The rubber flap end fitting is to prevent the eels from reentering the funnel, taken from the Olle Calles trap design. The screen will not be closed off when the trap is lifted. However, the trap will be tended during the day when eels are not migrating.

I see two concerns brought forth by agency staff that still need further discussion/resolution.

1. Current design of the silver eel trap can accommodate 800 cfs with no clogging. Will need a mutually agreeable plan for the times during migration season that we may need to open the other gates (which will be without an eel screen) (or spill) due to flows exceeding the capacity of 800 cfs. We showed flow duration curves that estimates median values exceeding this during the last week of October and first two weeks of November. Doug Smithwood has suggested the placement of ¾" trash racks in front of the other gates during these time periods. We do not feel this solution will work due to site and operational constraints. We would like your feedback on a proposal to shut down after rain events for the last week of October and November 1-15, or when flows exceed 800 cfs.

2. Upstream Eel Surveys and Eel Passage: Need to have a site visit with agency staff to scout appropriate locations for upstream eel traps, possibly Irish traps as proposed by Doug Smithwood (USFWS's proposal attached). Need to schedule this visit once high flows subside at the site for better visibility.

I also understand that we have concerns with freezing and operating the screen when the water temperature drops during the first two weeks of November. Would it be possible to explore a temperature threshold to discontinue operation of the screen, and perhaps shut down following rain events if concern for screen freezing is credible? Just raising this for discussion, open to ideas.

Please send any additional comments/concerns or items I may have missed. Unless there are objections, we will move forward with a plan for construction as soon as possible.

Thanks,

Elise Anderson

(617) 367-0032

From: Warner, John [mailto:john_warner@fws.gov]

Sent: Thursday, April 20, 2017 10:54 AM
To: Elise Anderson; Jon Truebe (jtruebe@lakesideengineering.net); Dave Sherman; Rosset, Julianne; Doug Smithwood; Michael Bailey; Matt Carpenter; Bryan Sojkowski
Subject: Fwd: Draft Agenda for Meeting on April 11th at Rolfe/Penacook Falls

Elise/Jon/Dave

Note comments below from Bryan - I think some of these have been raised previously and some may be as Bryan said, his unfamiliarity with the setup - but I am sending this now rather than trying to sort that all out in order to get you the issues Bryan raised ASAP so that can be addressed, clarified, etc in the next round of drawings - JW

---------- Forwarded message ----------
From: **Sojkowski, Bryan** <bryan_sojkowski@fws.gov>
Date: Thu, Apr 20, 2017 at 9:29 AM
Subject: Re: Draft Agenda for Meeting on April 11th at Rolfe/Penacook Falls
To: "Warner, John" <john_warner@fws.gov>

Hey John,

See below for comments (I apologize if they have already been addressed between the group)

1. The plans show 4 bays. Will eels entering either bay be guided to the trap? I'm not familiar enough with the site to have a good idea of how the eels will move between bays.

2. There is a note that states, "Trap system copied both sides of screen". Again, this question is due to my ignorance of the site but is the note alluding to the fact that there will be 2 traps? When they say both sides of screen, what is the screen?

3. I like the inclined rack but it doesn't show details as to how the eels will transition from the face of the rack into the chamber. I'm assuming a cutout in the rack but what size?

4. The drawings don't show the design range of headpond elevations. Will the racks ever be overtopped or is that controlled?

5. I'm assuming when the eel trap is lifted that the chamber between the trap and the rack (triangular cross-section) will be closed somehow? If not, will eels have access through the rack with no trap?

6. Sheet 2 shows a "rubber flap end fitting". Is this attached to the exit of the pipe to prevent eels from exiting the trap?

7. Dimensions aren't shown so I can't tell how big the chamber is...is there an estimate for how many eels could fit in the trap?

That's it for now, I'll continue looking at it but overall I like the idea.

On Fri, Apr 7, 2017 at 7:24 AM, Warner, John <john_warner@fws.gov> wrote:

Hi Elise - I will try to get feedback from Alex and Bryan and will convey the Service's comments and/or concurrence to move forward as soon as I can get that - jw

On Thu, Apr 6, 2017 at 3:55 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

Thanks John.

Since we are no longer meeting on the 11th, would it be possible to get an official go ahead to proceed with functional design drawings based on the revised design attached. It seems from what you are saying, that would mean Alex and Bryan would need to review this revision.

I reviewed Doug's comments and we appreciate them, but he cautions that they are not official so I want to be sure we are following the correct directives for any changes that need to be made before we move into functional design drawings. Mostly that applies to the structure of the trap and which design you would prefer (v1 that we reviewed with you in person or v2, here, based on the Ollie Calles photos)

Thanks-

Elise

From: Warner, John [mailto:john_warner@fws.gov]
Sent: Thursday, April 06, 2017 7:28 AM
To: Elise Anderson
Cc: Smithwood, Doug; Rosset, Julianne; Eric Truebe; Michael Bailey; Jon Truebe; Carpenter, Matthew; Dave Sherman; lake; Geoff Gutt; William Heinz; Bryan Sojkowski
Subject: Re: Draft Agenda for Meeting on April 11th at Rolfe/Penacook Falls

Yes - I was thinking about this again - we should probably have Alex and Bryan look at the plans before we meet with John and Eric on the trap - I suggest you revert to what Doug said, which is to focus on the upstream eel trapping for that meeting and try to schedule a second meeting if in fact a meeting is needed - JW

On Wed, Apr 5, 2017 at 2:58 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

Ok, if you would prefer we could limit the 11th meeting to cover upstream passage.

Is it possible that the service can review the proposed changes to the downstream screen and we could have a call to discuss any issues with the changes at a more convenient time?

Elise

From: Smithwood, Doug [mailto:doug_smithwood@fws.gov]
Sent: Wednesday, April 05, 2017 2:55 PM
To: Elise Anderson
Cc: Rosset, Julianne; Eric Truebe; Warner, John; Michael Bailey; Jon Truebe; Carpenter, Matthew; Dave Sherman; lake; Geoff Gutt; William Heinz; Bryan Sojkowski
Subject: Re: Draft Agenda for Meeting on April 11th at Rolfe/Penacook Falls

Hi Elisa, I was under the impression that this site visit was just to discuss upstream passage and it was mostly important for Matt, Julianne and myself to be there . I worry that some of the folks that should be part of the silver eel trap discussion, including our engineer Bryan Sojkowski, might not be at the meeting.

Doug

Douglas A. Smithwood

Fishery Biologist

Central New England Fish and Wildlife Conservation Office

U.S. Fish and Wildlife Service

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Telephone: (603) 595-1371

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Fax: (603) 595-0957

On Wed, Apr 5, 2017 at 12:57 PM, Elise Anderson <eanderson@essexhydro.com> wrote:

Hi All,

Here is an agenda of the items we would like to discuss next week. Please let me know if you would like to add anything.

Also attached is a revised design and summary of the changes made by Lakeside Engineering.

Thank you,

Elise Anderson

Agenda for 4/11/17 Onsite Meeting

9-9:30 am: Island Road, Rolfe Canal Gates – Intersection of River Road and Island Road – (See map below)

9:30-10:30 am: Meet at 369 Village St, Penacook NH

Proposal for Upstream Eel passage:

1. Visit site and determine locations for upstream traps

2. Recommendation for electrofishing in the bypass reach – logistics of this proposal

3. Discuss proposal to replace CT Traps with 2 Irish Elver traps with Enkamat substrate in the bypass channel of Lower Falls (June-September)

    a. Attraction flow of 10-35 cfs into the bypass channel to create wetted migratory corridor

    b. Captured eels will be released above the Rolfe Canal project – frequency?

Rolfe Eel Screen:

1. How to evaluate capture efficiency given unknown baseline population of eel

2. Rack vs perforated steel plate – issues with head loss over the screen

    a. What is Plan B for replacing the punch plate if debris loading becomes an issue

3. Clogging issues, manual cleaning necessary for traps and screens – frequency

4. Modifications to trapping boxes to address concerns:

a. Funnels

b. PVC pipe with one-way hinge to prevent exit

c. Leaf loading causing injury to trapped eels

d. Emptying the box daily

5. Concern for the Potential for high flows above 800 cfs

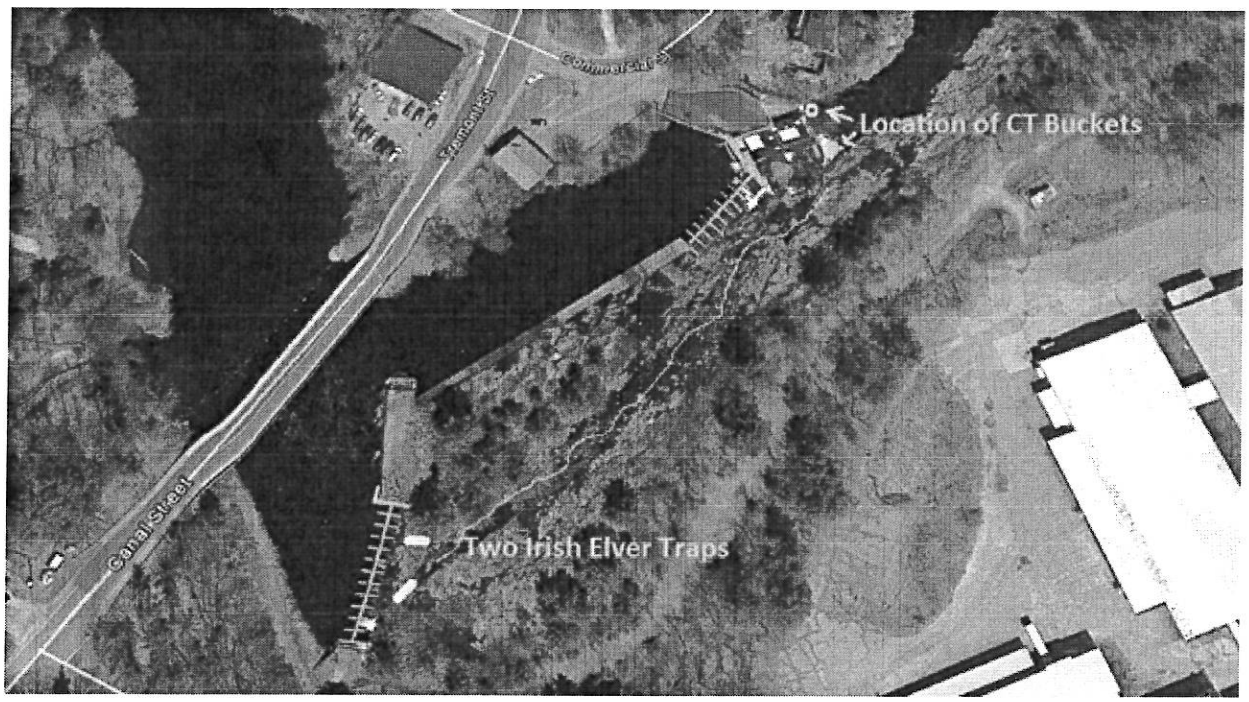
a. ¾" spaced trash racks in front of gates 1 & 2, is this feasible?

b. Alternative for night time shut down when flows exceed 800 cfs?

c. Angled boom to divert trash from the screen to the racks over gates 1&2

6. Any potential issues with guidance efficiencies with the current angle of the screen as proposed

7. Timing of screen operations – suspending operation October 15 vs November 15th, freezing?



From: Eric Truebe [mailto:etruebe@lakesideengineering.net]
Sent: Tuesday, April 04, 2017 12:46 PM
To: Elise Anderson; Dave Sherman; Jon Truebe
Subject: Rolfe Canal Eel Screen Revised

Hi Elise and Dave,

We've reworked the Rolfe Canal eel trap to try to mitigate some of the concerns raised in the agency comments.

Primarily, we moved the pivot point from the (upstream) base of the screen to a center point. This way, when the back is lowered, there is backflushing of the top of the screen, where the majority of debris should be. This could be augmented by an air burst system to help dislodge debris if necessary.

The trap is modeled after the one done by Olle Calles, since we know that was effective. The bottom of the trap did have to be mitered to enable the screen to swing down further.

The question of punched plate vs. bars for the screen is arguable either way. The major benefit of the punched plate is that it is dimensionally stable and will not open up like bar rack when large debris is wedged between the bars. But the bars may allow the debris to sweep along it more effectively, with less head loss.

It may be worth it to automate the screen cleaning such that the downstream end is lowered and debris is backflushed when the headloss gets to a certain point across the screen. This would increase hours of screen operation.

Let me know if you have question / changes you want made. If you feel comfortable with this, you may want to send it out to the agencies so they can review it before the meeting next week.

Thanks,

Eric

--

Eric Truebe

Lakeside Engineering, Inc.

4 Tuftonboro Neck Rd.

Mirror Lake, NH 03853

Office: (603) 569-1930

Cell: (603) 315-5786

Email: etruebe@lakesideengineering.net

Appendix 4-4 Preliminary Design of Downstream Eel Passage

4 3 2 1

B

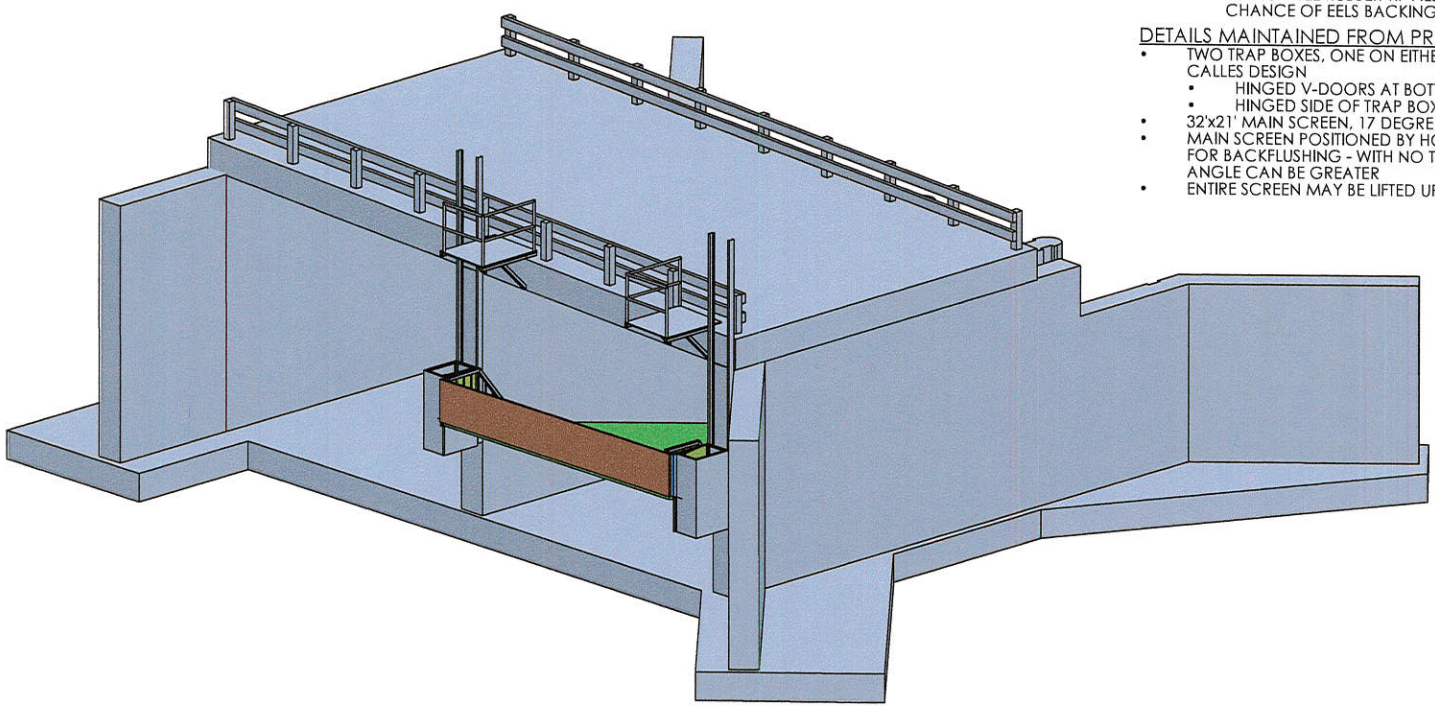
A

CHANGES FROM PREVIOUS DESIGN

- WALKWAY REMOVED - REPLACED WITH TWO ACCESS PLATFORMS
- TRAP BOX SEPARATES FROM THE SCREEN
  - LOWER LIP OF BOX ENTRANCE SETS ON SCREEN EDGE WHEN TRAPPING
  - WINCH RAISES TRAP BOX ON RAILS TO BRIDGE DECK FOR TENDING
- AIR CYLINDER TIPS TOP SCREEN TO FLUSH DEBRIS
- FRONT EDGE OF MAIN SCREEN IS SET IN RAILS TO MAINTAIN POSITION
- CONCENTRATOR PANEL LEADS ALONG FLOW AND ANGLED INTO TRAP
  - ADJUSTABLE RUBBER TIP ALLOWS SMALL SLOT TO LESSEN CHANCE OF EELS BACKING OUT OF TRAP

DETAILS MAINTAINED FROM PREVIOUS DESIGN

- TWO TRAP BOXES, ONE ON EITHER SIDE OF SCREEN, BASED ON OLLE CALLES DESIGN
  - HINGED V-DOORS AT BOTTOM OF TRAP FOR EELS REFUGE
  - HINGED SIDE OF TRAP BOX FOR TENDING
- 32'x21' MAIN SCREEN, 17 DEGREE ANGLE
- MAIN SCREEN POSITIONED BY HOISTS TO ALLOW RAISING UPSTREAM END FOR BACKFLUSHING - WITH NO TRAP ATTACHED TO THE SCREEN, THE TILT ANGLE CAN BE GREATER
- ENTIRE SCREEN MAY BE LIFTED UP UNDER BRIDGE DECK



ISOMETRIC VIEW OF BRIDGE WITH EEL SCREEN FISHING

REVISIONS
1 TRAP ENTRANCE MODIFIED
2
3
4

LAKESIDE ENGINEERING, INC.
MIRROR LAKE, NH 03853

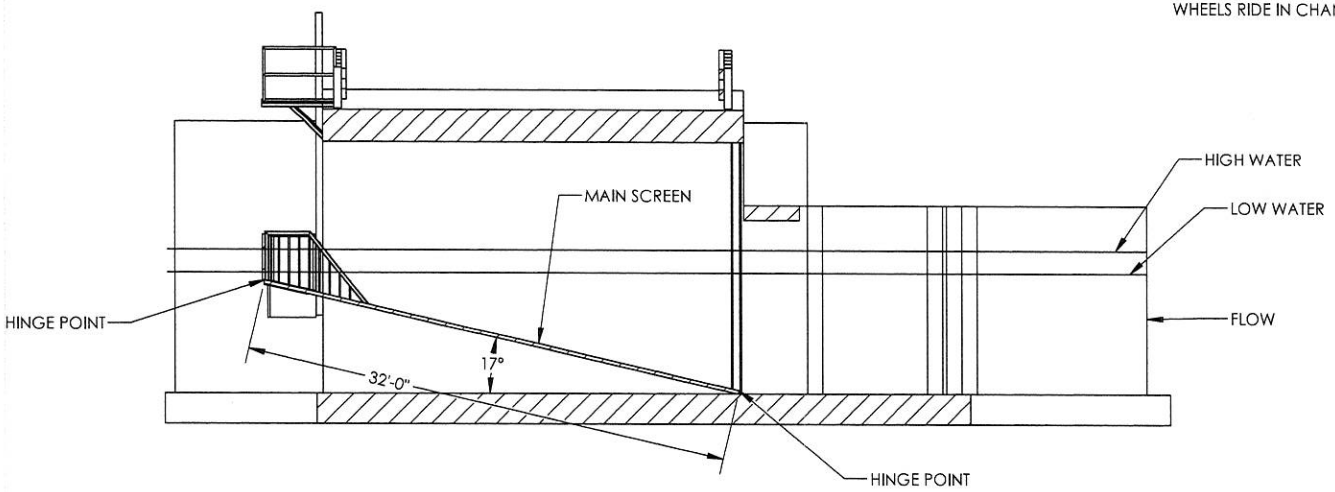
EEL SCREEN OVERVIEW

ESSEX HYDRO
ROLFE CANAL DOWNSTREAM EEL SCREEN

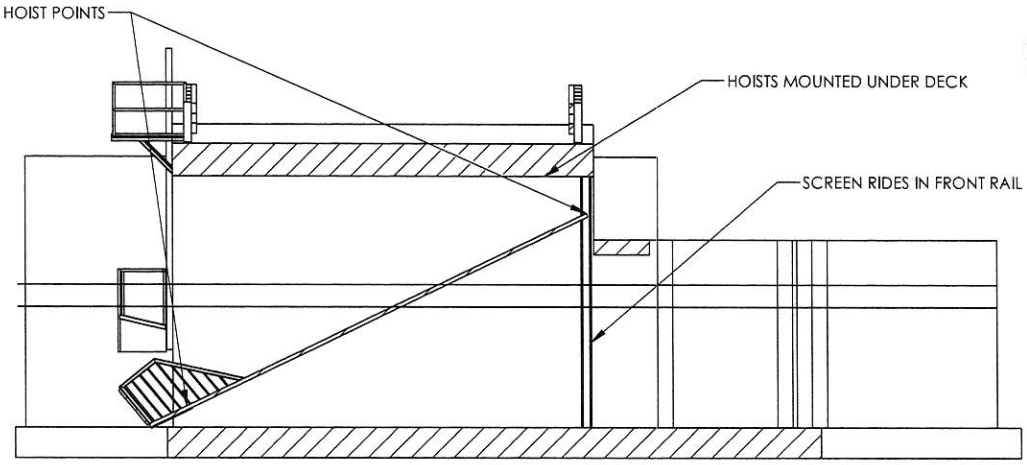
PLOT SIZE: 11x17 PLOT SCALE: SCALE
PLOT DATE: 5/23/2017

SHEET 1 OF 4

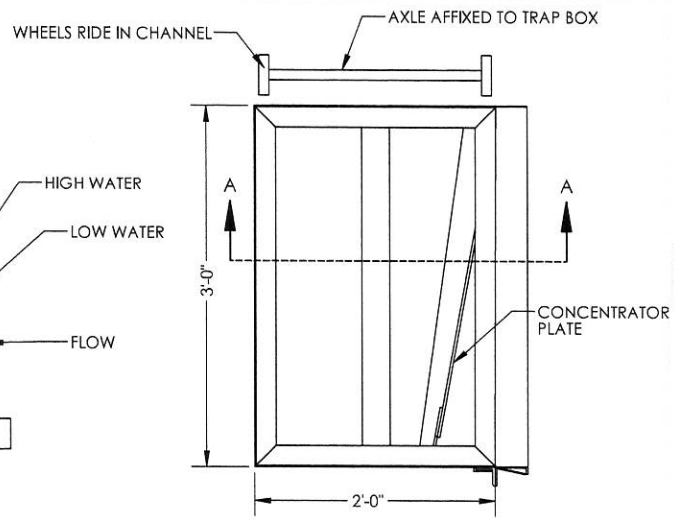
4 3 2 1



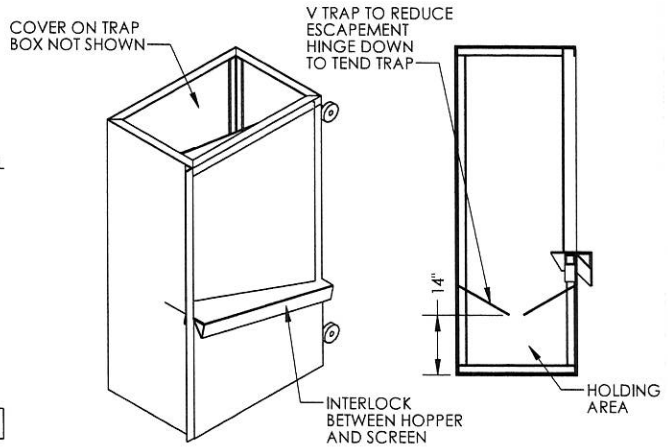
SECTION THROUGH SCREEN - FISHING



SECTION THROUGH SCREEN - BACKFLUSHING



TRAP BOX PLAN VIEW



PERSPECTIVE VIEW

SECTION A-A
SCALE 1 : 24

TRAP BOX DETAILS
BASED ON OLLE CALLES DESIGN

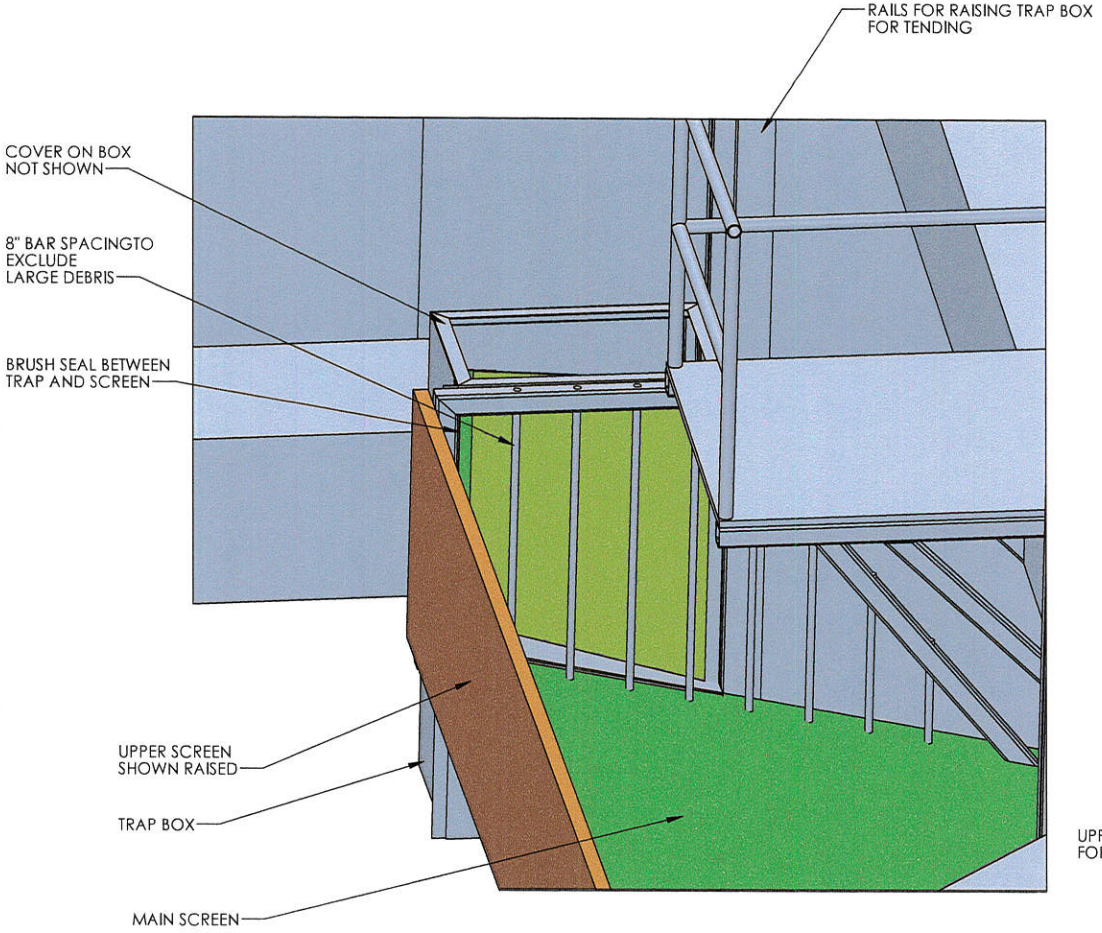
REVISIONS
1 TRAP ENTRANCE MODIFIED
2
3
4

LAKESIDE ENGINEERING, INC.
MIRROR LAKE, NH 03853

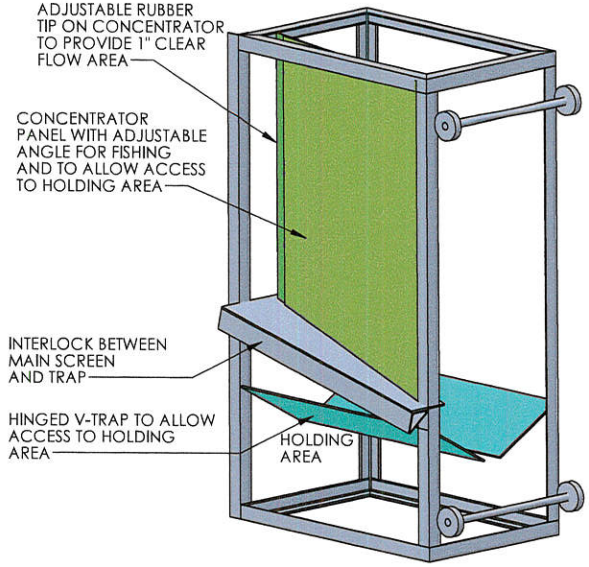
SECTIONS THROUGH SCREEN

ESSEX HYDRO
ROLFE CANAL DOWNSTREAM EEL SCREEN
PLOT SIZE: 11x17 PLOT SCALE: SCALE
PLOT DATE:5/23/2017

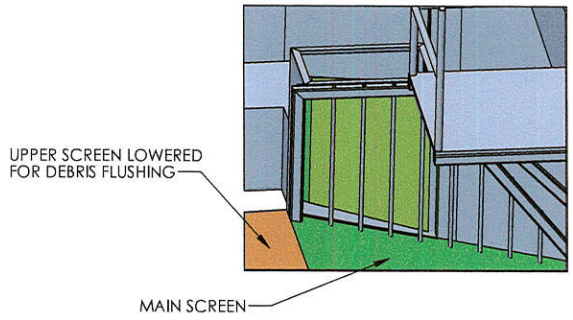
SHEET 2 OF 4



TRAP AREA ISOMETRIC NO WATER LEVEL SHOWN



TRAP WITH PUNCHED PLATE SIDES/ COVER NOT SHOWN



TRAP AREA ISOMETRIC WITH UPPER SCREEN LOWERED

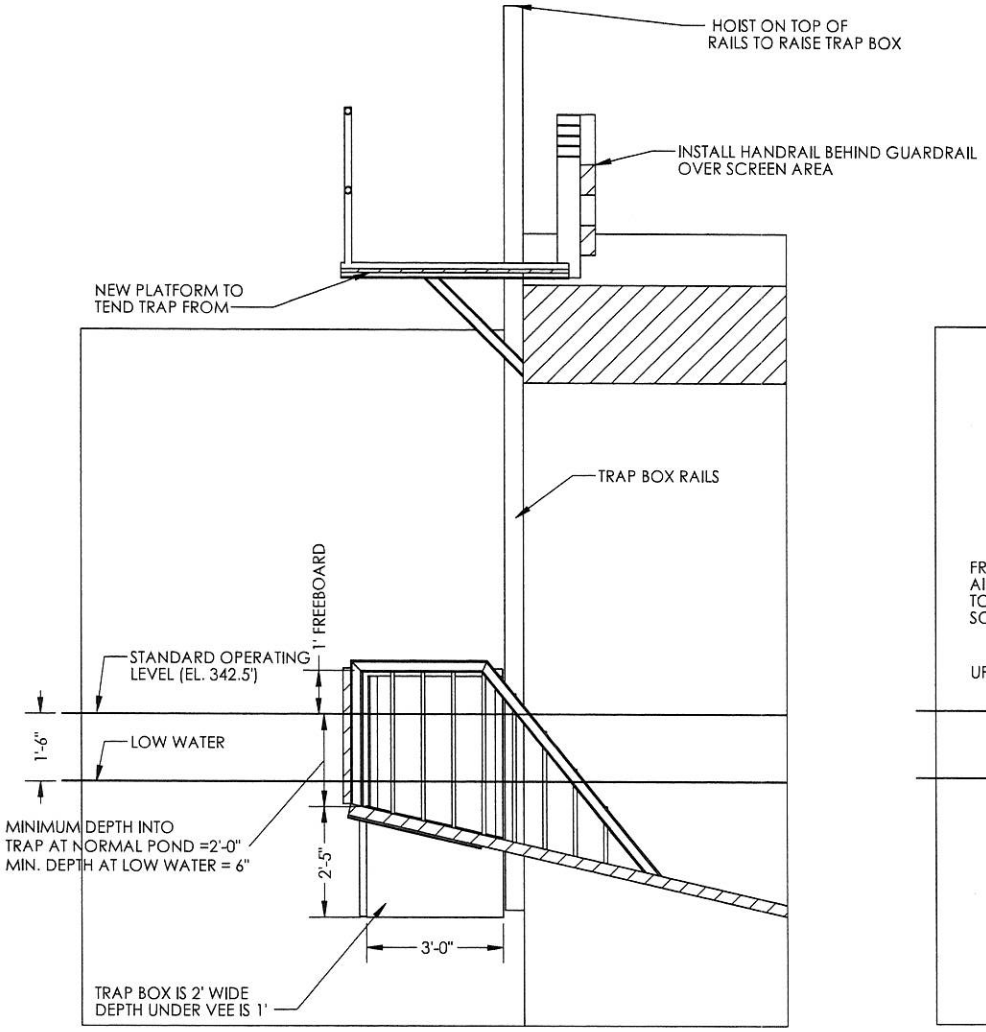
REVISIONS
1 TRAP ENTRANCE MODIFIED
2
3
4

LAKESIDE ENGINEERING, INC.
MIRROR LAKE, NH 03853

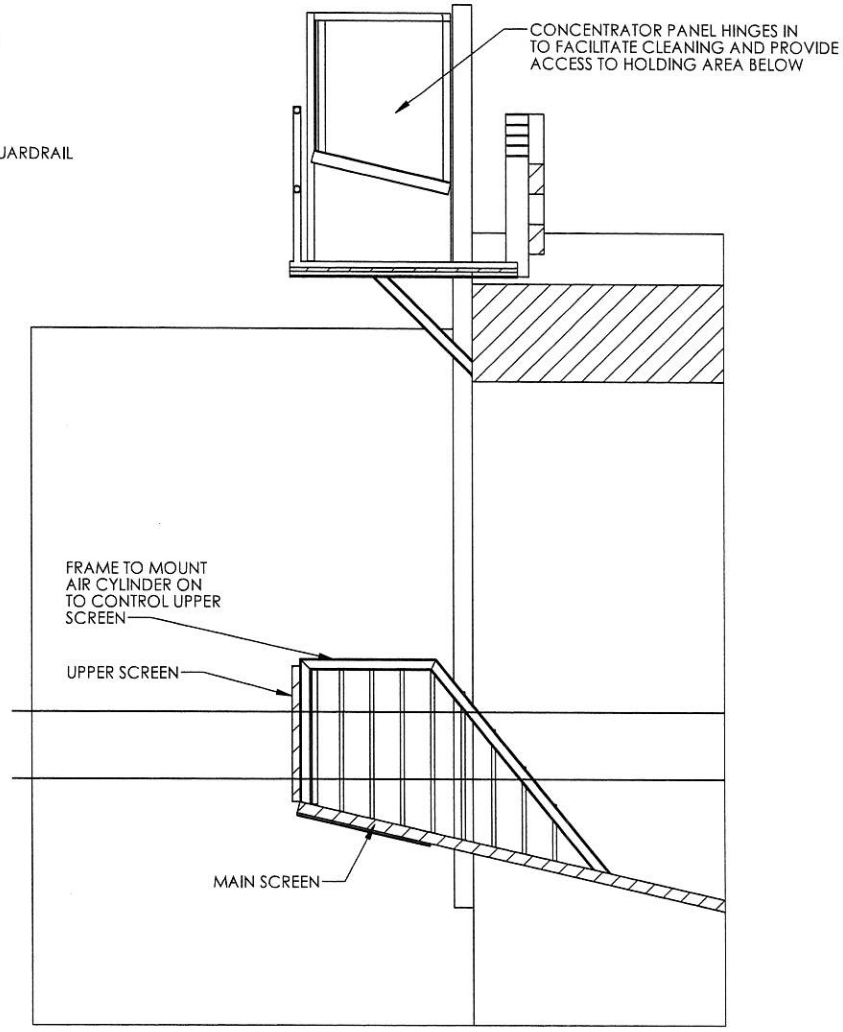
TRAP - SCREEN INTERACTION

ESSEX HYDRO
ROLFE CANAL DOWNSTREAM EEL SCREEN
PLOT SIZE: 11x17 PLOT SCALE: SCALE
PLOT DATE:5/23/2017

SHEET 3 OF 4



SECTION THROUGH SCREEN - FISHING



SECTION THROUGH SCREEN - TENDING

REVISIONS
1 TRAP ENTRANCE MODIFIED
2
3
4

LAKESIDE ENGINEERING, INC.
MIRROR LAKE, NH 03853

TRAP OPERATION / TENDING

ESSEX HYDRO

ROLFE CANAL DOWNSTREAM EEL SCREEN

PLOT SIZE: 11x17 PLOT SCALE: SCALE
PLOT DATE:5/23/2017

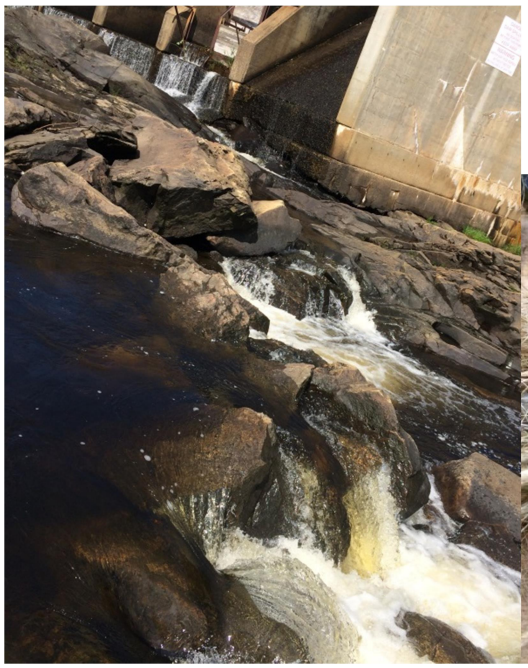
SHEET 4 OF 4

Appendix 4-5 – Report from USFWS Site Visit re: Upstream Eel Passage Studies

Update of upstream eel studies at the Penacook Lower Falls project.

Summary: Eels have so many means of passage at the Lower Falls project that I feel any eels entering the bypass reach will easily pass using existing means and are very unlikely to go into either of the two sampling Irish Elver traps at the site. **However, passage at the Upper Falls project represents a significant barrier to passage.** It is recommended that upstream passage focus on the Upper Falls Project. Eels captured here (Upper Falls) could then be transported above the Rolfe Canal Project as was originally planned for those captured at Lower Falls.

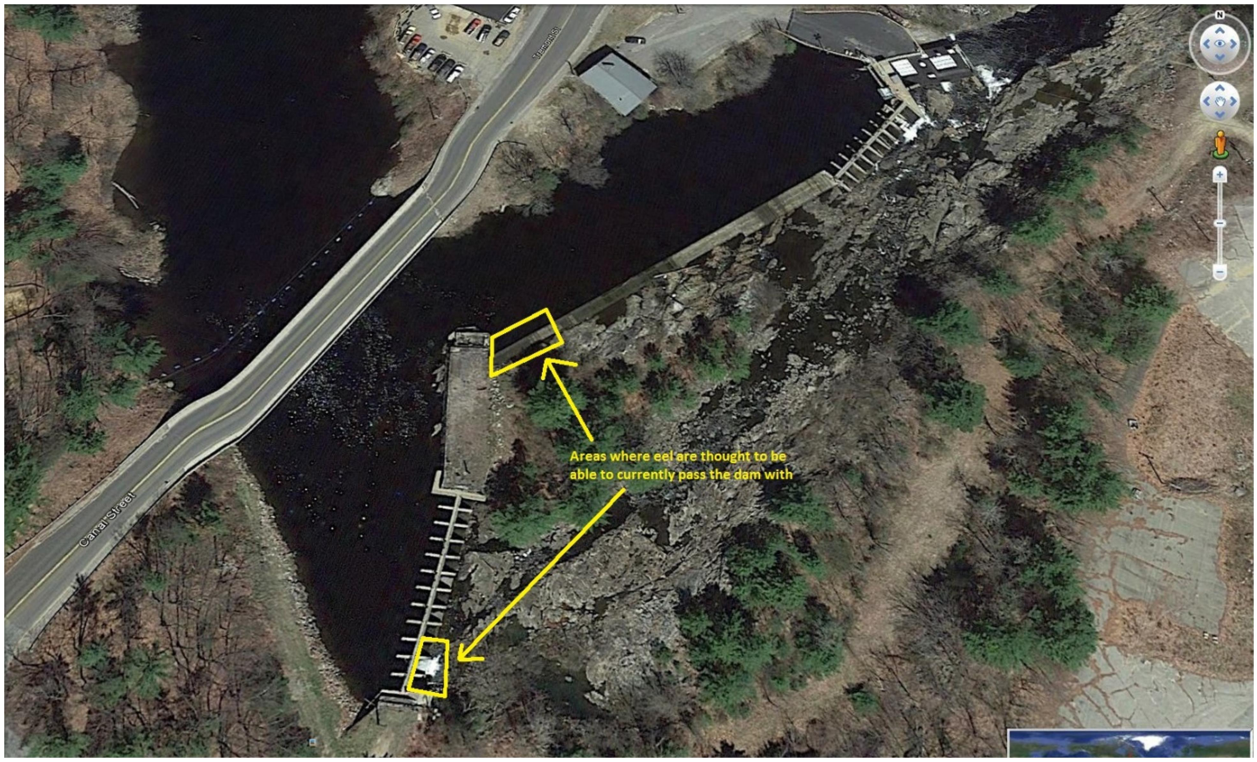
A site visit was conducted at this project on August 7, 2017 with Doug Smithwood (USFWS) and DJ Wyatt (Essex Hydro) in attendance. The primary purpose of this site visit was to test a combination rope/chain climbing matrix for assist eels in ascending three ledge areas at the base of the bypass reach.



Lowermost Ledge/Fall at Penacook Lower Falls

Chain/Rope Climbing Matrix

Climbing Matrix Installed at Small Ledge



Existing Areas of Eel Passage

2.5 inches of rain had fallen overnight causing 6 inches of spill over the powerhouse dam. This washed away the Irish Elver trap that was located at this site. The trap was recovered downstream. I told DJ that I did not think it was of value to reinstall this trap and said that I would like to focus on improving passage at the ledge area and focus on trapping eels at Upper Fall and not Lower Falls.

He will be contacting Dave Sherman to discuss purchasing 50 feet of chain needed to construct a climbing matrix for the most severe ledge at Lower Falls. This chain would be inlaid with manila and synthetic rope to test the durability of each rope type. If approved, the staff at Central New England FWCO would construct the matrix using the materials provided by Essex Hydro.

In addition: a site visit was also performed at the Upper Fall Site and several possible sites were proposed for the installation of an eel trap at this location. If approved, Doug Smithwood offered the use of one of their Irish Elver traps because this trap can be serviced by using a rope to raise the capture pail to the upper railing without having to go down to the trap itself to retrieve eels (which would be the case using their trap).

BRIAR HYDRO ASSOCIATES
c/o ESSEX HYDRO ASSOCIATES, L.L.C.
55 UNION STREET, 4TH FLOOR
BOSTON, MA 02108

TELEPHONE: 617-367-0032
FAX: 617-367-3796

December 20, 2016

Ms. Dana Hall, Deputy Director
Low Impact Hydropower Institute
PO Box 194
Harrington Park, New Jersey 07640

Dear Ms. Hall,

In conjunction with the filing of the Annual Compliance Statement for 2015 and 2016, I am providing this update on the status of the Rolfe Canal Project (the "Project") LIHI conditions. Please note, that in working with USFWS, NHDES and NHDFG, Briar Hydro Associates ("Briar") has been told that NHDES and NHDFG will follow the lead of USFWS in reviewing and approving the LIHI conditions. As such, following the Project's LIHI certification, Briar has focused on seeking USFWS approval of the Project's various conditions.

Condition 1: Briar has and continues to operate the Project in a run-of-river mode with no utilization of impoundment storage.

Condition 2: Briar increased the minimum flow released at York Dam to 100 cfs effective with the receipt of the LIHI certification in 2012. USFWS observed the 100 cfs in 2014 and verbally approved of the flows being protective of fish. Calculations were provided to USFWS to document the 100 cfs flow at the York dam and the 5 cfs flow at the Project intake. USFWS has not yet provided written approval of the site visit.

In early 2015 Briar's review of the bypass flow calculations at the York Dam revealed 150 cfs was being passed over the dam. Briar met with USFWS on July 14, 2015 and updated USFWS of the new information. At that time both parties agreed to schedule a site visit to view the flows at 100 cfs (based on the new calculations). Briar has attempted multiple times since that meeting to schedule a site visit, but USFWS has not been available. Briar plans to meet with USFWS to discuss eel passage measures in early 2017 and at that time will inquire further about the possibility of a site visit to view the flows and provide written concurrence. The project continues to bypass 150 cfs over the York Dam and 5 cfs at the Project intake.

Condition 3: Briar has developed a flow monitoring and record keeping plan to demonstrate compliance with run-of-river operations and maintenance of the prescribed minimum flows. Staff gages have been installed directly below the York Dam; however, USFWS has yet to visit the site (see Condition 2 summary) to approve of the gages and the overall flow-monitoring plan.

Pending USFWS approval, Briar has not filed a plan with FERC to date.

Condition 4: Briar met with USFWS July 14, 2015 to review an eel-monitoring plan and to discuss effective interim and permanent downstream and upstream passage for American eel (see attached email summary of this meeting). At that time, it was agreed to monitor the current eel population before determining a permanent passage solution (see attached "2015 Eel Passage Proposal").

The goal of this plan is to establish the approximate size of the eel population traveling downstream through the Rolfe project and traveling upstream from the Penacook Lower Falls ("PLF") project. The plan focuses on upstream passage at the PLF project and not Rolfe based on the fact that the eels must first pass the PLF project before passing Rolfe. Briar plans on reviewing the results of the monitoring program to date and discussing proposed permanent downstream and upstream passage measures with USFWS in early 2017.

Condition 5: Briar has not received any agency requests for upstream or downstream fish passage.

Condition 6: Briar has made no major physical or operational changes at the Project following its LIHI certification. Therefore, Briar has no reason to believe its activities have had any adverse effect on long leaved pondweed; as such, Briar has not consulted with the N.H. Natural Heritage Bureau.

Should you have any questions following the review of this letter please feel free to contact me by email (alocke@essexhydro.com) or phone (617-367-0032).

Sincerely,

BRIAR HYDRO ASSOCIATES

By: Essex Hydro Associates, L.L.C.
General Partner

Andrew Locke
President

cc: Mike Sale, Technical Advisor
Shannon Ames, Executive Director

Enc. 2015 Eel Passage Proposal & Email Summary of Meeting with USFWS

Elise Anderson

From: Andrew Locke
Sent: Thursday, November 10, 2016 3:16 PM
To: Elise Anderson
Subject: FW: Essex/Briar Hydro Rolfe Canal Meeting
Attachments: Briar Eel Trap 2015 Proposal.docx

Follow Up Flag: Follow up
Flag Status: Flagged

From: Andrew Locke [mailto:alocke@essexhydro.com]
Sent: Tuesday, December 22, 2015 12:02 PM
To: 'Warner, John'
Cc: Dave Sherman
Subject: FW: Essex/Briar Hydro Rolfe Canal Meeting

John –

Hope all is well. I need your help in closing out the discussion we had this summer regarding our plan for eels and flows. If you agree with the email I wrote you in July (see below), I will then share it with LIHI. If you could please get back to me this week I would greatly appreciate it.

Many thanks,

Andrew

From: Andrew Locke [mailto:alocke@essexhydro.com]
Sent: Friday, November 06, 2015 11:57 AM
To: 'Warner, John'
Subject: FW: Essex/Briar Hydro Rolfe Canal Meeting

Hi John –

Following up on this open item. Are you comfortable with the plan we discussed this summer? I'd like to let LIHI know we have an agreed upon plan.

Thank you,

Andrew

From: Andrew Locke [mailto:alocke@essexhydro.com]
Sent: Thursday, July 23, 2015 9:55 AM
To: 'John Warner'
Cc: Dave Sherman
Subject: Essex/Briar Hydro Rolfe Canal Meeting

John –

Thank you for meeting with me and Dave Sherman last Tuesday to review Briar Hydro's LIHI eel passage and bypass flow requirements for the Rolfe Canal Hydroelectric Project.

Below are the summary points from the meeting:

> We discussed our need to work with your agency to establish downstream and upstream eel passage at Rolfe Canal.
>
> In the meeting we discussed our proposed eel monitoring plan (attached to this email). The goal of this plan is to establish the approximate size of the eel population travelling downstream through the Rolfe project and travelling upstream from the Penacook Lower Falls (PLF) project (the plan focuses on upstream passage at the PLF project and not Rolfe based on the fact that the eels must first pass the PLF project before passing Rolfe).
>
> You approved of us implementing our proposed eel monitoring plan for the 2015 eel season and do not feel it is necessary for us to implement a downstream or upstream eel passage at Rolfe canal until we complete the eel monitoring plan and review the results with you this winter. Following this review we will work with you to determine the appropriate next steps.
>
> We discussed that our calculations show we are currently bypassing 150 cfs over the York Dam. You agreed to revisit the site at a date to be determined to evaluate if 100 cfs would be sufficient bypass.

Please let me know if this email correctly summarizes your understanding of our meeting or if edits are needed. For compliance purposes, I will then share your email with LIHI. If you do not wish me to share your response with LIHI, please let me know.

Thank you again for your time and I look forward to working with you in the future.

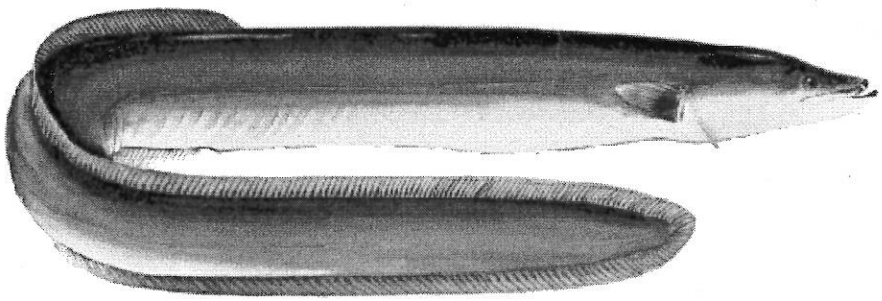
Regards,

Andrew Locke
Essex Hydro Associates
A GP of Briar Hydro Associates

EEL TRAP PROPOSAL

Upstream & Downstream Proposed Eel Passage at Briar Hydro/Rolfe Canal, and Penacook Lower Falls Project Locations

Observational 1 Seasonal Year Study, 2015



Prepared By: George "Skip" H. Zink Jr.
And Dave Sherman

TABLE OF CONTENTS

PROJECT LOCATIONS

BRIAR HYDRO/ROLFE CANAL

83A Washington Street
Penacook, NH 03303

The York Dam ("Briar") is located on the Contoocook River in the Village of Penacook, City of Concord, Merrimack County, in the State of New Hampshire. The dam is located approximately 2-1/4 miles upstream from the confluence with the Merrimack River. "Island Road/Canal Inlet", "Penstock Intake", "Briar Pipe Dam", "Bypass" are project components related directly to the Briar Hydro/Rolfe Canal Hydroelectric Project.

PENACOOK UPPER FALLS

31 Crescent Street
Penacook, NH 03303

The Penacook Upper Falls Hydro Facility ("Upper") is located on the Contoocook River in the Village of Penacook, City of Concord, Merrimack County, in the State of New Hampshire. The dam is located approximately one mile upstream from the confluence with the Merrimack River.

PENACOOK LOWER FALLS

2 Commercial Street
Boscawen, NH 03303

The Penacook Lower Falls Hydro Facility is located on the Contoocook River in the Villages of Boscawen, City of Concord, Merrimack County, in the State of New Hampshire. The dam is located approximately one half mile upstream from the confluence with the Merrimack River.

GEORGE "SKIP" H. ZINK JR.

Twenty four years with the Maine Department of Marine Resources along with the development and implementation of over twenty eel passages, evaluating the site and developing the plan, has given me the necessary experience for proper inception and execution of eel passage plans. *Resume can be found in Appendix A.*

INITIAL DETERMINATIONS

This plan is intended to be used as the main component in determining whether a permanent downstream eel program is required at the Briar Hydro Rolfe Canal Project as well as an upstream eel program at Penacook Lower Falls. This determination will be based on the amount of eel passing through the Essex Hydro facilities along the Contoocook River during the 2015 season.

After review and discussion of the project locations, river ways and other pertinent material with Essex Hydro Associates Operations Group a seasonal year observational period has been determined as the best course of action in obtaining suitable data on eel population in the Contoocook River, both upstream and downstream, and whether a permanent eel passage is needed.

With three project locations with where to collect data, there is ample opportunity to make this determination in one seasonal year. In the event that this timeline is not sufficient, the option of extending the observational study period exists.

As soon as water levels reach a point for personnel to work in a safe manner, necessary steps will be taken to implement the proposed eel trap plan.

UPSTREAM EEL PASSAGE

Upstream data collection will take place at Penacook Lower Falls hydroelectric locations.

Using a modified version of the Connecticut Trap (*"CT Trap" specifications can be found in Appendix B*), trained Essex Hydro employees will monitor any migrating eel caught in the trap(s) and record necessary data to the specifications found on the Data Collection Form. *The Data Collection Form can be found in Appendix C.*

CONNECTICUT TRAP LOCATIONS

A total of two modified CT Traps will be installed at all three of the Essex Hydro plant locations as well as the bypass reach on the Rolfe Canal.

- Two CT Traps on the downstream side of the Penacook Lower Falls Hydro Project (located approximately ½ mile upstream from the confluence with the Merrimack River).

- One CT Trap along the downstream side of the Bypass Reach (located approximately 1 ¾ miles upstream from the confluence with the Merrimack River on the Rolfe Canal).

OBSERVATION SCHEDULE

CT Traps will be installed, at the locations described above, during a safe and weather dependent period, sometime in late July of 2015, which is believed to be the earliest time spurts or bursts of eel, would be detected. This observational period for upstream passage will continue through September 1st, 2015.

DATA COLLECTION, RELEASE POINTS, and SECURITY

Traps will be pulled (they can be easily lifted out of their locations with a "pully-like" system) and checked during normal weekday. If eel are detected, trained employees with the appropriate permitting will log specified statistics of individual eel as well as bulk loads (i.e. weight, count, etc.) on the data collection form. *The Data Collection Form can be found in Appendix C.*

In the case of eel being detected in the CT Traps, once all data is properly logged, the eel will be transported upstream the Contoocook River and released above all dam obstructions known to Essex Hydro personnel.

At the more populated and active locations along the Contoocook River (Penacook Lower Falls), video surveillance is available. If suspicion arises that the traps may have been tampered with, this system will be used to help determine the cause of the issue.

DOWNSTREAM EEL PASSAGE

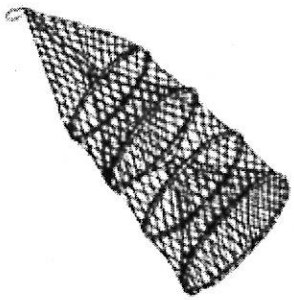
Downstream data collection will take place at the Briar Hydro/Rolfe Canal hydroelectric location; included in this program are dam components at Island Road/Canal Inlet, Penstock Intake, York Dam, and Bypass Reach.

Using Fyke Nets and a permanent Catfish Trap, trained Essex Hydro employees will monitor any migrating eel caught in the trap(s) and record necessary data to the specifications found on the Data Collection Form. *The Data Collection Form can be found in Appendix C.*

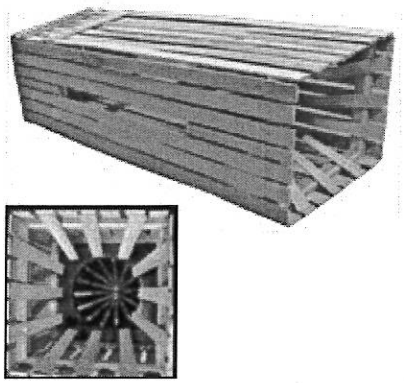
FYKE NET/CATFISH TRAP LOCATIONS

A total of three Fyke Nets are currently installed at the Briar Hydro/Rolfe Canal Project site(s). One Catfish Trap is located at the Bypass Reach.

FYKE NET



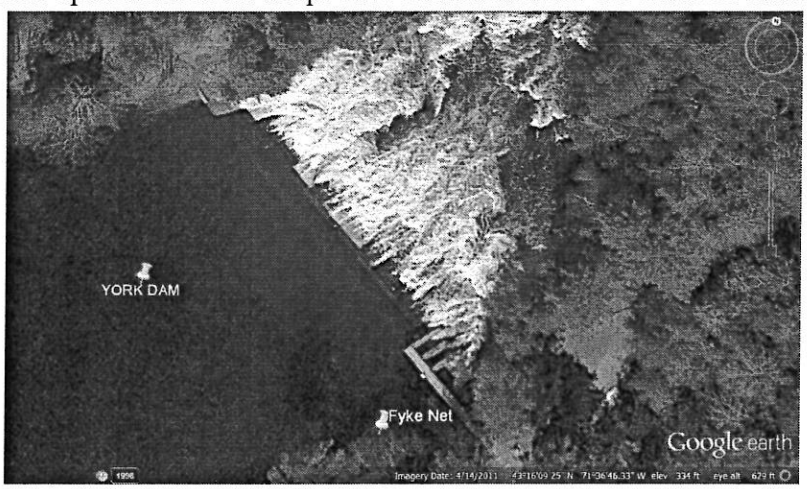
CATFISH TRAP



- Fyke Net #1 is located under the Island Road/Canal Inlet Bridge on the left bank and downstream of the canal inlet gates. The net is being held in location by ropes and at a four foot depth by floats attached to each hoop. The Fyke Net entrance faces upstream.

- Fyke Net #2 is located along the Penstock Intake wall to the left of the trash racked penstock entrance. The net is located by attached ropes and is approximately six feet under water with the net entrance facing towards Electric Avenue.

- Fyke Net #3 is located at the York Dam in front of the 50cfs minimum flow gate entrance. The net entrance faces upstream and the hoops have floats that allow the net to be at a three foot depth.



- One Catfish Trap is located along the Bypass Reach (located approximately 1 ¾ miles upstream from the confluence with the Merrimack River on the Rolfe Canal).

OBSERVATION SCHEDULE

Fyke Nets and Catfish Traps are currently installed at the locations described above. The downstream seasonal observations will begin August 1, 2015 and will continue through November 15, 2015.

DATA COLLECTION & RELEASE POINTS

Traps will be pulled and checked during normal weekday operations. If eel are detected, trained employees with the appropriate permitting will log specified statistics of individual eel as well as bulk loads (i.e. weight, count, etc.) on the data collection form. *The Data Collection Form can be found in Appendix C.*

In the case of eel being detected in the Fyke Nets and/or Catfish Trap, once all data is properly logged, the eel will be transported downstream and dropped at the boat ramp below Penacook Lower Falls, located ¼ mile upstream of the confluence with the Merrimack River.

APPENDIX A: RESUME

George H. Zink Jr.
83 Baker Rd.
Starks, Maine 04911

OBJECTIVE

To present qualifications for upstream/downstream eel passage design and data collection

EMPLOYMENT EXPERIENCE

Marine Resources Specialist — Maine Department of Marine Resources
April, 1996 to retirement October, 2011 — 21 Statehouse Station, Augusta, ME

Eel Project; Design and maintain Atlantic States Marine Fisheries Commission mandated annual young of year eel population study. Monitor and record data for upstream and downstream passage of eels on the Kennebec River drainage. Review and comment on passage designs for dams within the state. Review and comment on commercial eel fishing regulations. Build and test experimental passage and trapping equipment. Deploy and operate monitoring equipment including dip nets, Fyke nets, beach seines, Irish eel traps, Connecticut box traps, V traps, Otter trawls, Didson sonar, RFID pit tag readers and antennas, Lotek readers, and fish counters. Operate and maintain oxygen meters, flow meters, temperature recorders, scales and measuring devices. Collect and record data statewide for reports. Work in cooperation with Federal and State Agencies, public and private organizations. *Supervisor*; Dr. Gail Wippelhauser.

Marine Resources Conservation Aide — Maine Department of Marine Resources
May, 1987 to April, 1996 — 21 Statehouse Station, Augusta, ME

Androscoggin and Kennebec Projects; Trap and truck alewives, shad, stripers, and salmon. Trap and tag sturgeon. Operate and maintain related equipment including tank trucks, tanks and related water circulation systems, watercraft, otter trawls, push nets, Fyke nets, beach seines, box traps, and other related gear. Collect and record environmental, habitat, and fish growth data. Work with Federal and State Agencies. *Supervisor*; Lew Flagg.

EDUCATION

Fisher Junior College 80 Parks Street Duxbury, MA	1981, *Completed One Semester*
Allied Tractor Trailer Training, Inc. 26 Everett Street Westwood, MA	2/1973-3/1973, *Obtained Class A Commercial Drivers License*
Roslindale High School Poplar Street Roslindale, MA	

RELATED SKILLS

Heavy equipment operator, US Navy Seabees from May 1970 to November 1972. Attended USGS eel radio tracking workshop October 1997. Attended Oregon RFID workshop, June 2008. Attended USFWS fish passage workshop, October 2010. Presenter and steering committee member for ASMFC eel passage workshop, March 2011.

REFERENCES

Fred Seavey, USFWS	Fred_Seavey@fws.gov
Gail Wippelhauser	gail.wippelhauser@maine.gov
Michael Brown	Michael.Brown@maine.gov

APPENDIX B: CONNECTICUT TRAP SPECIFICATIONS

The Connecticut Trap was designed and used by Timothy Wildman and Steve Gephard, two biologists working on passage issues for their state. They made their original units out of 5 gallon buckets with two inch PVC fittings and have used both Enkamat and plastic bird netting as a climbing substrate. Jason Valliere, of Maine DMR, had modified the design to a plastic storage box and monitored the catch successfully, at a pond in Maine.

The basic design consists of a two inch PVC 90 degree fitting through the side of the container close to the bottom. This is then loosely packed with Enkamat or plastic netting from the outside, up into the container. The eel climb up and drop into the container where a screened drain sets the water level below the top of the 90 degree angle so the eel cannot climb back out.

An attraction water flow is set above the 90 degree angle into the top of the container and the tongue of the substrate is set in the direction the eel are approaching. The system can be set in areas where water flows vary and can be raised and lowered into tight spaces. It is a good method of locating where eel are attempting to travel as well as the number of eel moving.

The CT Trap has been modified down to a 5 gallon bucket as opposed to a storage bin used in the original model. Add in specs from Skip.

APPENDIX C: DATA COLLECTION FORM

[i] <http://www.landbigfish.com/images/fish/LBF_American_Eel.gif>