APPENDIX 4
PROJECT LOCATION AND OPERATIONS

Appendix 4

Project Location and Operations

The Penacook Upper Falls Hydroelectric Project ("the project") is located on the Contoocook River in the Village of Penacook, New Hampshire. The Village of Penacook is made up of a small portion of the Town of Boscawen and the northern end of the city of Concord. The project area, as outlined in the attach Project Boundary Map, Appendix 4-1, is located on the extreme northern end of the city of Concord; a section of the tailrace is located across the city line in the Town of Boscawen. The approximate latitude and longitude of the project area are 43°16'50"N and 71°36'00"W.

The project is operated as a run-of-river facility. The estimated average head is 22 feet and the project is required to maintain a continuous minimum flow of 338 cubic feet per second or the inflow to the reservoir, whichever is less. Project works consist of: (a) a timber stoplog dam with a concrete spillway 21 feet high and 187.0 feet long; (b) 15 gates in the spillway, 6 operable steel gates, 9.5 feet wide and 15.5 feet high, 7 fixed timber stoplog gates, and two operable (ice) gates, 12 feet wide and 3.5 feet high; (c) a reservoir with a surface area of 11.4 acres, a negligible storage capacity, and normal water surface elevation of 306 feet m.s.l.; (d) a powerhouse at the east side of the dam with one generating unit having an installed capacity of 2,800 kW; (e) a 35.0-foot-long, 4.16-kV generator lead; (f) a 4.16/34.5-kV 3.6 MVA three-phase transformer; (g) a 50-foot-long, 34.5-kV transmission line; (h) a tailrace, 47 feet wide and 350 feet long; and (i) appurtenant facilities.

A concrete powerhouse, 81 feet in length and 44 feet in width is located on the east river bank. The powerhouse houses one horizontal shaft tube turbine with a capacity of 2,800 kW. The river banks upstream and downstream of the power house are contained by concrete retaining walls to bedrock. A tailrace with an average width of 47 feet exists at the draft tube exit of the powerhouse and extends downstream for approximately 350 feet. A 15-foot long forebay with a 58-foot average width begins at the powerhouse intake and extends upstream. From the southwest corner of the powerhouse, a concrete, gated spillway extends 187 feet across the Contoocook River.

The project is located upstream of the Penacook Lower Falls project. The project utilizes a previously existing impoundment and the plant is unmanned, but operation is monitored on a 24/7 basis.

APPENDIX 4-1
PENACOOK UPPER FALLS PROJECT BOUNDARY MAP

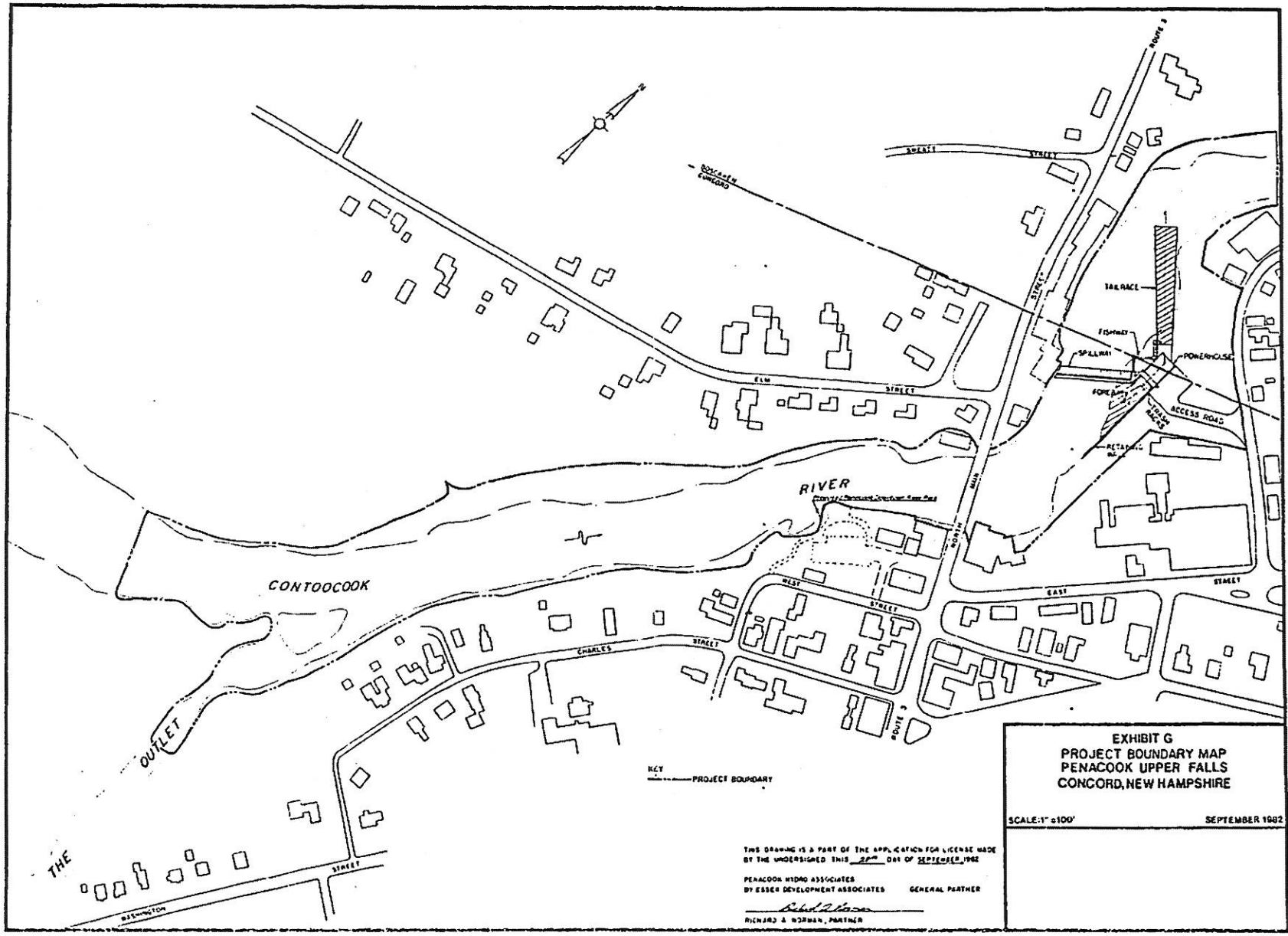

EXHIBIT G
PROJECT BOUNDARY MAP
PENACOOK UPPER FALLS
CONCORD, NEW HAMPSHIRE

SCALE: 1" = 100' SEPTEMBER 1982

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 27th DAY OF SEPTEMBER, 1982

PENACOOK HYDRO ASSOCIATES
BY ESSEX DEVELOPMENT ASSOCIATES GENERAL PARTNER

RICHARD A. NORMAN, PARTNER

Anderson-Nichols
engineers
environmental consultants
architects

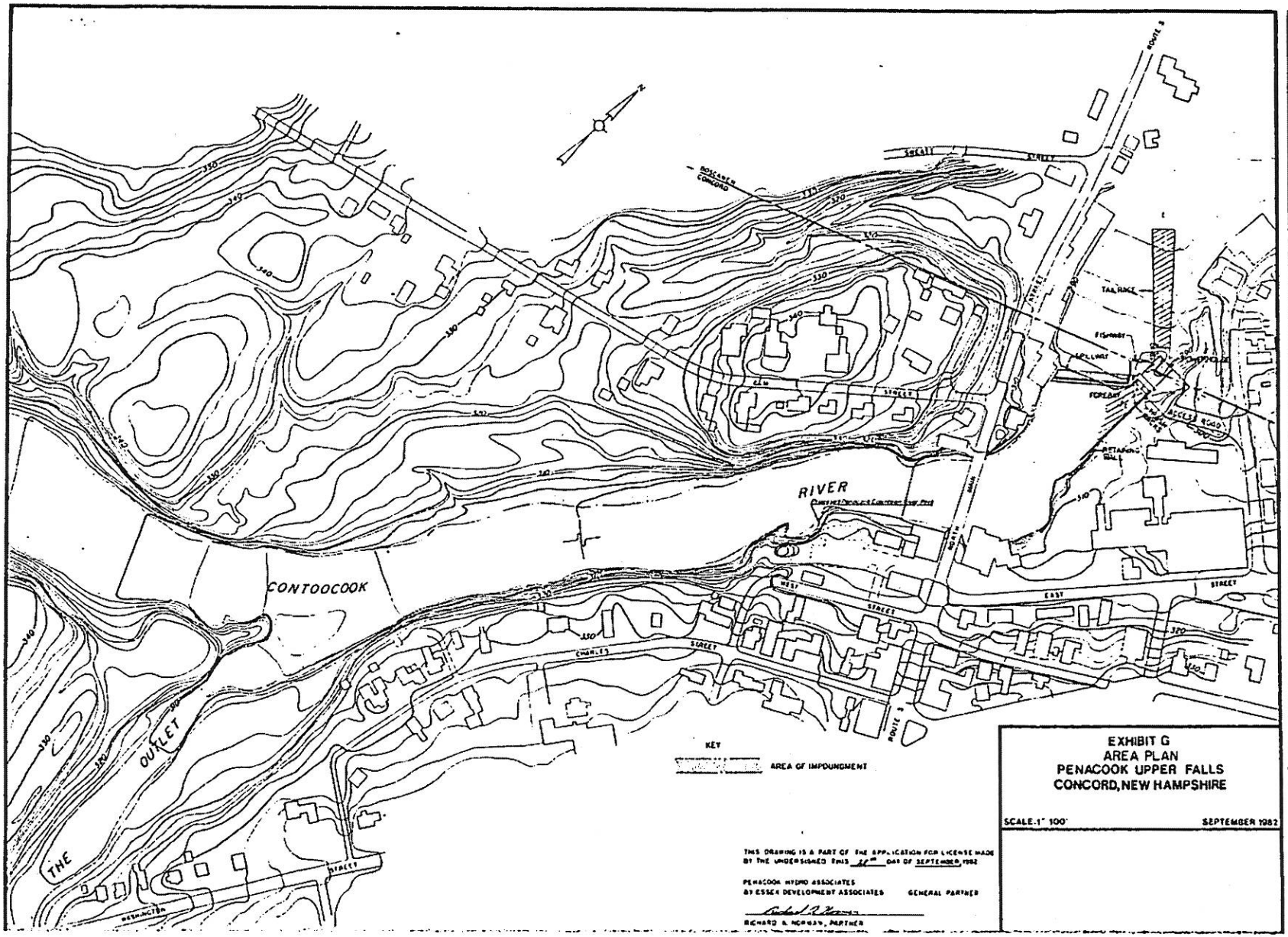

EXHIBIT G
AREA PLAN
PENACOOK UPPER FALLS
CONCORD, NEW HAMPSHIRE

SCALE: 1" = 100' SEPTEMBER 1982

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 27th DAY OF SEPTEMBER, 1982

PENACOOK HYDRO ASSOCIATES
BY ESSEX DEVELOPMENT ASSOCIATES GENERAL PARTNER

RICHARD A. NORMAN, PARTNER

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engineers
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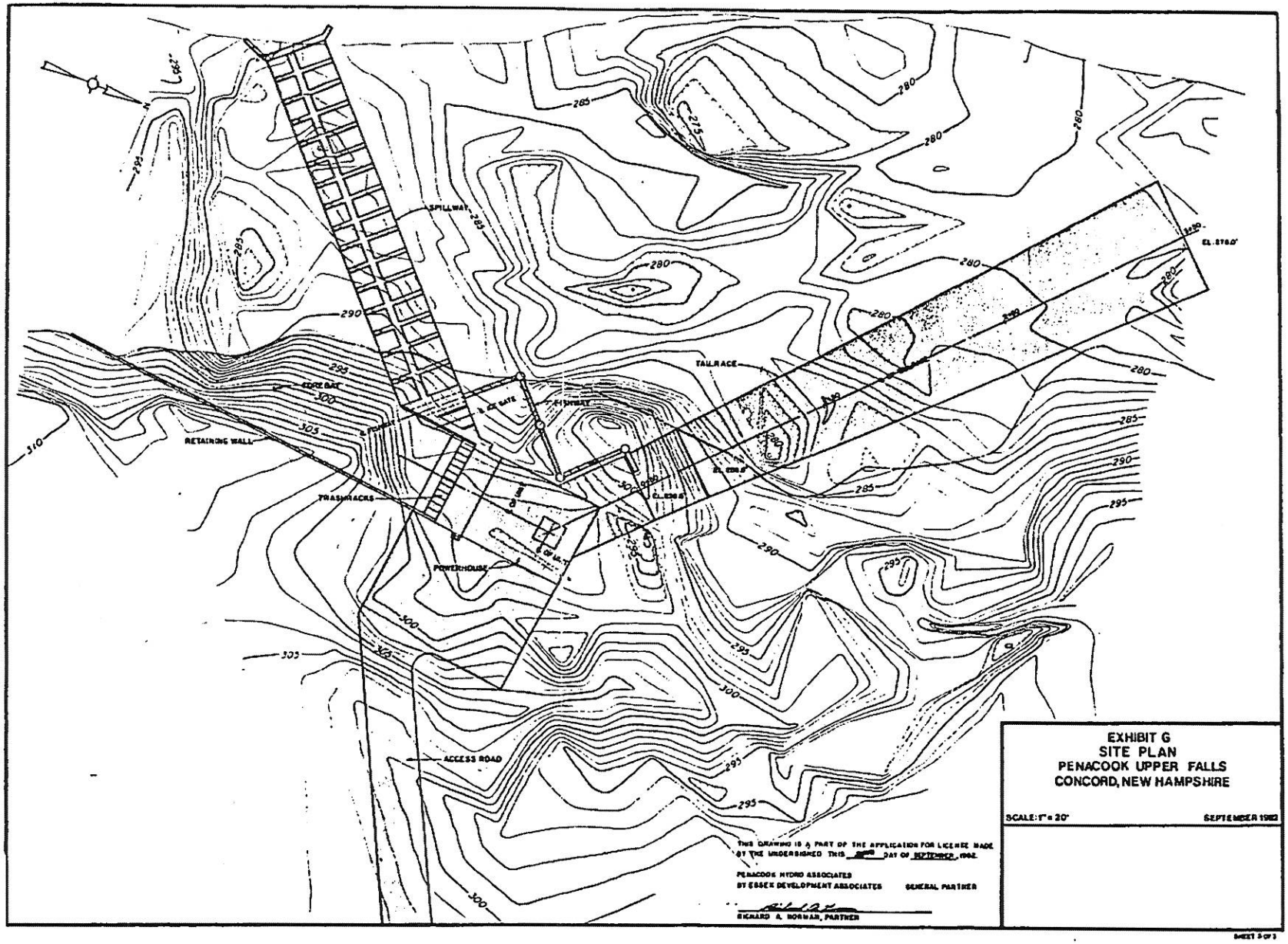
architects


SPILLWAY
TAILRACE
RETAINING WALL
TRASHRACKS
POWERHOUSE
ACCESS ROAD
EXHIBIT G
SITE PLAN
PENACOOK UPPER FALLS
CONCORD, NEW HAMPSHIRE
SCALE: 1" = 20'
SEPTEMBER 1982
THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 2nd DAY OF SEPTEMBER, 1982.
PENACOOK HYDRO ASSOCIATES
BY ESSEX DEVELOPMENT ASSOCIATES GENERAL PARTNER
RICHARD A. NORMAN, PARTNER

SHEET 3 OF 3

APPENDIX 5
DESCRIPTION OF PROJECT FLOWS

Appendix 5

Description of Project flows

River flow History

The Contoocook River rises on the eastern slopes of Mt. Monadnock in southeastern New Hampshire and ends where it enters the Merrimack River less than two miles downstream from the Penacook Upper Falls Hydroelectric Project. The river, about 66 miles long, flows in a generally north-easterly direction through the towns of Jaffrey, Peterborough, Bennington, Antrim, Hillsboro, Henniker, and Contoocook, and has a total drainage area of 766 square miles. Its major tributaries, the Warner and Blackwater Rivers, both enter from the north, only two miles apart, near the village of Contoocook. The watershed, which is primarily forested, contains numerous other small tributaries and many natural lakes. Elevations in the watershed range from 3165 ft MSL at the top of Mt. Monadnock to 243 ft. MSL at the confluence with the Merrimack. The Contoocook drops about 130 feet in its final 20 miles (6.5 ft/mile), thus explaining the location of the village of Penacook and the development of numerous water-powered mills over the past two centuries.

A gauge, located one-half mile upstream from the mouth, was maintained in the Contoocook from 1928 to 1977. The average flow over the 49 years of record was 1255 cfs. The maximum discharge of record, 46,800 cfs (estimated), occurred on March 20, 1936; the minimum, 38 cfs, occurred August 17, 1965. Daily minimum flows of 57 cfs were recorded on October 12, 1964 and August 16, 1965. The 7Q10 for this period is 94 cfs. (see Appendix 5-1). In accordance with its FERC License (project No. 6689-000) the project is operated as a run of river facility and is responsible for maintaining a continuous minimum flow of 338 cubic feet per second or the inflow to the reservoir, whichever is less, for the protection and enhancement of aquatic resources in the Contoocook River. (see Appendix 2-1)

Water Quality Certification

As was previously mentioned, as part of the FERC licensing process, the New Hampshire Water Supply and Pollution Control Commission ("NHWSPC") completed their review of the project and confirmed the impact on water quality would be minimal. (see Appendix 2-3) On May 6, 1983, the NHWSPC reconfirmed that the project was in accordance with Section 401(d) of the Federal Water Pollution Control Act (see Appendix 1-4). The dam elevation of 306 feet MSL creates a pool approximately 2,600 feet long with a maximum width of 260 feet. The pool has a storage volume of 70 acre-feet and a maximum depth of 22 feet.

APPENDIX 5-1
PENACOOK UPPER FALLS PROJECT FLOWS

(2) REPORT ON WATER USE AND QUALITY

Contoocook River Basin

The Contoocook River (see Figure (2)-1) rises on the eastern slopes of Mt. Monadnock in southeastern New Hampshire and ends where it enters the Merrimack River less than two miles downstream from the proposed Penacook Upper Falls Hydroelectric Project. The river, about 66 miles long, flows in a generally north-easterly direction through the towns of Jaffrey, Peterborough, Bennington, Antrim, Hillsboro, Henniker, and Contoocook, and has a total drainage area of 766 square miles. Its major tributaries, the Warner and Blackwater Rivers, both enter from the north, only two miles apart, near the village of Contoocook. The watershed, which is primarily forested, contains numerous other small tributaries and many natural lakes. Elevations in the watershed range from 3165 ft. MSL at the top of Mt. Monadnock to 243 ft. MSL at the confluence with the Merrimack. The Contoocook drops about 130 feet in its final 20 miles (6.5 ft/mile); however it drops 90 feet in the final three mile stretch (45 ft/mile), thus explaining the location of the village of Penacook and the development of its numerous water-powered mills over the past two centuries.

A gauge, located one-half mile upstream from the mouth, was maintained on the Contoocook from 1928 to 1977. The average flow over the 49 years of record was 1255 cfs or 1.61 cfs/mi^2. The maximum discharge of record, 46,800 cfs (estimated), occurred on March 20, 1936; the minimum, 38 cfs, occurred on August 17, 1965. Daily minimum flows of 57 cfs were recorded on October 12, 1964 and August 16, 1965. The 7Q10 for this period is 94 cfs.

River Character at Proposed Site

The river in the project area currently drops 26 feet in the 2600 feet from the upper end of the proposed pool to the foot of the proposed tailrace. At the site of the proposed dam there are currently three small consecutive falls, with a total drop of 16 feet. The first of these is the crest of an old dam (NHWRB #51.01). The second is the remnant of a dam now in ruins and the third is a bedrock ledge. In this area the riverbed is composed of well-scoured bedrock. The upstream reach to the top of the pool and beyond is a continuous stretch of small riffles. The riverbed in this area is composed of well-rounded loose rock from cobbles to boulders. The steep gradient in this area has prevented the deposition of any sand or silt except well up on the banks.

Summary of Existing Water Quality

Water quality of the Contoocook River at Penacook is currently designated as Class C (see Appendix A for N.H. Water Quality Standards). It is New Hampshire's stated objective to attain Class B conditions in this reach during 1982 (NHWS, 1980).

APPENDIX 6
WATER QUALITY

Appendix 6

Water Quality

As was previously mentioned, on September 16, 1982, as part of the FERC licensing process, the New Hampshire Water Supply and Pollution Control Commission completed their review of the project and issued their finding that water quality impacts from the construction and operation of the facility would be minimal and therefore they posted no objections to the project. (see Appendix 2-3) On May 6, 1983, the New Hampshire Water Supply and Pollution Control Commission confirmed that the project is in accordance with Sections 401(d), 301(b), 302, 303, 306, and 307 of the Federal Water Pollution Control Act (see Appendix 2-4).

There have been no deficiencies noted by any state or federal agency in regards to the project's impact on the water quality of the Contoocook River since the project began operation in 1986.
Briar Hydro Associates is currently working with Mr. Ted Walsh, Surface Water Monitoring Coordinator for the New Hampshire Department of Environmental Services (NHDES), to develop and implement a testing program to confirm that the Penacook Upper Falls project is not causing or contributing to violations of state water quality standards. Testing was completed in 2010 and by NHDES letter dated December 21, 2010 based on the current operations at that time it appeared the Penacook Upper Hydroelectric Project was not causing or contributing to water quality standard violations (Appendix 6-1). Testing on current conditions began in August 2015 and will be completed by September 30, 2015. Testing will be forwarded to the Low Impact Hydropower Institute upon receipt.

APPENDIX 6-1
NH Department of Environmental Services Letter dated December 21, 2010

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

December 21, 2010

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

RE: Water Quality Status of Contoocook River for Low Impact Hydropower Institute Certification of Penacook Upper Falls Hydroelectric Project (FERC No. 6689)

Dear Fred:

As you know, Essex Hydro Associates (EHA) has applied for Low Impact Hydropower Certification from the Low Impact Hydropower Institute (LIHI) for the Penacook Upper Falls Hydroelectric Project (FERC No. 6689) on the Contoocook River in Penacook, NH. 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. As you may recall, on December 31, 2009, the New Hampshire Department of Environmental Services (DES) sent EHA a letter stating what would be needed for DES to determine if the Contoocook River in the vicinity of the Penacook Upper Falls hydroelectric project was or was not attaining 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;
2. Impact of pond fluctuations on aquatic habitat;
3. Maintenance of adequate minimum flows to protect downstream aquatic life; and
4. Adequate upstream and downstream fish passage."

The purpose of this letter is to provide you with our assessment of data and information received from EHA in response to our letter of December 31, 2009 and, our conclusions as to whether or not the Penacook Upper Falls hydroelectric project is causing or contributing to New Hampshire surface water quality standard violations.

With regards to water quality, EHA, with the assistance of DES and the Upper Merrimack River Local Advisory Committee, provided data for dissolved oxygen, phosphorus and chlorophyll-a. Monitoring locations in the impoundment (03-CTC) and in the downstream section of the river (02K-CTC) were monitored continuously for a minimum 10 day period in August 2010 for water temperature and dissolved oxygen using multi-parameter dataloggers. At the time of the deployment and retrieval of the dataloggers a vertical profile of dissolved oxygen and water temperature was measured at the station in the impoundment (03-CTC) to determine if thermal stratification was present. The vertical profiles collected at 03-CTC on August 18th and August 30th indicated that the impoundment was not thermally stratified. In addition, between July 7, 2010 and September 8, 2010, ten samples from each station were collected by the Upper Merrimack River Local Advisory Committee and tested by the DES laboratory for total phosphorus and chlorophyll-a. The sampling timeframe included periods of high temperatures and lower flows.

DES has assessed the water quality data collected in 2010, 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 for dissolved oxygen, phosphorus and chlorophyll-a. In a March 15, 2010 letter DES provided the assessment status for the parameters of concern for the reaches of the Contoocook River upstream and downstream of the Penacook Upper Falls 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 2012. Please note that the assessment status listed in Table 1 could change if water quality criteria change and/or if additional data collected between now and the 2012 report indicate water quality violations.

Table 1. Assessment Status for Water Quality Monitoring Parameters at Penacook Upper Falls Dam

Assessment Unit	Location	Parameter	Designated Use	Assessment Status based upon summer 2010 sampling
NHIMP700030507-06	Penacook Upper Falls 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]
NHRIV700030507-09	Downstream of Penacook Upper Falls Dam	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]

[A] DES does have numeric water quality criteria for the aquatic life designated use for total phosphorus and chlorophyll-a in lakes/ponds and impoundments with characteristics similar to lakes/ponds but it can only be applied to waterbodies where the tropic class is known. For waterbodies where the trophic class is known the median total phosphorus and chlorophyll-a value is used to make the criteria comparison. The aquatic life designated use nutrient and chlorophyll-a criteria are depicted below with the median values for each parameter for the data collected at station 03-CTC in assessment unit NHIMP700030507-06 during the summer of 2010.

	TP (ug/L)	Chl-a (ug/L)
2010 Median 03-CTC	**16.5**	**2.07**
Oligotrophic	< 8	< 3.3
Mesotrophic	≤ 12	≤ 5
Eutrophic	≤ 28	≤ 11

[1] 2010 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.

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

[C] 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.

On November 23, 2010 EHA provided DES with information regarding minimum flows and pond fluctuations at the Penacook Upper Falls Hydroelectric Project. Essex Hydro Associates confirmed that the facility is operated as a fully automated run of river project. We further understand that the project is licensed to release a minimum instantaneous outflow of of 338 cfs. Due to the operation of the facility as a run of river project, EHA also provided information indicating that any "water level fluctuations have been controlled by natural changes in the river flow and minimum flow requirements have been equal to the lesser of 338 cfs or project inflow."

Regarding the issue of fish passage, DES has been informed by Essex Hydro Associates that they have received confirmation of compliance from John Warner of the U.S. Fish and Wildlife Service (USFWS) and Carol Henderson of New Hampshire Fish and Game (NHFG) for downstream fish passage. Regarding upstream fish passage, DES has also received documentation from EHA that barring changes to river conditions or fish management plans, the schedule for design and installation of upstream fish passage infrastructure will be governed by the construction and successful function of upstream fish passage facilities located on the Merrimack River downstream of the confluence with the Contoocook River. NHFG and the USFWS have indicated their concurrence with the current status of upstream fish passage.

In summary, based on the current operation of the dam, current water quality standards, the water quality data collected in 2010 and information provided to DES by EHA, it appears the Contoocook River immediately upstream and downstream of the Penacook Upper Falls Hydroelectric Project is not causing or contributing to water quality standard violations at this time. As previously noted, however, please note that this assessment could change in the future should a change in water quality criteria and/or new data indicate water quality violations. It could also change if the NHFG and/or USFWS conclude in the future that upstream or downstream fish passage is not adequate.

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: Steve Hickey, Essex Hydro Associates, LLC
Carol Henderson, New Hampshire Fish and Game
John Warner, USFS

APPENDIX 7
FISH PASSAGE AND PROTECTION

Appendix 7

Fish Passage and Protection

The FERC license ("the license") dated September 1984 (see Appendix 2-1), as amended in September 1986 (see Appendix 7-1), provided for the construction of fish passage facilities at the Penacook Upper Falls Project (the Project) on a schedule consistent with the agreement between Public Service of New Hampshire (PSNH) and the state and federal fishery agencies regarding the construction of fish passage facilities at the mainstream dams on the Merrimack River (see Appendix 7-2). The license required the Project to file functional design drawings with the Commission within five years after the passage of 15,000 adult American shad at the Garvins Falls Project (FERC No. 1893), or through the fish facilities of the proposed Sewalls Falls Project (FERC No. 7216) if constructed, but in no case later than July 1, 2004. The License required the functional design drawings to be prepared in consultation with the New Hampshire Fish and Game Department and the U.S. Fish and Wildlife service.

The Merrimack fish restoration program did not achieve its original goals. Consequently, an agreement was reached among various state and federal agencies and affected hydroelectric projects on the Merrimack and Contoocook rivers to delay the installation date for upstream fish facilities until a minimum of 15,000 American Shad were observed at the next downstream fish passage facility of the Amoskeag dam in Manchester, N.H. There are two intervening hydroelectric plants between the Amoskeag facility and the Project, the PSNH Garvin Falls project and the Penacook Lower Falls project. PSNH's Garvins Falls project is required to install upstream fish passage facilities within 3 to 5 years after the passage of 15,000 American shad at the Amoskeag dam; the PLF project is required to install its fish passage facilities within 3 years after 15,000 American shad are present at the Garvin Falls project. Due to the close proximity of the PLF and the PUF projects, PUF is also required to install its fish facilities when 15,000 American shad are present at the Garvins Falls project.

A letter dated March 5, 2009 between Mr. Robert Gundersen, Hydro Manager, PSNH and Mr. John K. Novak, FERC Division of Hydropower Administration and Compliance states that during 2008, no American shad or river herring were observed at the Amoskeag development (see Appendix 7-3). Consequently the earliest that the PUF project will be required to

install its facilities is 2015, six years from 2009. Therefore, the Project is in compliance with the upstream fish passage requirements of its license

The Project remains legally committed to install upstream fish passage and remains committed to the successful restoration of anadromous fish passage on the Merrimack River on a schedule consistent with the PSNH agreement on mainstream fish passage.

With respect to downstream fish passage the Project has been in contact with state and federal agencies regarding downstream fish passage design. The project operates a "flow inducer" at the intake of the Project (see Appendix 7-4) and meets current requirements of the USF&W.

As a condition of the PUF FERC license, the Project has agreed that should it be established in the future that the operation of the project adversely affects fish and wildlife resources, the Project may be ordered to undertake appropriate mitigation pursuant to authority reserved to the Commission under Articles 24 and 25 of the License. (See Appendix 2-1).

APPENDIX 7-2
AGREEMENT BETWEEN PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE AND U.S. FISH AND WILDLIFE REGARDING THE CONSTRUCTION OF FISH PASSAGE FACILITIES ON THE MERRIMACK RIVER ISSUED MAY 14, 1986

United States Department of the Interior

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

Mr. Kenneth F. Plumb, Secretary
Federal Energy Regulatory Commission
825 North Capitol Street, N.E.
Washington, D.C. 20426

MAY 14 1986

Dear Mr. Plumb:

We are submitting our comments regarding the document "A Comprehensive Plan for Provision of Anadromous Fish Passage Measures and Facilities at PSNH's Merrimack Pemigewasset River Hydroelectric Dams, FERC Projects #1893, 2456 and 2457," by Public Service of New Hampshire (PSNH) and the Policy and Technical Committees for Anadromous Fishery Management of the Merrimack River, dated April 14, 1986. As indicated in the letter dated April 17, 1986 (see enclosure) PSNH proposes modifying two of the project licenses to incorporate the provisions in the Plan.

GENERAL COMMENTS:

The Fish and Wildlife Service endorses the provisions, measures, and studies set forth in the Plan. The unanimous approval of the Plan by the Policy Committee and Public Service of New Hampshire on April 14, 1986 is the result of considerable coordination and negotiation between parties with an interest in the fishery and aquatic resources of the Merrimack and Pemigewasset Rivers.

This comprehensive plan ensures future passage of anadromous fish in the Merrimack and Pemigewasset Rivers. We commend Public Service of New Hampshire, the Policy and Technical Committees, and the participating state and federal fisheries resource agencies for their diligent efforts in developing the plan.

SPECIFIC COMMENTS:

Merrimack River Project #1893 (Amoskeag, Hooksett and Garvins Falls Dams)

Article 40 of the existing license requires the Licensee to submit to the Commission for approval, a report which includes functional design drawings for fish passage facilities and schedules for commencement and completion of construction of these facilities at each project. As part of the Plan, PSNH has proposed to provide upstream fish passage facilties at Amoskeag Dam to be operational for the 1988 spring runs. In addition, the Plan establishes a deferred schedule for construction of upstream fish passage facilities at Hooksett and Garvins Falls Dams. Implementation of the schedule for constructing facilities at the respective dams will be triggered by the passage of 15,000 American shad, first at Amoskeag Dam and second at Hooksett Dam.

The passage of American shad to trigger the construction of passage facilities is used in the Plan because shad restoration is expected to proceed faster than the restoration of Atlantic salmon in the Merrimack River Basin. Therefore, it is expected that passage facilities will be needed in the spring of the fifth year following the passage of 15,000 American shad at each of these dams (all available spawning and rearing habitat for shad will be utilized in the Amoskeag and Hooksett impoundments).

It is inherent in the Plan that functional design drawings and as-built plans for all upstream facilities will first be reviewed by the Fish and Wildlife Service. The schedule and methods for implementing downstream passage of smolts at these facilities is clear. However, the results of upstream and downstream passage studies to determine the effectiveness of passage could in fact alter the proposed schedules and methods for passage. Article 40 should be amended to ensure that the proposed studies are completed and that any mitigation measures are based on the results of the studies and are adequately implemented.

If for any reason the shad numbers are not achieved, but salmon restoration appears to be successful, discussions regarding a new schedule for construction of upstream fish passage facilities will be necessary.

Eastman Falls Dam-Project #2457

Article 38 of the existing license for the Eastman Falls Project provides a schedule for implementing fish passage facilities at the project. The Plan defers the need for upstream fish passage facilities at the project until the year 2010 or later. The FWS predicts, based on salmon population projections, that full restoration of naturally reproducing stocks of Atlantic salmon in the Merrimack and Pemigewasset Rivers is feasible as early as 2012 and is very likely to occur prior to the year 2020. At that time, the involvement of the Federal hatchery system will no longer be required in the stocking of Atlantic salmon fry and smolts. For planning purposes, it should be assumed that full fish passage facilities will probably be needed at Eastman Falls shortly after the year 2010.

Trapping facilities will be provided at the Eastman Falls Dam for the spring run of the second year following the annual passage or trapping of 50 multi-sea winter (non-grilse) Atlantic salmon at Amoskeag Dam. Transportation of Atlantic salmon from the Eastman Falls trap to upstream of the Eastman Falls Dam and/or Ayers Island Dam will be in accordance with Policy Committee annual instructions or until such time as full passage at both dams becomes available.

The interim trap-and-truck measures should augment the present restoration efforts. However, the FWS acceptance of these measures is predicated on the projection that upstream fish passage facilities will eventually be constructed at all dams on the Merrimack and Pemigewasset Rivers.

Article 38 should be amended to provide flexibility in the fish passage schedule for Eastman Falls, including a specific requirement to reassess the timing for construction of facilities by 2010.

Ayers Island Dam-Project #2457

The license for the Ayers Island Project does not expire until 1993. There presently is no requirement in the license for fish passage or minimum stream flows, yet certain conditions regarding the Ayers Island Project were included in the Plan.

The Plan provides for trapping and trucking Atlantic salmon, downstream fish passage facilities and measures, studies to determine the effectiveness of downstream passage, and minimum flows below the Ayers Island dam. Although PSNH does not intend to amend their present license to incorporate the provisions stated in the Plan, they are committed to implementing the measures until 1993, at which time the measures will be formally incorporated during relicensing.

While the Plan provides for the interim trapping of salmon at Eastman Falls and trucking around Ayers Island Dam until 2010, projections are that full fish passage facilities will eventually be needed at Ayers Island. We will recommend that the issuance of any new license for Ayers Island after 1993 contain a provision for scheduling upstream fish passage facilities after the year 2010. This is consistent with the provisions for the Eastman Falls project.

Continued coordination will be needed in implementing and evaluating upstream and downstream fish passage measures and minimum flow releases at the Ayers Island project. All coordination with the Fish and Wildlife Service should occur with a representative from this office (New England Field Office, Ecological Services).

Recommendations: The following special license articles are suggested to ensure that fish passage and other mitigative measures are provided in the Merrimack and Pemigewasset Rivers.

Merrimack River Project No. 1893 (Amoskeag Hooksett and Garvins Falls Dams)

Article 40 should be amended to read as follows:

Article 40. The Licensee shall provide at the Amoskeag, Hooksett, and Garvins Falls Dams, the upstream and downstream fish passage and trapping facilities, and measures and studies stated in the document: "A Comprehensive Plan for Provision of Anadromous Fish Passage Measures and Facilities at PSNH's Merrimack-Pemigewasset River Hydroelectric Dams, FERC Projects No. 1893, 2456 and 2457." In addition, the Licensee shall, after consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Forest Service, New Hampshire Department of Fish and Game, Massachusetts Division of Fisheries and Wildlife, and the Massachusetts Division of Marine Fisheries, submit for Commission approval (a) functional design drawings of fish passage and/or trapping facilities for each of the three project developments when necessary in accordance with the Plan; and (b) annual reports beginning in April 1987 describing (1) the yearly accomplishments and shortcomings in implementing the Plan, (2) the results of the studies or observations that were undertaken, and (3) the mitigation measures that were proposed and/or implemented based on the results of the studies or observations.

Eastman Falls Dam Project No. 2457

Article 38 should be superceded by the following:

Article 38: The Licensee shall provide at the Eastman Falls Dam the trapping facilities, measures, and studies stated in the document: "A Comprehensive Plan for Provision of Anadromous Fish Passage Measures and Facilities at PSNH's Merrimack-Pemigewasset River Hydroelectric Dams, FERC Project No. 1893, 2456, and 2457. In addition, the Licensee shall, after consultation with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, U.S. Forest Service, New Hampshire Department of Fish and Game, Massachusetts Division of Fisheries and Wildlife, and the Massachusetts Division of Marine Fisheries, submit for Commission approval (a) functional design drawings of fish passage and/or trapping facilities when necessary in accordance with the Plan; (b) annual reports beginning in April 1987 describing (1) the yearly accomplishments and shortcomings in implementing the Plan, (2) the results of the studies or observations that were undertaken, and (3) the mitigation measures that were proposed and/or implemented based on the results of the studies or observations. In addition, the Licensee shall not later than the year 2010 submit for Commission approval, following consultation with the fisheries agencies, a schedule for upstream fish passage facilities based on the progress of the Atlantic salmon program.

If you have any questions regarding these comments, please contact Mr. Joseph McKeon of my staff at FTS 834-4411.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor
New England Area

CC: L. Stolte, USFWS
R. Cronin, MDF&W
A. Crabtree, NHF&G
R. Fairbanks, MDEG
E. Niewald, USFS
R. Barbour, PSNH
R. Fairbanks, MDMF
R. Seamans, NMFS
RO/HR Reading File
ES: JMcKeon:jd:5-13-86:834-4411

A COMPREHENSIVE PLAN FOR PROVISION OF ANADROMOUS FISH PASSAGE MEASURES AND FACILITIES AT PSNH'S MERRIMACK - PEMIGEWASSET RIVER HYDROELECTRIC DAMS, FERC PROJECTS NO. 1893, 2456 AND 2457

By
Public Service of New Hampshire and
The Policy and Technical Committees
For Anadromous Fishery Management
Of The Merrimack River

PSNH will provide the following fish passage facilities, measures and studies.

UPSTREAM FISH PASSAGE

Amoskeag Dam

1988 - Provide Upstream Passage Facility (fish ladder); Operational for Spring Runs.

Provide for Transportation of Atlantic Salmon from Amoskeag Passage Facility to Garvins Falls Impoundment — Until Hooksett Dam and Garvins Falls Dam, Upstream Passage Facilities Are Operational.

- Provide 2 Barrier Dams; In Place for Spring Runs of Second Year Following:

  1. Observation of Stranding, Entrapment and/or Undue Delay of Upstream Migration of 200 or More Adult American Shad Below Spillway of Dam; Or

  2. Stranding, Entrapment and/or Undue Delay of Upstream Migration Below Spillway of Dam of 10% or More of Approximately 50 Adult Atlantic Salmon, Radio-Tagged and Released Above Pawtucket Dam in Lowell, Mass.

UPSTREAM FISH PASSAGE
Cont'd

- Provide For Performance of An Annual Radio Tracking Study of Approximately 50 Upstream Migrating, Adult Atlantic Salmon--Released in Merrimack River Between Pawtucket and Amoskeag Dams--for Three (3) Years Or Until Definitive Need for Amoskeag Barrier Dams Has Been Determined, Whichever Is Less. First Annual Tracking Study will Be Performed During First Year That 50 Or More Returning Salmon Are Made Available For This Purpose by the Policy Committee.

- Fishery Resource Agencies Will Provide PSNH With Necessary Salmon For Tracking Studies. Tracking Studies Will Be Cooperatively Developed by PSNH and Fishery Resource Agencies.

Hooksett Dam

Upstream passage facilities (fish ladder, etc.) will be provided for the spring runs of the 5th year following the annual passage of 15,000 American Shad at Amoskeag Dam but not prior to the completion of full fish passage facilities at Amoskeag Dam.

Garvins Falls Dam

Upstream passage facilities (fish ladder, etc.) will be provided for the spring runs of the 5th year following the annual passage of 15,000 American Shad at Hooksett Dam.

Eastman Falls and Ayers Island Dams

An Atlantic Salmon trapping facility will be provided at the Eastman Falls Dam for the spring run of the second year following the annual passage or trapping of 50 multi-sea winter Atlantic Salmon at Amoskeag Dam.

UPSTREAM FISH PASSAGE
Cont'd

PSNH will provide for the transportation of Atlantic Salmon from the Eastman Falls trap to upstream of the Eastman Falls Dam and/or Ayers Island Dam, in accordance with Policy Committee instructions or until such time as full fish passage at both dams becomes available.

Full upstream passage facilities (fish ladder, etc.) at the Eastman Falls Dam and a potential salmon trapping facility at the Ayers Island Dam will be deferred to the year 2010 or later. In the year 2010, the need for these facilities will be reevaluated by the fisheries resource agencies and PSNH.

DOWNSTREAM FISH PASSAGE

Ayers Island Dam

1988 - Provide Spillway Gate and Sluice for Regulated Overflow Spilling; Operational for Spring Salmon Out-Migration.

- Commence 2-3 Year Study to Determine Effectiveness of Spillway Gate and Sluice for Passing Salmon Smolt. Study Design Cooperatively Developed by PSNH and Fishery Resource Agencies. Fishery Resource Agencies Will Provide PSNH With Necessary Salmon for Study.

Eastman Falls Dam

1988 - Provide Gated Intake Structure (Gulper) for Existing Trash Sluice; Operational for Spring Salmon Out-Migration.

Automated Overflow Spillway Gate Within Waste Gate or Periodic Cracking of Waste Gate, etc., May Be Provided to Augment or Supplant Gulper Operation, If Need Demonstrated by Effectiveness Study, Below.

DOWNSTREAM FISH PASSAGE
Cont'd

- Commence 2-3 Year Study to Determine Effectiveness of Gulper, etc., for Passing Salmon Smolt. Study Design Cooperatively Developed by PSNH and Fishery Resource Agencies. Fishery Resource Agencies Will Provide PSNH With Necessary Salmon for Study.

Garvins Falls Dam

1986 & 1987 - Provide Periodic Manipulation of Waste Gate to Pass Salmon Smolt and Clupeid Out-Migrants.

- Observations of Effectiveness of Overflow Spilling at Waste Gate for Passing Summer-Fall, Clupeid Out-Migrants -- Performed Cooperatively by PSNH and Fisheries Resource Agencies.

1986 & Etc. - Exit Channel Cleared and Plunge Pool Below Waste Gate Provided each Spring, As Soon As River Conditions Permit.

1987 - Automate Waste Gate for Regulated Overflow Spilling; Automation Completed for Summer-Fall, Clupeid Out-Migrations.

1988 - Garvins Falls Dam Included in 2-3 Year Study to Determining Effectiveness of Downstream Passage Facilities and Measures for Passing Salmon Smolt -- See Study for Ayers Island and Eastman Falls Dam, Above.

- Need for Observations and/or Studies of Effectiveness of Downstream Passage Facilities for Passing Clupeid Species Determined Partially by Results of 1986-1987 Observations at Garvins Falls and Hooksett Dams, and Evaluated Annually by Fisheries Resource Agencies and PSNH.

DOWNSTREAM FISH PASSAGE
Cont'd

Hooksett Dam

1986 – Provide Periodic Stoplog Adjustments in Trash Sluice to Pass Salmon Smolt and Clupeid Out-Migrants.

1986 & 1987 – Observations of Effectiveness of Overflow Spilling at Stoplog Bay/Waste Gate for Passing Summer-Fall, Clupeid Out-Migrants -- Performed Cooperatively by PSNH and Fisheries Resource Agencies.

1987 – Provide Automated Waste Gate in Trash Sluice for Regulated Overflow Spilling; Operational for Summer-Fall, Clupeid Out-Migrations. Provide Periodic Manipulation of Waste Gate to Pass Clupeid Out-Migrants.

1988 – Hooksett Dam Included in 2-3 Year Study to Determining Effectiveness of Downstream Passage Facilities and Measures for Passing Salmon Smolt -- See Study for Ayers Island and Eastman Falls Dam, Above.

– Need for Observations and/or Studies of Effectiveness of Downstream Passage Facilities for Passing Clupeid Species Determined Partially by Results of 1986-1987 Observations at Garvins Falls and Hooksett Dams, and Evaluated Annually by Fisheries Resource Agencies and PSNH.

Amoskeag Dam

1986 & 1987 – No Downstream Passage Requirements.

1988 – Provide Automated Overflow Spillway with Bypass Sluice; Operational for Spring Salmon Out-Migration.

– Amoskeag Dam Included in 2-3 Year Study to Determine Effectiveness of Downstream Passage Facilities and Measures for Passing Salmon Smolt — See Study for Ayers Island and Eastman Falls Dam, Above.

April 23, 1986

AYERS ISLAND MINIMUM FLOW

1986 – Minimum Flow at Ayers Island Dam Will Be Determined by Observations of Flows in Reach Between Ayers Island Dam and Smith River Confluence. Observations Will Be Performed Cooperatively by Fisheries Resource Agencies and PSNH During Summer-Fall of 1986.

1987 – Provide Ayers Island Dam Minimum Flow.

APPENDIX 7-3

MARCH 5, 2009 LETTER BETWEEN JOHN K. NOVAK (FEDERAL ENERGY REGULATORY COMMISSION) AND ROBERT GUNDERSEN (PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE) REGARDING UPSTREAM FISH PASSAGE AT THE AMOSKEAG, HOOKSET AND GARVINS FALLS DEVELOPMENTS

20090309-0038 FERC PDF (Unofficial) 03/05/2009

FEDERAL ENERGY REGULATORY COMMISSION
Washington, D. C. 20426

OFFICE OF ENERGY PROJECTS

Project No. 1893-064--New Hampshire
Amoskeag, Hooksett and Garvins Falls
Public Service of New Hampshire

Mr. Robert Gundersen
Hydro Manager
Public Service of New Hampshire
P.O. Box 330
Manchester, NH 03105-0330

March 5, 2009

Subject: 2008 Fish Passage Facility Status Report

Dear Mr. Gundersen:

This is in response to your letter filed December 1, 2008, providing a report on upstream fish passage activities at the three project developments during 2008. This report was filed pursuant to the Water Quality Certification (WQC) and license Article 401.

Pursuant to the WQC and the fishway prescription issued by the U.S. Department of the Interior you are required to install upstream fish passage facilities within 3 to 5 years at the Hooksett and Garvins Falls developments after passage of a certain number American shad or river herring at the Amoskeag and Hooksett developments. There is an existing upstream fish passage facility at the Amoskeag development. You report that during 2008 that no American shad or river herring were observed at the Amoskeag development.

You report satisfies the filing requirements of the project license. Thank you for your cooperation in this matter. If you have any questions pertaining to this letter, please contact me at (202) 502-6076.

Sincerely,

John K. Novak
Biological Resources Branch
Division of Hydropower Administration
and Compliance

APPENDIX 7-4
OPERATION OF A FLOW INDUCER AT THE PENACOOK UPPER FALLS PROJECT

Unofficial FERC-Generated PDF of 20040526-0155 Received by FERC OSEC 05/25/2004 in Docket#: P-3342-000

ORIGINAL

ESSEX HYDRO ASSOCIATES, L.L.C.
55 UNION STREET, 4th FLOOR
BOSTON, MASSACHUSETTS 02108-2400 USA

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

April 7, 2004

John P. Warner, Energy/Hydropower Coordinator
New England Field Office, U.S. Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, NH 03301

Re: Penacook Lower Falls Hydroelectric, FERC Project No. 3342-NH
Penacook Upper Falls Hydroelectric, FERC Project No. 6689-NH
Rolfe Canal Hydroelectric, FERC Project No. 3240-NH

Dear Mr. Warner:

Essex Hydro Associates, LLC ("Essex") is a general partner of the entities holding the FERC licenses for the above referenced projects. License articles for those projects (articles 32, 24, and 30, respectively) require that the licensees shall, no later than July 1, 2004, "file for Commission approval functional design drawings of fish passage facilities... prepared after consultation with the New Hampshire Fish and Game Department ("NHF&GD") and the U. S. Fish and Wildlife Service ("USF&WS")."

As we have discussed the timetable for the Merrimack River fish restoration program has not proceeded as quickly as was envisioned at the time those articles were written. Essex understands that the three projects on the mainstem of the Merrimack River, immediately downstream of the above referenced projects, are now in the process of consultation and design regarding fish facilities as a part of their FERC relicensing process. As we have further discussed, consultation and design regarding fish facilities for the three Contoocook River projects would be more appropriately undertaken after the mainstem facilities have been better defined.

Therefore, if it meets with the approval of the NHF&GD and the USF&WS, the licensees for the above referenced projects are intending to file with the FERC, for each project, a request for an extension of time regarding the subject articles. Essex would request permission to file with the FERC, on or before January 31, 2006, a timetable for the required consultation and design process. If this is acceptable to the USF&WS, I would be grateful if you would signify this by signing and dating this letter in the appropriate spaces below and returning one copy to me by both facsimile and post. Thank you very much for your attention to this matter.

Sincerely,
Essex Hydro Associates, L.L.C.

Thomas A Tarpey
Executive Vice President

5/17/04

John Warner, U.S. Fish and Wildlife Service Date

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ORIGINAL

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E-MAIL: essex@essexhydro.com

April 16, 2004

William Ingham, Fish and Wildlife Ecologist
New Hampshire Fish and Game Department
11 Hazen Drive
Concord, NH 03301 Facsimile: 603-271-1438

Re: Penacook Lower Falls Hydroelectric, FERC Project No. 3342-NH
Penacook Upper Falls Hydroelectric, FERC Project No. 6689-NH
Rolfe Canal Hydroelectric, FERC Project No. 3240-NH

Dear Mr. Ingham:

Essex Hydro Associates, LLC ("Essex") is a general partner of the entities holding the FERC licenses for the above referenced projects. License articles for those projects (articles 32, 24, and 30, respectively) require that the licensees shall, no later than July 1, 2004, "file for Commission approval functional design drawings of fish passage facilities... prepared after consultation with the New Hampshire Fish and Game Department ("NHF&GD") and the U. S. Fish and Wildlife Service ("USF&WS")."

As we have discussed the timetable for the Merrimack River fish restoration program has not proceeded as quickly as was envisioned at the time those articles were written. Essex understands that the three projects on the mainstem of the Merrimack River, immediately downstream of the above referenced projects, are now in the process of consultation and design regarding fish facilities as a part of their FERC relicensing process. As we have further discussed, consultation and design regarding fish facilities for the three Contoocook River projects would be more appropriately undertaken after the mainstem facilities have been better defined.

Therefore, if it meets with the approval of the NHF&GD and the USF&WS, the licensees for the above referenced projects are intending to file with the FERC, for each project, a request for an extension of time regarding the subject articles. Essex would request permission to file with the FERC, on or before January 31, 2006, a timetable for the required consultation and design process. If this is acceptable to the NHF&GD, I would be grateful if you would signify this by signing and dating this letter in the appropriate spaces below and returning one copy to me by both facsimile and post. Thank you very much for your attention to this matter.

Sincerely,
Essex Hydro Associates, L.L.C.

Thomas A Tarpey
Executive Vice President

William C. Ingham 5-14-04

William Ingham, Fish and Wildlife Ecologist Date
New Hampshire Fish and Game Department

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ORIGINAL

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May 11, 2004

The Honorable Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.,
Room 1-A
Washington, DC 20426

016

Re: Penacook Lower Falls Hydroelectric, FERC Project No. 3342-NH
Penacook Upper Falls Hydroelectric, FERC Project No. 6689-NH
Rolfe Canal Hydroelectric, FERC Project No. 3240-NH

015

036

Dear Ms. Salas:

Essex Hydro Associates, LLC ("Essex") is a general partner of the partnerships holding the FERC licenses for the above referenced projects ("Contoocook River projects"). Essex seeks an extension of time in which to consult, develop and file functional design drawings of fish passage facilities and submits that good cause supports its request.

License articles for the Contoocook River projects (Articles 32 (P-3342), 24 (P-6689), and 30 (P-3240)) require that the Licensees shall, no later than July 1, 2004, "file for Commission approval functional design drawings of fish passage facilities... prepared after consultation with the New Hampshire Fish and Game Department ("NHF&GD") and the U. S. Fish and Wildlife Service ("USF&WS")."

The timetable for the Merrimack River fish restoration program, of which the above referenced projects are a part, has not proceeded as quickly as was envisioned at the time the subject licenses were issued. Essex understands the three projects on the mainstem of the Merrimack River, immediately downstream of the above referenced projects, are now in the process of consultation and design regarding fish facilities as a part of their FERC relicensing process. In light of the consultation and development activities at the downstream projects, consultation and design regarding fish facilities for the three Contoocook River projects would be more appropriately undertaken after the mainstem facilities have been better defined.

Therefore, the Licensees for the Contoocook River projects respectfully request the Commission grant an extension of time for compliance with License Articles 32 (P-3342), 24 (P-6689) and 30 (P-3240). The Licensees propose to file with the Commission, on or before January 31, 2006, a timetable for the required consultation and design process.

The Licensees have conferred with the relevant offices of the USF&WS and the NHF&GD. Correspondence with these agencies evidencing their consent to the granting of such an extension of time is attached.

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Thank you very much for your attention to this matter. Please direct any questions with respect to this request to Thomas A. Tarpey at 617-367-0032.

Sincerely,
Essex Hydro Associates, L.L.C.

Thomas A Tarpey
Executive Vice President

Enc.: Essex Letter of April 07, 2004 to USF&WS
Essex Letter of April 16, 2004 to NHF&GD

cc: John Warner; USF&WS, Concord, NH
William Ingham; NHF&GD, Concord, NH

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20040706-3013 Issued by FERC OSEC 07/06/2004 in Docket#: P-3240-036

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Briar Hydro Associates

Project Nos. 3240-036, 3342-016, and 6689-015

ORDER GRANTING EXTENSION OF TIME TO FILE FISH PASSAGE DESIGN DRAWINGS

(Issued July 6, 2004)

Briar Hydro Associates, licensee for the Rolfe Canal, Penacook Lower Falls, and Penacook Upper Falls Hydroelectric Projects, has requested an extension of time to file functional design drawings of the proposed fish passage facilities at each project, as required by the cited articles of its licenses.[1] The projects are located on the Contoocook River in Merrimack County, New Hampshire.

The licensee states that the timetable for the fish restoration program on the downstream Merrimack River has not proceeded as quickly as was expected when the licenses for these projects were issued. The licensee notes that consultation and design regarding fish facilities at projects on the Merrimack River are ongoing as part of the relicensing process for those projects. The licensee requests an extension of time, until January 31, 2006, to file a timetable for the consultation and design process for fish passage facilities at the three Contoocook River projects.

The reasons advanced by the licensee in support of the requested extension of time are reasonable and justify an extension. The licensee has contacted the U.S. Fish and Wildlife Service and the New Hampshire Fish and Game Department, with whom consultation on fish passage is required, regarding this request. The agencies concur with the request.

The Director orders:

(A) The licensee shall file, by January 31, 2006, a timetable for the consultation and design process for fish passage facilities required by article 30 of the license for

[1] 29 FERC ¶ 62,229 (1984), article 30; 21 FERC ¶ 62,282 (1982), article 32; and 29 FERC ¶ 62,230 (1984), article 24.

20040706-3013 Issued by FERC OSEC 07/06/2004 in Docket#: P-3240-036

Project No. 3240, article 32 of the license for Project No. 3342, and article 24 of the license for Project No. 6689.

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

Regina M. Saizan
Division of Hydropower
Administration and Compliance

ESSEX HYDRO ASSOCIATES, L.L.C.
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TELEPHONE: +617-367-0032
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E-MAIL: essex@essexhydro.com

February 25, 2005

John P. Warner, Energy/Hydropower Coordinator
New England Field Office, U.S. Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, NH 03301

Via e-mail: "John_Warner@FWS.gov"

Re: Penacook Lower Falls Hydroelectric, FERC Project No. 3342-NH
Penacook Upper Falls Hydroelectric, FERC Project No. 6689-NH
Rolfe Canal Hydroelectric, FERC Project No. 3240-NH

Dear Mr. Warner:

Essex Hydro Associates, LLC ("Essex") is a general partner of Concord Hydro Associates, LLC ("CHA"), the FERC licensee, owner and operator of the three above captioned hydroelectric projects. All of these projects are located on the Contoocook River, in the vicinity of Penacook, New Hampshire.

Over the last several years, these Contoocook River plants have installed and operated numerous prototype systems designed to improve the passage of atlantic salmon smolts migrating downstream. To test the effectiveness of those systems, CHA has operated traps downstream of the bypass facilities for use in "Mark-Release-Recapture" studies.

These studies showed the installed facilities to be effective in passing the hatchery smolts employed in the testing. However, the trap and passage facility have now been run for five full migration seasons and the number of wild smolts captured has been extremely low relative to the predicted population of outmigrating wild smolts. See Table 1.

Assuming that wild smolts were opting to pass the hydro facility at which we were conducting our tests by moving through the facility's turbine, rather than using the bypass facilities being tested, CHA engaged Normandeau Associates, Inc. ("NAI") to conduct a survival test on salmon smolts moving through turbines of the type installed at each of CHA's Contoocook River plants. Attached for your review is the NAI letter report "Survival Estimates of Hatchery-reared Juvenile Atlantic salmon Passed Through A Kaplan Turbine at the Briar-Rolfe Canal Hydroelectric Project".

The Rolfe Canal Hydroelectric Project ("Rolfe") is the most upstream of CHA's Contoocook River hydroelectric projects. The Rolfe plant was chosen as the test site because, of the three Penacook plants, it presents the least favorable conditions for turbine passage. All three of the CHA Contoocook River plants have turbines which are essentially identical, mecahnically; all are three

meter diameter, five bladed, horizontal kaplan-type turbines. However, the Rolfe plant's turbine, at 150 RPM, has a higher operating speed than the turbines of either Penacook Upper Falls (138 RPM,) or Penacook Lower Falls (130.4 RPM).

The NAI test indicates that the survival rate for smolts transiting each of CHA's three Contoocook River turbines will be equal to or better than ninety-five percent. In light of this, CHA makes the following proposal regarding downstream fish passage at its three Contoocook River plants.

1. Rolfe Canal Hydro.
   a. Rolfe Canal passage - migrants moving downstream via the Rolfe Canal would pass the facility by transiting the turbine.
   b. Mainstem passage.
      i. When river discharge is less than or equal to turbine capacity - migrants moving downstream via the mainstem of the Contoocook would pass the York Dam via one of two bottom-opening slide gate located at the southerly end of the dam. This gate would release a constant fifty cubic feet per second, until river flow exceeds turbine hydraulic capacity.
      ii. When river discharge exceeds turbine hydraulic capacity (see Table 2) - the above mentioned gates will be opened as necessary, up to their full hydraulic capacity, to match river flow in excess of turbine hydraulic capacity.
      iii. When river discharge exceeds the combined hydraulic capacity of turbine and dam spill gates - additional river flow will pass via the crest of the York Dam.
2. Penacook Upper Falls Hydro.
   a. When river discharge is less than or equal to the combined hydraulic capacity of the turbine and the downstream migrant bypass slot - migrants would pass the Penacook Upper Falls Hydro facility via:
      i. A four foot deep slot located in the gate bay immediately to the left of the powerhouse intake. This slot would release a constant twenty cubic feet per second, until river flow exceeds turbine hydraulic capacity. This slot will be opened as necessary, up to its full hydraulic capacity, to match river flow in excess of turbine hydraulic capacity. Outfall from this slot will be channeled into a flume running down the left side of the powerhouse and be discharged into the tailrace.
      ii. The facility's turbine.
   b. When river discharge exceeds the combined hydraulic capacity of turbine and the downstream migrant bypass slot (see Table 2) - additional river flow will pass via one or more of the bottom opening slide gates comprising the facility's gated spillway.
3. Penacook Lower Falls Hydro.
   a. When river discharge is less than or equal to the combined hydraulic capacity of the turbine and the downstream migrant bypass gate - migrants would pass the Penacook Upper Falls Hydro facility via:
      i. A four foot high bottom opening slide gate located immediately to the right

of the powerhouse intake. This gate would release a constant twenty cubic feet per second, until river flow exceeds turbine hydraulic capacity. This slot will be opened as necessary, up to its full hydraulic capacity, to match river flow in excess of turbine hydraulic capacity. Outfall from this gate will be channeled into a flume running down the right side of the powerhouse and be discharged into the tailrace.

ii. The facility's turbine.

b. When river discharge exceeds the combined hydraulic capacity of turbine and the downstream migrant bypass slot (see Table 2) - additional river flow will pass via one or more of the bottom opening slide gates comprising the facility's gated spillway.

I would be grateful if you would review and comment on this proposed plan of operation for downstream migration facilities for CHA's three Contoocook River plants. I will contact you during the week of March 7th, to arrange a meeting for further discussion on this proposal. Thank you very much for your attention to this matter.

Sincerely,
Concord Hydro Associates, LLC, by
Essex Hydro Associates, L.L.C.. a
General Partner, by

-------- s ----------

Thomas A. Tarpey
Executive Vice President

Table 1 Penacook Upper Falls Hydroelectric Project Fishway Collection Information	
Test Year	Number of Wild Smolts Collected
2000	24
2001	17
2002	31
2003	29
2004	45

TABLE 2 Calculated Percent of Time when River Flow Exceeds Turbine Discharge April 1 thru June 30			
Rolfe Canal and Penacook Upper Falls Projects		Penacook Lower Falls Project	
1993	34.8	1993	26.3
1994	49.0	1994	49.5
1995	08.7	1995	00.3
1996	45.5	1996	57.3
1997	38.3	1997	49.1
1998	37.0	1998	45.3
1999	28.5	1999	35.0
2000	32.2	2000	43.4
2001	36.9	2001	38.9
2002	22.6	2002	31.5
2003	40.2	2003	53.2
2004	32.7	2004	43.7
Average	33.9	Average	39.5
Min	08.7	Min	00.3
Max	49.0	Max	57.3

6130

United States Department of the Interior

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

FERC No. 3342, 6689 and 3240

June 21, 2005

Mr. Thomas A. Tarpey, Executive Vice President
Essex Hydro Associates, L.L.C.
55 Union Street, 5th Floor
Boston, MA 02108-2400

Dear Mr. Tarpey:

This is in response to your letter dated February 23, 2005, which submits a proposal for operation of downstream passage facilities at the Penacook Lower Falls, Penacook Upper Falls and Rolfe Canal Projects, located on the Contoocook River in Penacook and Boscawen, New Hampshire. Attached to the letter was a brief report on turbine survival tests of salmon smolts, conducted in 2004.

We have reviewed the proposal and turbine survival report and have the following comments, questions and recommendations. We have coordinated this response with other Service and state agency offices involved in anadromous fish restoration in the Merrimack River Basin.

Introductory Statements

The statement, in the third paragraph of the letter, that studies performed at the project have proven the downstream fish passage facilities to be effective for passing salmon smolts is incorrect. While studies of various bypasses and screen designs were conducted at all three projects, positive results were only attained at the Upper Penacook Falls Project, and acceptable passage effectiveness at this site only occurred when a combination of an arc-shaped bypass, flow inducer and floating guidance louver was in place. All studies at the Rolfe Canal and Lower Penacook Falls Projects demonstrated very poor passage efficiency under all tested scenarios.

Turbine Survival

The letter also references the turbine survival test results that indicate greater than 95% survival through the project turbines. While the study determined that direct mortality was less than 5%, some fish that survived initial passage received potentially serious injuries that could affect longer-term survival. Since all smolts passing this site need to pass though many miles of river and up to seven more hydro stations, cumulative injuries and reduced condition attributable to the injuries would likely reduce overall long-term survival. With injured fish factored in, we consider the long-term survival of smolts passing through each turbine to be closer to 90%.

Proposed Passage Plan

Based on turbine survival data, you propose the following:

Rolfe Canal – Operate the bottom-opening gate at York Dam to pass a minimum of 50 cfs at all times. Fish that do not pass at York Dam would enter the canal and pass through the Rolfe Canal station turbine.

We do not have any plans of York Dam or the bottom-opening gate. However, based on an approximated 10-foot head difference at York Dam and a submerged orifice type gate, a five-foot-wide gate would need to be open only six inches at the bottom to pass the required 50 cfs. A submerged opening would not be expected to provide an efficient passage by surface-oriented smolts, and effectiveness would be further aggravated by the small opening.

Upper Penacook – Operate a 4-foot-deep slot in the gate bay adjacent to the powerhouse intake. This slot would pass a minimum of 20 cfs. Passage through the turbine would be the secondary passage route.

This slot width would only be about nine inches wide. The Service's design criteria calls for the minimum width of a bypass facility at a hydro facility to be three feet, or four times the width proposed here. All previous correspondence, as well as the approved bypass plans regarding downstream bypass facilities, identify a bypass flow of 40 cfs, which is consistent with our minimum design criteria of 2% of turbine capacity. The only bypass configurations that showed any reasonable effectiveness at this site was the configuration using an arc-shaped bypass entrance located at the dam crest gate bays.

Lower Penacook – Operate a four-foot-high bottom-opening slide gate located immediately adjacent to the powerhouse intake. This gate would release a minimum flow of 20 cfs. Passage through the turbine would be the secondary passage route. During high flows, excess spill would pass via additional bottom-opening slide gates.

As with Upper Penacook, the approved plans and all previous correspondence called for a minimum bypass flow of 40 cfs. Also, similar to Rolfe Canal, a bottom-opening gate passing such a small flow is unlikely to provide any meaningful passage.

Overall

We note that the proposal is not detailed, and included no design plans for which gates will be used as bypasses. As a result, the exact bypass configurations proposed are unclear. In addition, there is no information on the plunge pool configuration below any of the bypasses.

Salmon Fry Stocking in the Contoocook River

The numbers of salmon fry stocked into the Contoocook River has varied from year to year. In recent years, stocking upstream from the project (including the mainstem Contoocook, North Branch Contoocook and Beards Brook) have ranged from over 140,000 in 2000 to 9,000 in 2004. Most smolts move downstream as 2-year-olds with some migrating at one or three years old. As such, fish passing downstream in 2005 would have largely been from the 2003 fry stocking, with some possibly from 2002 and 2004. Stocking in those years have been 14,000, 93,000, and 9,000 fry respectively.

Passage measures in 2005

Given the need to determine 2005 passage measures prior to a complete review of the long-term passage plan for the projects, you contacted John Warner of this office regarding passage measures needed this year. You requested, and were granted permission to operate the Upper Penacook Falls fish bypass system without running the current inducer system, due to the limited number of salmon smolts that would move downstream in 2005 and your conclusion of over 95% turbine survival. We reserved a decision on long-term measures pending review of the proposal, the attached turbine survival results, and past study results.

Past Evaluations at Each Project

Evaluation of various structural downstream passage devices and non-structural behavioral measures have been ongoing at one or more of the three projects since 1991.

Rolfe Canal

Studies at Rolfe Canal included assessment of a simple 3-foot-wide, 2-foot-deep bypass adjacent to the project intake in 1992, a modified bypass with a surface screening structure and attraction and repulsion lights in 1993 and 1994, and a sound deterrent system in 1995 and 1996 designed to exclude smolts from the canal and encourage passage at York Dam.

Extremely poor passage results at Rolfe Canal led to the concept of excluding fish from the Rolfe Canal and passing them down the mainstem river or capturing fish at York Dam and transporting them downstream below the three projects. Passage effectiveness results for all studies, however, were very poor. It is notable, however, that the Rolfe Canal tests indicated that passage efficiency at the bypasses was inversely related to unit discharge.

Upper Penacook Falls

Poor passage results at Rolfe Canal led to a shift in focus to testing experimental technologies at the Upper Falls Project. Initial test results of an acoustic deterrent system in 1997 were poor, leading to a switch to look at current inducers that create an artificial flow field to guide fish to the fish bypass sluice. The fish bypass itself was moved to the center crest bay gate and designed with an arc-shaped entrance to promote an entrance flow field with more gradual flow acceleration. Results in 1997 were promising. In 1998, a slickbar oil boom was installed to help direct flow towards the bypass, and floating current transducer units were used in addition to a shore-mounted inducer. Overall passage with this configuration was 64%. This was the operation mode in 1999, but in 2000, a cabled louver was installed instead of the slickbar boom, and the bypass location was moved to the right crest bay gate. Passage results for specific test releases ranged from 3% to 86%. Better efficiencies were seen during test runs at lower turbine discharges.

The success of the current inducer in creating a flow field led to thoughts that such a system could be used to move smolts into a trap, where they could be transported around the three projects. If successful in its experimental deployment at Upper Falls, this system could be installed at Rolfe Canal to intercept emigrating smolts for transport below the three projects. A prototype floating auger–type trap was tested in 2001. The results of this test were poor, and focus was reverted back to the shore-mounted inducer and bypass system. The test in 2002 used a larger 16 hp motor on a single current inducer. Bypass efficiencies from different release groups ranged from 43% to 74%. It is uncertain if turbine discharge affected the test results as in past evaluations, as we do not have a results report from this study.

In addition to field testing in 2002, Essex had a Computational Flow Dynamics (CFD) model developed to evaluate the flow fields created by the current inducer and guide louver to assess how to improve that flow field. The results indicated that two inducers, one 10 hp shore-mounted inducer and one 16 hp floating inducer, were needed to create a continuous flow field to the fish bypass. A continuous field is considered necessary to achieve high bypass effectiveness.

Following the 2002 studies, you proposed to continue current inducer operations at Upper Falls, while you shifted to planning for a similar installation at Rolfe Canal. You also proposed to investigate the level of turbine mortality that may be expected to occur at the projects. In 2003, an acoustic Doppler flow profile was to be completed at the entrance to Rolfe Canal, a new current inducer system was to be installed in 2004, and by 2006, the plan and hope was that a complete, effective guidance and trapping system would be in place at Rolfe Canal/York Dam, to capture smolts and transfer them past the other two projects. If the Rolfe Canal trap proved to be very effective, it was possible that the Upper Falls current inducer system could be turned off.

We are unaware whether the Doppler survey or planning and designing a current inducer system for Rolfe Canal ever occurred. What was conduced in 2004 was the turbine survival test at Rolfe Canal discussed above.

Lower Penacook Falls

Lower Falls had largely been ignored in most studies of the projects. Initial bypass testing proved ineffective and efforts focused on technology development at the other sites that could be applied to Lower Falls and to trapping and transfer systems that would eliminate the need for site-specific measures at Lower Falls.

Passage Study Summation

Given that the three projects, in close proximity were operated by the same company, the Service and other resource agencies agreed that passage evaluations could focus on one site at a time to test new passage technologies. We also agreed to experimental measures including the lights, acoustic arrays and current inducers, modified bypasses and trap-and-trucking.

The concept for these evaluations was that information gathered and lessons learned at one site could then be applied to the other two sites, given somewhat similar project size, intake depths and turbine designs. As such, the tests of the current inducer, louver and modified bypass at Upper Falls show great promise as a solution to passage problems, especially at lower generation levels. Instead of following through on the results of so many years of study, Essex turned to turbine mortality testing. While we agreed this was acceptable, it was uncertain whether turbine passage alone would be an acceptable passage measure. Rather, it was conceivable that the data could have indicated that good survival coupled with moderate bypass effectiveness would be needed to provide acceptable passage.

Salmon Smolt Passage

Necessary Facilities for Salmon Smolt Passage

The proposed fish passage plan departs from the long-standing plan to move forward with modifications at Rolfe Canal and Lower Falls based on the Upper Falls results.

Essex's proposal would mean that the proven-effective current inducer and louver system would be abandoned and the simple bypasses that were proven to be ineffective would be operated instead. In fact, as described above, the proposed bypasses with only 20 cfs flow would be even less effective than the old bypasses that were previously proven ineffective. Salmon smolts, therefore, would largely pass through the turbine units. As indicated above, we would ascribe to a more conservative 90% turbine survival figure. If such a survival rate is applied to the three projects, overall survival past the three would be only 73%. That is a sizable percentage loss.

For successful salmon passage at the projects, we believe that the following improvements to passage would need to be implemented:

- The current inducer and louver system, with improvements indicated by the CFD modeling, would be installed and operated at Upper Falls.

- A current inducer system, such as a system at Upper Falls, would be implemented at the Rolfe Canal Project, as was previously proposed by Essex.
- Following installation and evaluation of the Rolfe Canal current inducer system, we would determine if a combination of trap-and-truck from Rolfe Canal and/or Upper Falls, and/or unit passage at the three projects would be acceptable long-term passage configurations, and whether or not current inducer and bypass operation at the Upper Falls facility could be suspended.

Interim Passage Operations Given Current Stocking Levels

We would not accept the proposed fish passage plan if salmon fry stocking in the Contoocook River had continued at the same levels that existed before and during much of the last 14 years of passage studies. However, a reduced number of salmon fry are now stocked in the Merrimack River Basin. Stocking into the Contoocook, therefore, has been severely reduced as indicated above.

Some fry stocking will continue and all fry and subsequent smolts are valuable to the restoration effort. However, moving forward with further studies and additional passage measures at Rolfe Canal solely for salmon smolts appears unwarranted at this time. In addition, the incremental difference between the proposed turbine passage plan and operation of only the Upper Falls current inducer system (the only bypass configuration proven to be somewhat effective) would be minimal given limited fry stocking.

We note that the bypass configuration at Upper Falls and the plunge pool configuration at all three sites are not defined, and need to be reviewed by the Service before we can agree with the proposed plan.

Please note that if salmon fry production increases or changes in stocking location result in more fry being stocked in the Contoocook River drainage, we will push for immediate action to implement the current inducer system at Upper Falls (as modified pursuant to the CFD results), and implementation of measures at Rolfe Canal as outlined above.

Therefore, for the time being, the proposed passage plan is acceptable, as long as the bypass flows are increased to the previously approved minimum flows at the Upper Penacook Project and safe plunge pools are established, and as long as Essex Hydro commits to implementing the modifications described above if Contoocook River stocking changes in the future.

River Herring and Shad Downstream Passage

We have raised the issue of shad and herring stocking into the Contoocook and the subsequent need for downstream passage measures for these fish a number of times in recent years. The shad and herring restoration program calls for establishment of both species in the Contoocook River. River herring have been stocked into the Contoocook River in past years. It is anticipated that herring or shad could be stocked into the Contoocook upstream from your projects as early as next year. At that time, passage measures to assure safe downstream migration of juvenile

clupeids will be needed as these juveniles exit the watershed in late summer or early fall of the same year that they were spawned.

When stocking does occur, the existing bypasses at Rolfe Canal and York Dam should be operated with safe plunge pools and the Upper Falls current inducer, louver and the arc-shaped bypass facility should be operated. We note that the freefall distance from the end of the bypass flume/pipe to tailwater cannot exceed six feet for juvenile clupeids.

While no formal evaluation of passage would be required the first year of such stocking, visual evaluation of fish congregating in the forebays and bypass entrances and observations of the project tailraces of all three projects for injured or dead juveniles should be undertaken. Decisions on the need for further evaluations or changes to these bypass measures would be based on these visual observations and the fishery agencies' long-term stocking plans.

Conclusion

As stated above, we can accept for the time being the proposed fish passage plan for salmon smolt passage (with clarifications on bypass and plunge pool configuration as well as minimum bypass flows), with the understanding from Essex that the passage measures described above will be required if fry stocking in the Contoocook drainage is increased. In addition, downstream passage measures will be needed for shad and/or herring when they are stocked into the river.

Thank you for this opportunity to comment. If you have any questions, please contact John Warner at 603-223-2541, extension 15.

Sincerely yours,

William J Neidermyer

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

cc: CNEFRO- Joe McKeon
NHFGD – Jon Greenwood
NHFGD- Bill Ingham
MDFW - Caleb Slater
MDMF - Kristen Ferry
Engineering FO – Dick Quinn
FERC- Div. Of Hydropower Administration and Compliance
Reading file

es: JWarner:06-21-05:603-223-2541

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May 3, 2006

John P. Warner, Energy/Hydropower Coordinator
New England Field Office, U.S. Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, NH 03301

Facsimile: 603-223-0104

Re: Rolfe Canal Hydroelectric, FERC Project No. 3240-NH
Penacook Upper Falls Hydroelectric, FERC Project No. 6689-NH
Penacook Lower Falls Hydroelectric, FERC Project No. 3342-NH

Dear Mr. Warner:

Essex Hydro Associates, LLC ("EHA") is a general partner of Concord Hydro Associates, LLC ("CHA"), the FERC licensee, owner and operator of the three above captioned hydroelectric projects (collectively referred to here as the "Contoocook River Projects"). All of these projects are located on the Contoocook River, in the vicinity of Penacook, New Hampshire.

By a letter dated February 25, 2005, addressed to you in your capacity as Energy/Hydropower Coordinator of the New England Field Office, U.S. Fish and Wildlife Service ("F&WS") (copy attached), EHA described its proposed methods for passing downstream migrants at the Contoocook River Projects. In a letter response dated June 21, 2005, the F&WS commented on and suggested changes to the proposed migration facilities.

Incorporating the changes suggested in the F&WS's letter, the subject downstream migration facilities have been fabricated and installed. The installed facilities and their operation are described below and in the attached drawings and photographs. Given water depths are measured from the invert of the structure being described to the minimum, regulated water surface elevation.

1. Rolfe Canal Facilities:
   a. Migrants moving downstream via the Rolfe Canal would pass the facility by transiting the turbine.
   b. Mainstem passage See Attachments 1 and 2.
      i. When river discharge is less than or equal to turbine capacity, migrants moving downstream via the mainstem of the Contoocook will pass the York Dam via a surface passage three (3) feet wide and four (4) feet deep, designed to pass fifty (50) fifty cubic feet per second.
      ii. When river discharge exceeds the combined hydraulic capacity of the project's turbine and the surface passage, the additional water will flow over the spillway crest. This will also increase passage flow slightly as pond elevation increases.

2. Penacook Upper Falls Facilities:
   a. When river discharge is less than or equal to the combined hydraulic capacity of the turbine and the downstream migrant passage, migrants will pass the Penacook Upper Falls Hydro facility via:

i. A surface passage twenty-six (26) inches wide and four (4) feet deep located in the gate bay immediately to the left of the powerhouse intake. This passage will release a constant forty (40) cubic feet per second. Outfall from this passage will be channeled into a flume running down the left side of the powerhouse and be discharged into the tailrace. Attachments 3, 4 and 5 are provided for general overview of the downstream passage. Attachment 3 shows the location of the trapping station which has been replaced by the flume passage as reflected in the pictures of attachments 4 and 5.

ii. The facility's turbine.

b. When river discharge exceeds the combined hydraulic capacity of turbine and the downstream migrant passage, additional river flow will pass via one or more of the bottom opening slide gates comprising the facility's gated spillway.

3. Penacook Lower Falls Facilities:

a. When river discharge is less than or equal to the combined hydraulic capacity of the turbine and the downstream migrant passage, migrants will pass the Penacook Lower Falls Hydro facility via:

i. Surface entrance passage located in the first full gate opening to the right of the turbine trash racks. This passage will release a constant forty (40) cubic feet per second. Outfall from this surface passage will discharge into a series of three plunge pools. Each step in this series of plunge pools represents a change in elevation of six (6) feet or less. The lower level of the last step in the series is a bypass channel leading to the facility's tailrace. See Attachments 6 – 9.

ii. The facility's turbine.

b. When river discharge exceeds the combined hydraulic capacity of turbine and the downstream migrant passage, additional river flow will pass via one or more of the bottom opening slide gates comprising the facility's gated spillway or over the spillway crest.

Please call me (617-367-0032) or Dave Sherman (603-753-6166) to arrange access for inspection of these installations. Once you have had an opportunity to review the facilities, please feel free to contact me to discuss their operation or to suggest further modifications.

Very truly yours,

ESSEX HYDRO ASSOCIATES, L.L.C.

Thomas A. Tarpey,
Vice President

cc: FERC, Division of Hydropower Admin. and Compliance
William Ingham, NH Department of Fish and Game

5940

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October 6, 2006

Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Room 1A
Washington, DC 20426

RE: Rolfe Canal Project No. 3240
Penacook Lower Falls, Project No. 3342
Penacook Upper Falls, Project No. 6689
Order Granting Extension of Time to File Fish Passage Design Drawing
Issued July 6, 2004

Dear Secretary:

As originally filed with the FERC on May 19, 2006, enclosed please find an original and eight copies of a letter dated May 3, 2006 to John Warner, U.S. Fish and Wildlife Service ("USF&W") which states that the subject downstream migration facilities have been fabricated and installed.

Very truly yours,

ESSEX HYDRO ASSOCIATES, L.L.C.

Thomas A. Tarpey

Thomas A. Tarpey
Executive Vice President

Enc.