

Study Plan Wilder Dam FERC 1892-026
Fowler 2-27-13

Study Plan, 18CFR Section 5.9b
Submitted for the Wilder Project, FERC 1892-026

By Linda L. Fowler
Hanover Town Trustee for Pine Park
on behalf of
Trustees of Pine Park Association
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Goals and Objectives:

The goal of the proposed study is to obtain data concerning piping erosion at the shoreline of the Wilder Dam impoundment and to ascertain whether erosion may be reduced by changes in water level management practices by the dam operator. The study will accomplish the following objectives:

1. Identify the effects of the size and rate of river level changes on water transport into soils surrounding the impoundment.
2. Study sites will include known highly erodible soils as well as less easily eroded soils.
3. Study sites will also include locations where bank stabilization using various methods has been performed.
4. Identify sites where piping erosion occurs and estimate the amount of siltation from such sites.
5. Place river level and flow gauges at selected study sites above Wilder Dam.
6. Record and collect measurements of flow and river levels at these gauges and Wilder Dam.
7. Produce a model for the management of water levels and rate of water level change that will reduce erosion.
8. Allow the effectiveness of bank stabilization methods to be tested.

The strategy is to examine the rate and size of water level changes in the reservoir to ascertain whether these variables produce significant changes in the amount or rate of water loading of erodible soils. This information would enable management of river levels that reduce siltation without necessarily compromising the operator's goal to achieve a satisfactory return on its investment.

The study Objective is to gather data on erosive activity and river flows that will assist the operators of the Wilder Dam and FERC in developing a management plan that minimizes erosion. Reducing erosion, in turn, meets several objectives of public importance:

1. improvement of water quality in the reservoir and downstream
2. improvement in the scenic and recreational value of the river
3. preservation of valuable agricultural land – a resource for migrating birds and wildlife
4. reduction in the siltation in the reservoir with resulting loss of storage capacity and dam lifespan
5. increased protection for private and governmental shoreline structures and/or infrastructure
6. **prevent further loss of old trees lining the river bank in Pine Park.**

Relevant Resource Management Goals:

5.9(b)(2) Not relevant

5.9(b)(3) Sections 4(c) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the waterway on which the project is located. When reviewing a proposed action the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project as well as power and developmental values.

Public Interest Considerations:

All of the objectives listed in the Study Objective section on page 3, points 1-5, comprise issues that are in the public interest and which the Commission must consider in addition to power generation and development. With respect to Pine Park, the 93-acre, natural reserve in the town of Hanover is a major recreational site with an extensive network of woodland trails that serves the needs of town residents, students at Dartmouth College and the Dresden School District, and members of the surrounding Upper Valley communities.

Existing Information and Need for Additional Information:

The Pine Park Association, a non-profit organization, that owns the 93-acre park in public trust in Hanover, NH, has a Flowage Deed Agreement dating from 1944 with the owner of the Wilder Dam. The deed requires the owner to mitigate damage to the 7500 feet of shoreline of the park along the eastern bank of the Connecticut River north of the Dartmouth rowing facility in Hanover, NH. The last work to mitigate erosion within the park boundaries was completed in 1981. Since then, serious damage has occurred at the northern end of the park, leading to very steep, unstable banks and the loss of a dozen large trees that toppled into the river. Another dozen trees are leaning heavily into the river, which will expose a great deal of loose soil to scouring and piping effects once they fall. Numerous other trees are threatened, posing a future hazard for sections of the hiking trail close to the river.

The Pine Park Trustees do not require a study to compel the TransCanada Corporation to honor its deed. Nevertheless, speakers at the public Scoping Meeting in West Lebanon on January 28th, 2013, presented anecdotal evidence of similar erosion problems with their properties abutting the Wilder mpoundment. They claimed that the rate of erosion had increased in recent memory, changes that corresponded to the transfer of management of the project following assumption of operations by TransCanada. In light of these widespread perceptions, the park trustees think it prudent to obtain a better understanding of why the damage began occurring about a decade ago and why it is accelerating.

Project Nexus:

Connection between the project and its potential effect on the applicable resource.

The application for renewal of the Wilder Dam license intersects with an assortment of resources, including clean water, preservation of riverine habitat, aquatic recreation, and public safety among others.

The applicant recognizes this, and presents in the PAD the results of two studies that

address the subject of erosion in the Wilder Dam project area. These two studies have led the applicant to conclude that Project activities have a minimal impact on the above listed resources. (See section 3.4.6 of the PAD and cited above.) It is up to FERC to decide whether the studies the applicant has already performed allow TransCanada to reach the conclusions that are offered in section 3.4.6 of the PAD without further evidence to back those conclusions. *The Existing Information section of proposals submitted by the Towns of Lyme and Lebanon provide abundant evidence that TransCanada cannot conclude that the dam that the dam operation has no significant effect on erosive activity.*

How the information from this study would be used to develop license requirements:

The study will enable TransCanada to fulfill its legal obligation under its 1944 Deed with the Pine Park Association in the most effective manner to insure a long-term resolution of the erosion issues in the park.

Proposed Methodology:

As a small, volunteer citizens' organization, the Trustees of Pine Park are not in a position to propose or comment on study design and methodology.

Level of Effort and Cost:

Again, the Trustees of Pine Park are not able to comment on study costs.

Appendix of supporting documentation:

- 1) Memo from Pine Park Trustees, January 28, 2013, submitted at the public Scoping meeting;
- 2) Bellows Falls Hydro-Electric and Pine Park Association Flowage Deed Agreement (1944);
- 3) Copies of orders by FERC for shoreline remediation to the New England Power Company (1978 and 1979);
- 4) Copy of the Permit for the remediation of the shoreline in Pine Park (1981).



Dartmouth College HANOVER □ NEW HAMPSHIRE □ 03755-3547

Department of Government, 6108 Silsby Hall
603/ 646-2544 FAX: 603/ 646-2152

January 28, 2013

To: Representatives of Federal Energy Regulatory Commission
From: Pine Park Association Trustees
(Brian Kunz, President; Linda Fowler, Town Trustee)
Re: Erosion of east bank of Connecticut River

The Pine Park Association has a Flowage Deed Agreement dating from 1944 that obliges the owner of the Wilder Dam to mitigate damage to the 7500 feet of shoreline of the park along the eastern bank of the Connecticut River north of the Dartmouth Rowing facility in Hanover, NH. The last work to mitigate erosion along the riverbank was in 1981. In 2010, the Association began a discussion with representatives of TransCanada regarding the severe erosion, the loss of a number of large trees, and the threat to many others at the north end of the park. After a brief flurry of activity, the Association has not received a plan for mitigation or had any communications with representatives of TransCanada.

The Association is a private, non-profit organization responsible for the 93-acre park, which was established in 1900 and expanded through 1912. Since then, the Town of Hanover and Dartmouth College became responsible for the maintenance of the park, but the Association retained the title and all legal powers for its protection and preservation.

TransCanada has a contractual duty to the Association to meet its responsibilities for protection of the bank within the park, as outlined in the deed agreement. In addition, the company is obligated under its 1979 permit renewal to mitigate erosion. The current condition of the shoreline indicates that the TransCanada has been remiss in carrying out both duties. The trustees request, therefore, that renewal of a permit to continue operation of the dam include the requirement that TransCanada fulfill its contractual and license obligations.

We submit the following documents confirming the narrative above:

1. Bellows Falls Hydro-Electric and Pine Park Association Flowage Deed Agreement (1944)
2. Copies of orders by FERC to the New England Power Company (1978 and 1979)
3. Copy of the Permit for remediation of the shoreline in Pine Park (1981)
4. Copies of emails summarizing conversations with Matthew Cole, representative of Trans Canada (May, July 2011).

BELLOWS FALLS HYDRO-ELECTRIC
CORPORATION

AND

PINE PARK ASSOCIATION

FLOWAGE DEED AGREEMENT

FLOWAGE DEED AGREEMENT

In consideration of the delivery of the flowage deed of PINE PARK ASSOCIATION (the Grantor) to BELLOWS FALLS HYDRO-ELECTRIC CORPORATION (the Grantee), dated October 30, 1944, the Grantee - in addition to the payment of ONE THOUSAND - - - - - Dollars this day paid, the receipt of which is hereby acknowledged, does hereby agree to fulfill the terms of a certain Indenture by and between said Grantor and said Grantee, dated October 30, 1944.

No agreements or representations not contained in said deed or in the aforesaid agreement shall be binding upon said Grantors and Grantee and the burdens and benefits of the obligations contained in said deed and in the aforesaid agreement shall be binding upon and inure to the benefit of the respective successors and assigns of said Grantors and said Grantee.

Executed in duplicate this 30th day of October, 1944

BELLOWS FALLS HYDRO-ELECTRIC CORPORATION

By

Matthew E. Doherty
Secretary

PINE PARK ASSOCIATION

By

James P. Richardson
Chairman

By

Donald L. Stone
Secretary

THIS INDENTURE made and entered into this 30th day of October, 1944 by and between BELLOWS FALLS HYDRO-ELECTRIC CORPORATION, a corporation duly organized and existing under and by virtue of the laws of the States of Vermont and New Hampshire (hereinafter called "Bellows"), Party of the First Part, and PINE PARK ASSOCIATION, a corporation duly organized and existing under and by virtue of the laws of the State of New Hampshire (hereinafter called "Pine Park"), Party of the Second Part.

WHEREAS Bellows is the owner of certain water rights and privileges on the Connecticut River and now maintains a dam, together with the flashboards thereon, across said River between the Towns of Lebanon, Grafton County, New Hampshire and Hartford, Windsor County, Vermont, known as the "Wilder Dam";

WHEREAS Bellows has plans for the re-development of said water rights and privileges, which include the construction, maintenance and operation of a new dam with flashboards thereon to a higher elevation, together with a power plant connected therewith (hereinafter referred to as the "re-developed project") which will raise the elevation of the waters of said River and its tributaries in the pond formed thereby and cause additional flowage on certain lands and properties along or near said Connecticut River;

WHEREAS Pine Park owns certain lands and properties bordering on or near said Connecticut River in the Town of Hanover, Grafton County, New Hampshire which will be affected by the raising of the elevation of the waters of said Connecticut River and its tributaries as aforesaid;

WHEREAS Pine Park has by deed of even date herewith (to be recorded

in Grafton County Registry of Deeds) conveyed certain flowage rights and easements to Bellows, all as set forth in said deed, affecting lands and properties which said Pine Park owns in Hanover, New Hampshire, said lands being more generally shown on a plan entitled: "BELLOWS FALLS HYDRO-ELECTRIC CORP. BELLOWS FALLS, VERMONT PINE PARK ASSOCIATION PROPERTY AT HANOVER, N.H. SCALE 0 400' 800' MARCH 22, 1944 E-6037", a copy of which is hereto attached and made a part hereof and to which reference is hereby made;

WHEREAS, as part of the consideration for said conveyance, Bellows has agreed to perform certain work and to minimize as much as practicable the damage to lands and properties now owned by Pine Park resulting from the raising of the elevation of the waters of said River as aforesaid and the exercise of the right to flow said lands under said deeds;

WHEREAS some of the work to be performed may be done prior to the commencement of operation of the re-developed project and certain of the work to be performed may be done after the commencement of operation of the re-developed project;

NOW, THEREFORE, Bellows hereby covenants and agrees that if it re-develops the water rights and privileges hereinbefore mentioned to any elevation above 370 feet at the dam, it will perform the following work:

1. Prior to the commencement of operation of the re-developed project, Bellows will cut and remove all trees and timber growing on land now owned by Pine Park below an elevation one (1) foot above the elevation of the top of flashboards on the new dam, and such other trees on land of said Pine Park above such elevation as

in the judgment of said Bellows endanger the bank of said River or are apt to die as a result of the raising of the elevation of the pond created by the dam of the re-developed project; provided, however, that Bellows shall not cut such live trees above the aforementioned elevation which Pine Park specifically designates shall not be cut; and after the commencement of operation of any plant as aforesaid, it will from time to time remove such trees as die as a result of the raising of the elevation of said water. All trees and timber cut by Bellows under the provisions hereof shall become the property of Bellows and shall be removed from land of Pine Park.

2. After the start of construction and previous to the raising of the elevation of the pond created by the dam of the re-developed project, and from time to time thereafter, Bellows will use all reasonable efforts and take all reasonable precautions, by installing cribwork, piling, riprap or by other means, to prevent sliding or erosion of those portions of the banks of said River now owned by Pine Park; and in the event any portion of such banks of said River now owned by Pine Park commences to slide or erode, it will take such steps as are reasonably necessary to prevent further sliding or erosion; provided, however, that in the event any sliding or erosion may not have been thus prevented, Bellows will make proper repairs to said banks and will leave the affected area in a clean condition, free from unsightly debris.

3. Prior to the commencement of operation of the re-developed project, Bellows will construct a one-track truck roadway (with suit-

able turnouts) on or over the premises of Pine Park to take the place of that portion of the road now located on said premises along Girl Brook which will be unusable after the raising of the elevation of the waters as hereinbefore set forth; said new road to commence at or about Point "A" and to extend to about Point "B" - all as shown on the plan herein referred to; and to be constructed in such location as is mutually agreed upon by the parties hereto at the time of the construction thereof, and to be at least as good as the present road. Bellows will further do such maintenance as may be necessary, due to defects in construction, for a period of two (2) full years after the completion of the construction of said road.

4. Any and all work performed under any of the terms or provisions hereof will be done in accordance with sound engineering practice and in a good workmanlike manner.

NOW, THEREFORE, Pine Park hereby covenants and agrees:

1. That it will permit the agents, servants and employees of Bellows to enter upon any and all of its lands in order to make surveys and studies of conditions and the ways and means to minimize the damage to said property; and will permit the agents, servants and employees of said Bellows to enter upon its lands with tools, materials and supplies for use in connection with any and all work which Bellows has agreed to perform.

2. That it will allow Bellows, without charge, to construct or

relocate, to the extent required by this agreement, any sewers, trails, roads, drains and pipes upon, over or across any of its lands whenever necessary.

3. That it will use its best efforts to watch the condition of the banks of the Connecticut River and will from time to time, after the commencement of operation of the re-developed project, notify Bellows of any changes in the condition of the banks and the location of any portion of said banks which may be in need of attention.

It is understood and agreed by and between the parties hereto that any work performed by said Bellows in accordance with the terms of this agreement may not be successful in preventing or arresting damage to the lands and property of Pine Park. It is, however, the intention of the parties hereto that Bellows will use all reasonable efforts in accordance with sound engineering practice to minimize the sliding or erosion of those portions of the banks of said River now owned by Pine Park; provided, however, that in the event any sliding or erosion may not have been thus prevented, Bellows will make proper repairs to said banks and will leave the affected area in a clean condition, free from unsightly debris.

The parties hereto agree that this agreement sets forth all that Bellows has agreed to do as consideration for the flowage rights hereinbefore referred to.

All of the provisions herein contained, shall, where the context so admits, be binding upon and enure to the benefit of the parties hereto

and their respective successors and assigns.

IN WITNESS WHEREOF, the parties hereto have hereunto interchangeably set their hands and seals as of the day and year first above written.

Albert V. Luman

BELLOWS FALLS HYDRO-ELECTRIC CORPORATION

By Arthur E. Richards
Treasurer

By _____

Witnesses:

Donald L. Stone

PINE PARK ASSOCIATION

By James P. Richardson
Chairman

By Donald L. Stone
Secretary

Doreen Gale Robinson

COMM-OPINION-ORDER, 9 FERC ¶61,322, New England Power Company, Project No. 1892, (Dec. 10, 1979)

New England Power Company, Project No. 1892

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[¶61,322]

New England Power Company, Project No. 1892

Order Issuing New License

(Issued December 10, 1979)

Before Commissioners: Charles B. Curtis, Chairman; Georgiana Sheldon, Matthew Holden, Jr. and George R. Hall.

New England Power Company (NEPCO) filed an application under Part I of the Federal Power Act for a new major license to authorize the continued operation and maintenance of the constructed Wilder Project No. 1892. The project is located on the Connecticut River, a navigable water of the United States, in Windsor and Orange Counties, Vermont and Grafton County, New Hampshire.¹

Notice of the filing of an application was issued and the Environmental Defense Fund, Western Massachusetts Public Interest Research Group, Inc., For Lands' Sake, and Trout Unlimited have been permitted to intervene. In addition, numerous late-filed protests related to erosion control have been received and are considered below.

History of the Project

A timber crib dam was built at the Wilder site in 1882 for the purpose of paper manufacture and in 1907 work was commenced on a small powerhouse adjacent to the papermill. In 1924 an additional generator was installed and a small amount of surplus electrical power was sold to a local utility. In 1926, a concrete dam was constructed just downstream of, and to the same elevation as, the timber crib dam. Additional generating units were installed in 1928 and 1937 and the original two units were rehabilitated in 1937-38, thus bringing the total capacity of the five water wheel generating units to 5,220 kW.

On November 6, 1942, Bellows Falls Hydro-Electric Corporation purchased the Wilder Project from Olcott Falls Company and a major license was issued on April 22, 1944.² On July 28, 1948, the license was transferred to New England Power Company. Reconstruction of the Wilder Project began in March 1949 and the existing project

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became operational on December 1, 1950. The original license for the project expired on June 30, 1970. The project has been operating under annual licenses since then.

Project Description and Operation

The constructed project includes a concrete gravity-type dam 59 feet high, having a 232-foot long non-overflow section and a 526-foot long spillway section with tainter gates and flashboards. The dam creates a 45-mile long reservoir with a surface area of 3,100 acres at elevation 385 feet msl and with 105 miles of shoreline. At full-pond elevation, the reservoir contains a total volume of about 55,000 acre-feet. The powerhouse contains two 16,200-kW generating units, which, under a maximum gross-head of 53 feet, are

capable of producing 33,000 kW at full station load.

The project is operated primarily on a run-of-the-river basis and has 13,500 acre-feet of useable storage. During periods of low flow, off-peak stream flows are stored and the plant is used to supply daily peak load power. During high flow periods, the plant is operated for base load power and passes the water as it is received. The normal pool elevation during the recreation season is 383 feet msl, with a maximum of 385 feet msl and a minimum of 380 feet msl. A more detailed description is given in ordering paragraph (B) below. NEPCO sometimes deviates from the above pattern of operation in order to provide for a minimum flow of 1,200 cfs from the reservoir of its downstream Vernon Project No. 1904, which supplies water to the Vermont Yankee Nuclear Power Plant for cooling purposes.³ No additional construction or changes in the operation of the project are proposed, except for installation of fish passage facilities, as explained below.

Safety and Adequacy

All project structures, machinery, and appurtenant facilities were inspected by the Commission's staff and found to be adequately maintained and in good operating condition. The Commission's staff has analyzed the project works for stability and found them to be safe against sliding and overturning for various loading conditions, including extreme flooding and earthquake and ice loadings. The analysis demonstrated that the spillway overflow section is stable through the range of water surface elevations. Prior to and including submergence. The spillway has successfully passed all flood flows since 1910, including the maximum flood of record, 91,000 cfs in March 1936. That flood was the greatest in the Connecticut River Basin in 300 years. Both the staff and independent consultants who have analyzed the project works under Part 12 of our Regulations and consider the spillway capacity adequate. On the basis of our staff's report, we conclude that the project works are safe and adequate.

Comprehensive Development

The drainage area above the the Wilder Dam is approximately 3,375 square miles, or about 30% of the total Connecticut River Basin drainage area. The average flow of the Connecticut River at the project is 5,900 cfs. In addition to the project's 13,500 acre-feet of useable storage capacity, NEPCO owns and operates 232,500 acre-feet of storage capacity upstream from the Wilder Project. NEPCO also utilizes 99,300 acre-feet of storage capacity from the State of New Hampshire's Lake Francis. Operation of the Wilder Project provides 32,400 kW of installed capacity that produces an average annual generation of 136,200 MWh.⁴

The United States Corps of Engineers cited in its report on the application the need for closer coordination of operation of the federal projects and the licensed projects located in the Connecticut River Basin. NEPCO recognizes the need to coordinate the operation of the tributary flood control reservoirs and the main stem power projects during floods. NEPCO has been meeting with personnel of the Corps' Reservoir Control Center to determine how coordination should be carried out. Article 32 of this license requires the licensee to enter into an agreement with the Corps of Engineers for coordination of the project's operation in the interest of flood control and navigation.

The average monthly flow at the project exceeds the hydraulic capacity of the power plant less than 15 percent of the time and, as presently operated, the project utilizes about 82 percent of the available flow. A Commission staff study in 1968 analyzed the feasibility of adding 25,000 kW of new capacity at the project, with an estimated increase in annual generation of 21,000,000 kWh. The analysis at that time developed a cost/benefit ratio of 1.05 which indicated that the installation of additional generating units would be attractive when compared to alternative sources of generation in the area. Changed minimum flow requirements then made the feasibility of additional generation problematic, however. In light of the significantly changed economic conditions since 1973, particularly the escalating costs of non-renewable fuels, the installation of additional generating capacity may now be feasible. Article 37 of this license requires the Licensee to file a feasibility analysis of installing additional generating capacity and, if additional capacity is feasible, a schedule for filing an application to add capacity. Under Article 9 of this license, we retain the authority to require the Licensee to install additional capacity that may be

economically feasible.

We conclude that the project as constructed makes effective use of the fall and flow of the Connecticut River and, upon compliance with the terms and conditions of the license, will be best adapted to a plan for comprehensive development of the Connecticut River for beneficial public uses.

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Federal Takeover

Section 14 of the Federal Power Act reserves to the United States the right to take over a non-publicly owned project upon expiration of the license, after paying to the licensee in net investment in the project, not to exceed the fair value of the property taken, plus severance damages, if any. No federal department or agency, state, or municipality recommended takeover or redevelopment of the project by the United States or any other entity. The project is not in conflict with any project authorized or under study by the United States. None of the above governmental units has objected to the relicensing of the project. We know of no reason why federal takeover of the project would better serve the public interest than issuance of this license. Consequently, we shall not recommend Federal takeover.

Fish Passage Facilities

The Department of the Interior (Interior) and the New Hampshire Fish and Game Department (NHFG) recommended that fish passage facilities, needed for the restoration of Atlantic salmon and American shad to upstream reaches of the Connecticut River, should be constructed as soon as possible. The New Hampshire Office of State Planning the New England River Basins Commission and the Vermont Federation of Sportsmen's Club, Inc. expressed similar views. A restoration program was initiated in December 1966. NEPCO has cooperated in studies conducted in conjunction with this program and has contributed funds supporting such studies.

On October 5, 1978, in Docket No. E-7561, 5 FERC ¶61,033, the Commission approved a settlement agreement providing a schedule for construction of fish passage facilities at the Wilder Project and at the Vernon Project No. 1904 and the Bellows Falls Project No. 1885, downstream on the Connecticut River.⁵ Construction at the Vernon Project is in progress and is expected to be completed during two construction seasons. Preliminary design of fish facilities at the Bellows Falls Project is under way. Preliminary design of fish passage facilities at the Wilder Project will begin by May 1, 1981 and be completed by November 1, 1981. Construction of facilities at Wilder Project is to begin after the later of May 1, 1983 or, depending on the numbers of adult salmon that return to the farther downstream Holyoke Project No. 2004, two years after construction begins at the Bellows Falls Project. Construction must be completed within about two construction seasons. Article 15 of this license provides for continuing supervision of the construction and operation of fish passage facilities at the Wilder Project.

Stream Flow Releases

The Coordinating Committee of the Connecticut River Basin Comprehensive Water and Related Land Resources Study has recommended a minimum flow of 0.2 cfsm (cubic feet per second per square mile of drainage area) for projects on the Connecticut River, to reestablish historic low flow levels. Applied to the drainage area associated with the Wilder Project, that requirement is the equivalent of 675 cfs. The New England River Basin Commission, the Vermont Agency of Environmental Conservation and the Environmental Protection Agency also have recommended a minimum flow release of 0.2 cfsm, with which our staff concurs.⁶ On the other hand, the Technical Committee for Fisheries Management of the Connecticut River Basin, the New Hampshire Fish and Game Department, and the Department of the Interior⁷ all favored a minimum release of 0.25 cfsm (equivalent to 850 cfs from project No. 1892), to promote anadromous fish runs.

In our recent orders issuing licenses for the downstream Vernon Project No. 1904 and the Bellows Falls

Project No. 1855, we require minimum flow releases of 0.2 cfs. That figure represents the estimated minimum natural flow in the river if the various projects had not been constructed. Accordingly, in Article 33 of this license, we are requiring a minimum flow release of 675 cfs, or 0.20 cfs, from the project. Should this minimum flow release prove inadequate to protect the Connecticut River fishery, however, we may require higher flow releases under Article 12 or Article 15. As noted above, this license also requires coordination of project operation with the Corps of Engineers for flood control purposes.

Recreation

Adequate public access to project waters is provided by state parks and state boat launch sites, access from highways crossing the project reservoir, privately-owned launch and access areas, and NEPCO-owned and operated facilities. On the New Hampshire side of the reservoir, a visitors' center and picnic area where guided tours of the project dam and powerhouse originate provides an exhibition display area. Sanitary and drinking water facilities provided at the center also serve the users of the nearby picnic area. A portage trail enable canoeists and boaters to get around the dam to a safe distance downstream for continuing their river journey. On the Vermont side of the reservoir, a picnic and boat launching area has been developed upstream of the dam that includes toilets, a launch ramp, a drinking fountain, a parking area and a public ball field. A parking lot on the Vermont shoreline adjacent to the powerhouse is available for use by people who wish to fish in the vicinity of the tailrace. NEPCO proposes to develop a variety of additional facilities to accommodate growing recreational demand, including fishing access, play-ground and picnic facilities, trails and a boat ramp.

The Department of the Interior and our staff both report that NEPCO's Recreation Plan (Exhibit R) adequately provides for public use of the project's recreational resources. NEPCO's biennial filings

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of Form 80 will facilitate continuing review of the adequacy of recreational facilities. If a need for additional facilities develops in the future, the additional development may be required under Article 17 of this license.

Article 33 of this license requires NEPCO to install any safety devices that may be reasonably needed to protect the public using project lands and waters, to the satisfaction on our authorized representative, the Regional Engineer (see Article 4).

Erosion Control

The New Hampshire Fish and Game Department recommended that NEPCO be required to stabilize bank conditions within the impoundment area. The Department contends that fluctuation of the reservoir level has caused serious bank erosion and resultant siltation in the Connecticut River. Intervenors, including For Lands' Sake, have also raised this issue. Over 100 protests⁸ to the issuance of a long-term license to NEPCO, prior to completion of the U.S. Army Corps of Engineers study, have been received on the subject of erosion.

We addressed this matter in our earlier "Order Approving Settlement Agreement Concerning Fish Passage Facilities..."⁹ There, we recognized that the Corps of Engineers was conducting a study of the Connecticut River to determine the causes of erosion, problem areas and methods to reduce erosion. In our order we denied For Lands' Sake's motion that we not issue a license for the Wilder Project until the erosion study was complete and the findings were reviewed. We found that standard license Article 19 and, if necessary, special articles could retain ample means for us to address any erosion problems the Corps' study might establish.

The Corps' final report on its erosion study is not yet available.¹⁰ Special Article 38 of the license we recently issued for Project No. 1904 already requires NEPCO to file a copy of the Corps' report within 30 days after it is issued. If the Corps' report identifies erosion problems associated with Project No. 1892, we

shall then entertain, on our own motion or the motion of others, the question of what mitigative measures might be appropriate.

Historical and Archeological Resources

The State Historic Preservation Officers (SHPO) of Vermont and New Hampshire were requested to review the proposed recreational development for the Wilder Project to determine what effects, if any, relicensing and construction of any new recreational facilities might have on any known archeological remains. The Vermont SHPO stated that the issuance of a license for the Wilder project will not affect properties that are included or eligible for inclusion in the National Register of Historic Places. No response has been received to date from the New Hampshire SHPO, but our staff reports that no site listed in or eligible for the National Register is within the project boundary. Since there are some archeological remains within the project area, however, it is in the public interest to require NEPCO to consult with the SHPOs in both Vermont and New Hampshire before any future construction, to prevent possible loss of any archeological remains within project boundaries. Article 36 of this license will ensure proper protection of historical and archeological resources.

Other Environmental Considerations

Approval of a new license for Project No. 1892 would permit the continued project operation which started in 1910. No additional power facilities are proposed. Continued operation and maintenance of the project and resulting environmental impacts are discussed in this order. The only construction authorized or required by this license is for limited recreational development and will not result in any significant adverse environmental impacts. On the basis of the record, including agency and intervenor comments and the staff's independent analysis, the Commission concludes that issuance of this new license for Project No. 1892, as conditioned, is not a major federal action significantly affecting the quality of the human environment.

License Term

Our usual policy on relicensing is to limit the license term to 30 years if no substantial development is contemplated or proposed.¹¹ On December 8, 1978, the City of Lebanon, N.H. filed a letter stating the interest of its citizens in filing a competing application for long-term license; and at elections in both Lebanon and Hartford, Vt., questions were later presented on the question of whether to apply for the license for the project. In each instance, the polls failed to support filing of either a petition to intervene on NEPCO's application or a competing application. The Lebanon City Council did, however, recommend that we issue a 25-year license to NEPCO. "Listen," a citizens group based in Lebanon that is not an intervenor, submitted comments urging year-to-year licensing rather than a 50- or 25-year license, to allow the City of Lebanon to intervene in the "near future," should municipal power become economically attractive and feasible.

The City of Lebanon and its inhabitants have had more than ample opportunity to file a competing application for the Wilder Project and have chosen not to. We believe it would be inconsistent with Section 15 of the Federal Power Act and sound administrative practice to continue issuing only annual licenses to NEPCO just to allow others an indefinitely long opportunity to compete for a long-term license. In the circumstances of this project we consider a long-term license of about 38 years to be warranted, even though NEPCO does not propose to add new generating capacity. The Wilder Project is located upstream from the Turners Falls Project No. 1889, the Northfield Mountain Project No. 2485, the Vernon Project No.

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1904, and the Bellows Falls Project No. 1855. The expiration date of the licenses for the Northfield Mountain Project, which makes joint use of the Turners Falls Reservoir, and the Vernon and Bellows Falls Projects is April 30, 2018. In the interests of coordinating the administration of projects on this reach of the Connecticut River, the license for Project No. 1892 will terminate on April 30, 2018, too.¹²

Exhibit K

NEPCO's Exhibit K shows a project boundary which, in general, follows the outer lot lines of lands owned in fee and which follows contour lines, as designated on each drawing, on lands over which NEPCO holds only flowage rights. NEPCO states that the exact location of the line delineating the outside limits of its flowage rights cannot be determined since its location changes under varying flood, ice, and other conditions. It also states that it includes in the project all of the rights which it has to flow water over the lands and properties of others. The entire parcels over which NEPCO has flowage rights, however, are not shown as included within the project boundary on the Exhibit K maps.

Our staff recommends that NEPCO be required to file a revised Exhibit K to define clearly the limits of the lands over which NEPCO holds only flowage rights for the project. Article 38 requires NEPCO to file such a revised Exhibit K for approval. The project boundary should be revised to encompass highwater levels, *i.e.*, all lands on which waters flow when the reservoir is at full pond (including increase in the water level in upstream reaches because of backwater effects), and all other land which is necessary for project purposes. Where a flowage easement applies to an entire tract of land and is not otherwise defined, the project boundary may enclose the entire tract.

The Commission orders:

(A) This license is issued to New England Power Company Licensee) of Westboro, Massachusetts, under Part I of the Federal Power Act (Act), for a period effective the first day of the month in which the continued operation and maintenance of the Wilder Project No. 1892, located in Orange and Windsor Counties, Vermont, and Grafton County, New Hampshire, on the Connecticut River, a navigable waterway of the United States. 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.

(B) The Wilder Project No. 1892 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 being shown and described by certain exhibits which form part of the application for license and which are designated and described as:

Exhibit	FERC No. 1892	Showing
J-Sheet 2A	76	General Map
K-2	77	Project Map
K-3	78	Project Map
K-3; 1A-18	79	Project Map
K-3; 2A-18	80	Project Map
K-3; 3A-18	81	Project Map
K-3; 4A-18	82	Project Map
K-3; 5A-18	83	Project Map
K-3; 6A-18	84	Project Map
K-3; 7A-18	85	Project Map
K-3; 8A-18	86	Project Map
K-3; 9A-18	87	Project Map

K-3; 10A-18	88	Project Map
K-3; 11A-18	89	Project Map
K-3; 12A-18	90	Project Map
K-3; 13A-18	91	Project Map
K-3; 14A-18	92	Project Map
K-3; 15A-18	93	Project Map
K-3; 16A-18	94	Project Map
K-3; 17A-18	95	Project Map
K-3; 18 -18	96	Project Map

(2) Project works consisting of: (1) a concrete gravity-type dam 59 feet high, comprising a 232-foot long non-overflow section and a 526-foot long spillway section with taintor gates and flashboards; (b) a 45-mile long reservoir having a surface area of 3,100 ares at elevation 385 feet m.s.l., with 105 miles of shoreline and a total volume of about 55,000 acre-feet at full-pond elevations; (c) a powerhouse containing two 16,200-kW generating units; (d) transmission facilities consisting of: (i) two generator leads to the 13.8-kV bus; (ii) the 13.8-kV bus; (iii) the two banks of 13.8/46-kV step-up transformers; (iv) the 13.8/115-kV step-up transformer bank; and (v) the 115-kV appurtenances to connect to the 115-kV bus at which the Vermont Electric Power Company, Inc., and the 115-kV Wilder-Bellows Falls lines are connected; and (e) appurtenant facilities.

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

Exhibit	FERC No.	Showing
	1892-	
L - 1d	97	General Layout
L - 2d	98	Dam and Powerhouse (general plan)
L - 3d	99	Dam - Typical Sections
L - 4d	100	Dike and Yard
L - 5d	101	Profile and Down-
L - 6c	102	Powerhouse and

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L - 7c	103	Powerhouse Basement
L - 8c	104	Powerhouse Section
L - 9c	105	Future Unit Bay

Exhibit M: consisting of three pages showing "General Description and General Specifications of Mechanical, Electrical and Transmission Equipment" filed June 23, 1969.

Exhibit R: consisting of: (1) 14 pages of text; (2) Appendix entitled "Estimated Public Visitation 1959-1968; Ultimate;" and (3) Exhibit R drawing No. 1892-106, entitled "General Recreation Map," and No. 1892-107, entitled "General Recreation Map - Plant Area," as filed June 23, 1969, and supplemented on September 2, 1971.

Exhibit S: filed on September 2, 1971 consisting of text entitled "Fish and Wildlife Report."

(3) All of the structures, fixtures, equipment or facilities used or useful in the maintenance and operation of the project and located on the project area, all protable property which may be employed in connection with the project, located on or off the project area, as provided by the Commission, and all riparian or other rights which are necessary or appropriate in the maintenance or operation of the project.

(C) Exhibits J, L, M and R, designated and described in ordering paragraph (B) above, are approved and made a part of this license. Exhibit K, designated and described in ordering paragraph (B), is approved and made a part of this license only to the extent that it shows the general location, nature, and description of the project and subject to Article 38 of this license. Exhibit S, designated and described in ordering paragraph (B), is approved and made part of the license subject to the Commission's "Order Approving Settlement Agreement Concerning Fish Passage Facilities..." Docket No. E-7561, Project Nos. 1904, 1855 and 1892 (issued October 5, 1978).

(D) This license is also subject to Articles 1 through 28 set forth in Form L-3 (Revised October 1975, Sec. 54 FPC 1817) entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States," attached to and made a part of this license. This license is also subject to the following special conditions set forth as additional articles:

Article 29. Pursuant to Section 10(d) of the Act, 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 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: Provided, that, if and to the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year under the license, the amount of such deficiency shall be deducted for the amount of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any, cumulatively computed, shall be set aside in the project amortization reserve account; and the amounts thus established in the project amortization reserve account shall be maintained therein until further order of the Commission.

The annual specified reasonable rate of return shall be the sum of the weighted cost components of long-term debt, preferred stock, and the cost of common equity, as defined herein. The weighted cost component for each element of the reasonable rate of return is the product of its capital ratios and cost rate. The current capital ratios for each of the above elements of the rate of return shall be calculated annually 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 rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year and the cost of common equity shall be the interest rate on 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 30. For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, the Licensee shall pay the United States, a reasonable annual charge as determined by the Commission in accordance with the provisions of its Regulations in effect from time to time. The authorized installed capacity for that purpose is 45,800 horsepower.

Article 31. Licensee shall implement, and modify when appropriate, the emergency action plan on file with the Commission designed to provide an early warning to upstream and downstream inhabitants and property owners if there should be an impending or actual sudden release of water caused by an accident to, or failure of, project works. That plan shall include: instructions to be provided on a continuing basis to operators and attendants for actions they are to take in the event of an emergency; detailed and documented plans for notifying law enforcement agents, appropriate Federal, State, and local agencies, operators of water-related facilities, and those residents and owners of properties that could be endangered; actions that would be taken to reduce the inflow to the reservoir, if possible, by limiting the outflow from upstream dams or control structures; and actions to reduce downstream flow by controlling the outflow from

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dams located on tributaries to the stream on which the project is located. Licensee shall also maintain on file with the Commission a summary of the study used as a basis for determining the areas that may be affected by an emergency, including criteria and assumptions used. Licensee shall monitor any changes in upstream or downstream conditions which may influence possible flows or affect areas susceptible to damage and shall promptly make and file with the Commission appropriate changes in the emergency action plan. The Commission reserves the right to require modifications to the plan.

Article 32. The Licensee shall enter into an agreement with the Department of Army, Corps of Engineers (Corps), providing for the coordinated operation of the project, in the interest of flood control and navigation, on the Connecticut River in accordance with rules and regulations prescribed by the Secretary of the Army. A conformed copy of the agreement shall be filed with the Commission within one year of the date of issuance of this license. If the Licensee and the Corps fail to reach agreement, then within one year from the date of issuance of this license the Licensee shall file its proposals for coordinated operation of the project with other water resource projects on the Connecticut River, together with a copy of the Corps' objections to the Licensee's proposals. The Commission reserves the right to impose conditions on the Licensee for coordinated operation of the project.

Article 33. The Licensee shall, to the satisfaction of the Commission's authorized representative, install and operate any signs, lights, sirens, barriers, or other devices that may be reasonably needed to warn the public of fluctuations in flow from the project and to protect the public in its recreational use of project lands and waters.

Article 34. In the interests of protecting and enhancing the scenic, recreational, and other environmental values of the project, Licensee: (1) shall supervise and control the use and occupancy of project lands and waters; (2) shall prohibit, without further Commission approval, the further use and occupancy of project lands and waters other than as specifically authorized by this license; (3) may authorize, without further Commission approval, the use and occupancy of project lands and waters for landscape plantings and the construction, operation and maintenance of access roads, power and telephone distribution lines, piers, landings, boat docks, or similar structures and facilities, and embankments, bulkheads, retaining walls, or other similar structures for erosion control to protect the existing shoreline; (4) shall require, where feasible and desirable, the multiple use and occupancy of facilities for access to project lands and waters; and (5) shall ensure to the satisfaction of the Commission's authorized representative that all authorized uses and occupancies of project lands and waters: (a) are consistent with shoreline aesthetic values, (b) are maintained in a good state of repair, and (c) comply with State and local health and safety regulations. Under item (3) of this article, Licensee may, among other things, institute a program, for issuing permits to reasonable extent for the authorized types of use and occupancy of project lands and waters. Under appropriate circumstances, permits may be subject to the payment of a fee in a reasonable amount. Before

authorizing the construction of bulkheads or retaining walls, Licensee shall: (a) inspect the site of the proposed construction, (b) determine that the proposed construction is needed, and (c) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site. If an authorized use or occupancy fails to comply with the conditions of this article or with any reasonable conditions imposed by the Licensee for the protection of the environmental quality of project lands and waters, the Licensee shall take appropriate action to correct the violations, including, if necessary, cancellation of the authorization and removal of any non-complying structures or facilities. The Licensee's consent to an authorized use or occupancy of project lands and waters shall not, without its express agreement, place upon the Licensee any obligation to construct or maintain any associated facilities. Licensee shall, within 60 days prior to commencement of a program for issuing permits, furnish a copy of its guidelines and procedures for implementing the program to the Commission's authorized representative and its Director, Office of Electric Power Regulation. Whenever the Licensee makes any modification to these guidelines and procedures, it shall promptly furnish a copy to each of those persons. The Commission reserves the right to require modifications to these guidelines and procedures.

Article 35. The Licensee shall maintain a continuous minimum flow of 675 cfs (0.20 cubic feet per second per square mile of drainage basin) or a flow equal to the inflow of the reservoir, whichever is less, from the project into the Connecticut River. These flows may be modified temporarily: (1) during and to the extent required by operating emergencies beyond the control of the Licensee; and (2) in the interest of recreation and protection of the fisheries resources upon mutual agreement between the Licensee and the Fish and Game Departments of the States of New Hampshire and Vermont.

Article 36. Prior to the commencement of any construction or development of any project works or other facilities at the project, the Licensee shall consult and cooperate with the appropriate State Historic Preservation Officer(s) (SHPO) to determine the need for, and extent of, any archeological or historic resource surveys and any mitigative measures that may be necessary. The Licensee shall provide funds in a reasonable amount for such activity. If any previously unrecorded archeological or historic sites are discovered during the course of

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construction, 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 37. The Licensee shall, within six months from the date of issuance of the license, prepare and file with the Commission a feasibility analysis of installing additional generating capacity at the Wilder Project, taking into account, to the extent reasonable, all benefits that would be derived from the installation, including any contribution to the conservation of non-renewable natural resources. If the study shows additional capacity to be economically feasible, the Licensee shall simultaneously file a schedule for filing an application to amend its license to install that capacity.

Article 38. Within one year from the date of issuance of this license, the Licensee shall file for approval a revised Exhibit K conforming to the requirements of §4.41 of the Commission's Regulations and the order issuing this license and clearly delineating the limits of the lands over which it holds flowage rights for the project.

(E) This order is final unless an application for rehearing is filed within 30 days from the date of its issuance, as provided in Section 313(a) of the Act. The filing of an application for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission. Failure of the Licensee to file an application for rehearing shall constitute acceptance of this license. In acknowledgment of acceptance of this license, the license shall be

signed for the Licensee and returned to the Commission within 60 days from the date of issuance of this order.

-- Footnotes --

¹ The application was filed on June 23, 1969, and supplemented at various times, the latest being the filing of September 2, 1971.

² A condition of the license required the redevelopment of the project. 4 FPC 3, 5 (1944).

³ The license for the Vernon Project was amended for the use of the project as a source of cooling water by order dated July 31, 1970, 44 FPC 220. Pursuant to that order, NEPCO maintains a minimum stream flow through the Vernon Project of 1,200 cfs to prevent excessive heat buildup in the reservoir. Under the new license recently issued for the Vernon Project, NEPCO must maintain a minimum flow release of 1250 cfs New England Power Company, Project No. 1904, Order Issuing New License (issued June 25, 1979) (7 FERC ¶61,292, mimeo at 15).

⁴ The project uses a renewable energy resource that saves the equivalent of about 223,000 barrels of oil or 63,000 tons of coal annually.

⁵ Signatories to the settlement agreement included the intervenors in this proceeding and the states of Connecticut, Massachusetts, New Hampshire and Vermont.

⁶ The New Hampshire Water Supply and Pollution Control Commission certified the project's compliance with New Hampshire water quality standards. The Vermont Agency of Environmental Conservation waived state certification under §401 of the Federal Water Pollution Control Act on condition that the 0.20 cfs flow release be maintained.

⁷ Interior's actual recommendation is somewhat unclear because at one point in its comments it recommended a 675 cfs minimum flow release.

⁸ Including the Hanover Conservation Commission; the Town of Norwich, Vermont; Congressmen James M. Jeffords of Vermont and James Cleveland of New Hampshire; the Connecticut River Watershed Council; and individual citizens.

⁹ *New England Power Co.*, Docket No. E-7561, Project Nos. 1904, 1855 and 1892 (issued October 5, 1978, 5 FERC ¶61,019).

¹⁰ The President of For Lands' Sake has recently submitted a letter asking that note be taken of certain enclosures alleged to be part of the Corps' consultants' "final" draft of the report on the erosion study. The letter and enclosures were not properly submitted in accordance with our rules, with proof of service on other parties, and thus have not been considered. In any event, the consultants' draft may not be final and the Corps' final report may vary from that draft. To the extent that matters in the consultants' draft are reflected in the Corps' final report, we shall, of course, consider them then available.

¹¹ See *The Montana Power Co.*, Mystic Lake Project No. 2301, Order Issuing New License (Major) (issued October 5, 1976, 56 FPC 2008).

¹² Moreover, assuming the requisite number of adult salmon return to the Holyoke Project, NEPCO will be investing a significant amount of new capital in the Wilder Project to provide fish passage facilities.

COMM-OPINION-ORDER, 5 FERC ¶61,019, New England Power Company, Docket No. E-7561, Project Nos. 1904, 1855, and 1982, (Oct. 05, 1978)

New England Power Company, Docket No. E-7561, Project Nos. 1904, 1855, and 1982

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[¶61,019]

New England Power Company, Docket No. E-7561, Project Nos. 1904, 1855, and 1982

Order Approving Settlement Agreement Concerning Fish Passage Facilities At Project Nos. 1904, 1855, and 1982 and Approving Preliminary Plans for Fish Passage Facilities at Project No. 1904

(Issued October 5, 1978)

Before Commissioners: Charles B. Curtis, Chairman; Don S. Smith, Georgiana Sheldon, Matthew Holden, Jr. and George R. Hall.

On December 30, 1977, the Commonwealth of Massachusetts filed for Commission¹ approval a proposed settlement agreement concerning fish passage facilities at three hydroelectric projects on the Connecticut River licensed to the New England Power Company (NEPCO). Proceeding upstream in order, these projects are the Vernon Project, No. 1904, the Bellows Falls Project, No. 1855, and the Wilder Project, No. 1892. The signatories to the settlement agreement are NEPCO, the States of Massachusetts, Connecticut, New Hampshire, and Vermont, the U.S. Fish and Wildlife Service (USFWS), the Environmental Defense Fund, the Massachusetts Public Interest Research Group, Inc., For Land's Sake (FLS), and Trout Unlimited.²

On January 30, 1978, NEPCO filed for Commission approval four sheets of Exhibit S drawings depicting functional plans for construction of fish passage facilities at the Vernon Project. These drawings were filed pursuant to the fish facility settlement agreement referred to above.

BACKGROUND

American shad and Atlantic salmon are anadromous fish native to the Connecticut River. The construction of dams for five licensed projects on the river³ created barriers to the natural upstream migration of these anadromous fish. Docket No. E-7561 is the result of a 1971 Commission order⁴ establishing an investigation into the possibility of restoring annual runs of shad and salmon to the Connecticut River and any appropriate measures to be taken at the five licensed projects to aid the restoration effort. The Commission has already provided for modification or construction of fish passage facilities at the Holyoke and Turners Falls Projects, pursuant to earlier settlement agreements.⁵

THE SETTLEMENT AGREEMENT

The settlement agreement before us now sets forth a schedule for the design, construction, and operation of fish passage facilities by NEPCO at Vernon, Bellows Falls, and Wilder. Public notice of

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the settlement agreement was given on February 3, 1978, with March 13, 1978 as the last day for filing protests or petitions to intervene. None was received. Commission staff filed comments on March 13, 1978 seeking to clarify some of the provisions of the settlement agreement. The signatories to the settlement filed a response to staff's comments on July 14, 1978.

1. *Design.*

Section I of the settlement agreement provides the timetable for decision on the facilities at each project.⁶ Final design of the Vernon facilities will begin within 30 days of either approval of the preliminary design by the fisheries agencies and the Commission⁷ or completion of model studies -- whichever comes later -- and be completed within a year. For facilities at Bellows Falls, preliminary design of fish passage facilities will begin before the year ends and will be filed within six months after commencement. Final design will begin 30 days after either approval of the preliminary design by the fisheries agencies and the Commission or the return of 30 adult salmon to the Holyoke Project in a single year -- whichever comes later -- and be completed within nine months. At Wilder, preliminary design will begin by May 1, 1981 and will be completed within six months. The final design steps will be similar to and will follow by two years those for Bellows Falls.

2. Construction.

Section II of the agreement contains the schedule for construction of the facilities. The dates are subject generally to timely approval of the final design at each project by the fisheries agencies and the Commission. Section IV provides that any time limits in the settlement agreement may be modified at any time by up to twelve months upon mutual written agreement of the signatories.

The construction schedule in Section II calls for the Vernon facilities to be ready to operate by May 1, 1981. The facilities at Bellows Falls are to be ready to operate within approximately two years after either issuance and acceptance of a new long-term license for the project, or the return of 30 adult salmon to the Holyoke Project in a single year, or May 1, 1981 -- whichever is latest. The Wilder facilities are to be ready to operate within approximately two years after either issuance and acceptance of a new long-term license for that project, or May 1, 1983, or if certain minimum numbers of salmon continue to return to Holyoke, two years after construction is commenced at Bellows Falls -- whichever is latest.

The principal question raised in staff's comments related to the number (thirty) of Atlantic salmon returning to Holyoke that triggers final design and construction of the Bellows Falls fishway. Staff considered this triggering figure in conjunction with the provision that the states may release as few as 10 percent of those salmon to continue migrating upstream after the Bellows Falls fishway is operating.⁸ Staff noted that under these provisions very few fish (as low as three) might be released for upstream migration and spawning. Staff contended that, if only a few salmon were released, it would be unreasonable to expect a significant number to find their way successfully to tributary spawning areas, resulting in the waste of the released fish. In such circumstances, it might be better either to use the 10 percent to augment the 90 percent being collected to establish a brood stock or to increase the triggering number.

In response, the signatories indicated that returning adult Atlantic salmon will be collected for brood stock at fishways on downstream tributaries -- Farmington River and Salmon River -- as well as at Holyoke. Therefore, it is expected that at least 60 fish would be collected for brood stock before construction of upstream fishways would begin. The signatories also stated that the 10 percent release figure is only a minimum, and was included in the agreement to assure NEPCO that when the fishway is completed at Bellows Falls, salmon will be released for passage through it. The signatories further advised that they would not release only a few fish if it appeared that those fish would be wasted. Their response indicates that the actual number of fish released will depend upon the fishery management decisions made by the fisheries agencies. Staff has concurred with the statement of clarification and has encouraged all decisions on the distribution of returning adult fish to be made by the fisheries agencies.

3. Other Fish Facility Provisions.

Section III requires NEPCO to report every other month to the Commission on the status of the work on fish passage facilities at the three projects. Section V permits NEPCO to seek outside sources of funding for the facilities, but provides that failure or delay in securing such funding would not relieve NEPCO of its obligations under the settlement agreement.

Sections VI and VII provide guidelines for the operation of fish passage facilities at the three projects and for the maintenance of minimum flows. If NEPCO and the States failed to agree on the actual operating regime of the facilities, it would be determined by a panel of three fish biologists (NEPCO, the States, and the Commission would each appoint one). In Section IX, the fisheries agencies and intervenors agree to certain limitations on the construction of further fish passage facilities at the three projects.

4. Erosion.

Finally, Section X of the settlement provides that inclusion of standard Article 19 of the Commission's Form L-3 (See 54 FPC 1817) in any new long-term licenses for the three projects would satisfy all issues regarding possible erosion raised by the intervenors in 1973. We note, however, that

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FLS has taken action that might be interpreted to contradict this provision of the Settlement Agreement partially. On September 5, 1978, FLS filed a motion⁹ which asks that we not issue a new long-term license for the Wilder Project until a current Army Corps of Engineers' study of erosion along the Connecticut River is completed and the findings have been reviewed.¹⁰ FLS also moves that we "require implementation of any relevant recommendations regarding the method of operation of the dam that may be made in the Corps study, specifying same in the license." As the sole ground for its motion, FLS states that a license granted before the results of the Corps' study are available:

* * * could only contain the standard erosion clause [Article 19 of Form L-3 (Rev. October, 1975)], which is applicable to all hydroelectric facilities and therefore is abstract and general, whereas if the Commission waits * * * until the recommendations of the completed Corps' study are available, it would spell out specifically in the language of the license the methods of operation that will cause the least erosion in the Wilder Pool.

To eliminate any possible uncertainty about the effect of FLS's motion on the settlement agreement, we believe it proper and desirable to rule on the motion now. We shall deny the motion.

In the first place, standard Article 19 of Form L-3 in itself would retain ample means for us to address any erosion problems the Corps' study might establish. That Article provides:

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.

This article's very generality, which FLS seems to find troublesome, is advantageous. Under its provisions we would be able to order NEPCO to take whatever erosion control measures we found necessary upon review of the Corps' study.¹¹ The Commission could still "spell out specifically" then any changes in "the methods of operation" of the Wilder Project required to control erosion.

In any event, contrary to FLS's belief, in licensing the Wilder Project we would not be limited to inclusion of only standard Article 19. If we should determine on the record before us at the time of any licensing decision that more specific conditions related to the Corps of Engineers' erosion study are suitable for protection of the public interest, we could include an appropriate special article in the license. And nothing in Section X of the settlement agreement purports to restrict our authority to issue special conditions related to erosion. We do not, however, suggest here that we will or will not include any such special article in a new license for the Wilder Project; deciding that now would simply be premature.

Nor should our action in denying FLS' motion be interpreted as suggesting either that we will or will not issue a new license to NEPCO; or that we will or will not issue such a license before the Corps' erosion

report is available.¹² We will decide these matters in the relicensing proceeding, when the time is ripe. Here we decide only that FLS has not shown any good reason for us to postpone licensing of the Wilder Project until after the Corps' erosion report is available. We are well aware of the Corps' erosion report is available. We are well aware of the Corps' study and have no intention of ignoring its results. We will retain adequate regulatory control to require any measures we find proper to mitigate demonstrated project-induced erosion even if we should license the project before the Corps has reported.

5. Approval of Settlement Agreement.

The settlement agreement is the result of extended negotiations by the signatories to establish a schedule of fish facility construction at these three projects. The agreement provides for an acceptable general method of constructing the proposed fish facilities in stages, as anadromous fish extend their migratory range upstream. Based on our review of the agreement and Staff's comments and the response from the signatories, we believe that the agreement adequately provides for upstream fish passage facilities at Vernon, Bellows Falls, and Wilder, and that the agreement is thus in the public interest and should be approved.

FACILITIES AT THE VERNON PROJECT

Pursuant to the settlement agreement above, NEPCO filed for Commission approval Exhibit S Drawings showing the preliminary design of fish passage facilities at the Vernon Project. Copies of the Exhibit S drawings were sent for comment to appropriate state and Federal agencies on May 11, 1978. The agencies responding¹³ all commented favorably on the proposed preliminary design.

The proposed fishway at the Vernon Dam was developed cooperatively by NEPCO and the interagency Technical Committee for Fisheries Management of the Connecticut River Basin, with active participation by a Commission staff fishery biologist. The fishway is an "Ice Harbor" type, with a vertical slot-type ladder leading from the gatehouse to the reservoir. This same type of design was used for the Turners Falls fishway, and it has a long record of success in passing salmon and shad at hydroelectric dams in the Pacific Northwest. Commission staff considers this type of ladder to be the most efficient design in passing anadromous fish at large dams and the most economical type of large fish ladder to construct and to operate. The design

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appears to use the existing project structures, insofar as possible, and takes into account the hydraulics of the project's operation to attract migratory fish for collection.

The Exhibit S functional drawings include the general plan for the fish passage facilities, various sections of the fish ladder from the entrance at the downstream face of the powerhouse to the exit into the reservoir, cross sections of a typical weir, and flow diagrams at four different tailwater elevations. Hydraulic model studies of the entrance and exit sections of the fishway are still in progress, but Commission staff states that this work will not result in a significant change in the configuration of the ladder as shown in the preliminary design.

The fish passage facility proposed at the Vernon Project is designed to pass an annual migration of 750,000 American shad and 40,000 Atlantic salmon. (A fish counting station to enumerate migrating fish would be located about midway up the ladder.) NEPCO has indicated that, upon receipt of Commission approval, it is prepared to begin final design of the fish facilities as shown on the functional Exhibit S drawings. Construction is scheduled to start by May 1, 1979. A detailed cost estimate of the facilities has not been completed, but Commission staff reports that preliminary estimates of capital costs discussed during technical meetings have ranged from five to seven million dollars.

The environmental effects of constructing the proposed facilities would be minimal. The work on land would be concentrated in small areas already cleared of vegetation. Construction activities within the

meander of the river would be enclosed within cofferdams. The collection galleries would be concrete and would rest on concrete supports anchored to rock foundations. The work would occur during two construction seasons. There would be some construction noise during this period, and possibly some minor turbidity when the cofferdams are installed and removed. These temporary effects would be minor and would cease upon completion of construction. The state and Federal agencies commenting favorably on the Exhibit S drawings are thoroughly familiar with the anadromous fish restoration program and with any environmental consequences of its implementation, but have identified no significant adverse effects from installation of the proposed facilities. For these reasons and considering our staff's independent analysis, we conclude that approval of the functional Exhibit S drawings and the subsequent construction of the fish facilities as depicted by the drawings is not a major Federal action significantly affecting the quality of the human environment.

The proposed Exhibit S drawings conform substantially to the requirements of our Regulations. We find it appropriate and in the public interest to approve the Exhibit S drawings for fish passage facilities at the Vernon Project submitted by NEPCO.

The Commission orders:

(A) The Settlement Agreement filed December 30, 1977, concerning fish passage facilities on the Connecticut River at Project Nos. 1904, 1855, and 1892, is approved and incorporated by reference in this order. New England Power Company shall comply with the provisions of the settlement agreement.

(B) Nothing in this order shall prejudice any past or future Commission findings or orders or any claims or contentions that may be made by the Commission, its staff, or any party or persons affected by this order, in any other proceeding now pending or that may be instituted.

(C) The following Exhibit S drawings showing the preliminary design for fish passage facilities at Project No. 1904, filed January 30, 1978, consisting of four sheets, are approved and made a part of the license for Project No. 1904:

Exhibit S	FERC No.	Showing
Sheet 1	1904-67	General Plan
Sheet 2	1904-68	Fishway Sections
Sheet 3	1904-69	Fishway Sections
Sheet 4	1904-70	Flow Diagrams

-- Footnotes --

¹ This proceeding was commenced before the FPC. By the joint regulation of October 1, 1977 (10 CFR 1000.1), it was transferred to the FERC. The term "Commission," when used in the context of action taken prior to October 1, 1977, refers to the FPC; otherwise, it refers to the FERC.

² The term "fisheries agencies" in this order will be used to refer collectively to the four states and

USFWS.

³ The three projects named above plus two others further downstream, the Holyoke (or Hadley Falls) Project No. 2004 and the Turners Falls Project No. 1889.

⁴ *Holyoke Water Power Co., New England Power Co., Western Massachusetts Electric Co., Docket No. E-7561*, Order Instituting Investigations, Consolidating Proceedings, and Directing that a Hearing be Held, 45 FPC 939 (1971).

⁵ *Holyoke Water Power Co., et al., Docket No. E-7561*, Order Prescribing Modifications to Fish Facilities and Continuing Proceeding, 49 FPC 1067 (1973); *Holyoke Water Power Co., et al., Docket No. E-7561*, Order Approving Settlement Agreement with Modification (November 8, 1976, 56 FPC 2914).

⁶ In its comments of March 13, 1978, staff stated its interpretation of these provisions. The signatories concurred in staff's construction in their response of July 14, 1978. We will follow the parties' agreed interpretation.

⁷ As noted above, NEPCO filed the preliminary design at the Vernon facilities for Commission approval on January 30, 1978.

⁸ Section VI (C). The agreement contemplates that before releasing any Atlantic salmon above Holyoke, the fisheries agencies will collect the first returning adults in trapping facilities and take them to a hatchery to establish a brood stock.

⁹ The motion is captioned with reference to both this proceeding and the proceeding on relicensing of the Wilder Project No. 1892.

¹⁰ FLS states that: This study is scheduled for completion

[61,036]

early in 1979, to be followed by a Final Report outlying conclusions about the causes of erosion behind the [Wilder, Bellows Falls, Vernon, and Turners Falls] dams and containing recommendations for any changes in the operations of the dams that may minimize erosion on the banks of the river.

¹¹ Assessment of the Corps' study and recommendations, as well as other relevant matters of record, would clearly be prerequisite to our imposing any particular erosion control measures recommended. Thus, we deny FLS's request that we categorically include in the license for Wilder *any* measures regarding the project's method of operation that the Corps' report might recommend. We will consider the recommendations on their individual merits when the time comes.

¹² For instance, should the Corps' report be imminent or issued at the time when we might otherwise be ready to act on the application for license, we might on our own motion decide to consider the implications of the Corps' study before acting on the application.

¹³ New Hampshire Fish and Game Department, Vermont Agency of Environmental Conservation, Connecticut Department of Environmental Protection, Massachusetts Division of Fisheries and Game, U.S. Department of the Interior, and the Policy Committee for Fisheries Management of the Connecticut River Basin.

From ???@??? Thu Jul 28 15:05:39 2011
From: Matthew Cole <matthew_cole@transcanada.com>
Date: Thu, 28 Jul 2011 13:05:15 -0600
Subject: RE: Wednesday's walk
To: "Linda L. Fowler" <Linda.L.Fowler@Dartmouth.EDU>

Dear Linda,

We have an active study to document and evaluate riverbank erosion along the Connecticut River in Vermont and New Hampshire from the top of the Wilder Project to the Massachusetts state line. It is still in the data collection phase.

Once drafted, we will review the site-specific information relating to the Pine Park area. We'll be in touch again when the review is completed.

It was a pleasure to meet and talk with you and thank you for your interest.

Thanks,
Matthew Cole
Community Relations, US NE Region
(413) 424-7229

Please consider your environmental responsibility before printing this document.

-----Original Message-----

From: Linda L. Fowler [mailto:Linda.L.Fowler@Dartmouth.EDU]
Sent: Thursday, May 19, 2011 8:01 PM
To: Matthew Cole
Cc: ropeferry@yahoo.com; rbailey@crrel.usace.army.mil;
Richard.E.Nordgren@Hitchcock.ORG; aggiebk@gmail.com; Brian F. Kunz
Subject: Wednesday's walk

Dear Matt,

Thanks for meeting with me yesterday to survey the riverbank erosion in Pine Park.

I was pleased to hear that you had done some scouting with Ken last year.

I think that some tree cutting to preserve the root balls and use of the
downed
trees to reinforce the bank sounds like a good idea. I am sure the
board will
be pleased that you intend to have an expert on riverbank restoration
take a look

at it.

I'll be in touch as we agreed in about a month to see what plan you have come up with.

Again, thank you on behalf of the Pine Park trustees for taking this project forward.

Linda

Linda L. Fowler

Professor of Government and Frank J. Reagan Chair in Policy Studies

6108 Silsby Hall

Dartmouth College

Hanover, NH 03755

Tel: 603-646-0009

Fax: 603-646-2152

linda.fowler@dartmouth.edu

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From ???@??? Thu May 21 20:21:06 2009
From: Agnes Kurtz <aggiebk@gmail.com>
Date: Thu, 21 May 2009 20:20:34 -0400
Subject: Re: minutes
To: "Linda L. Fowler" <Linda.L.Fowler@dartmouth.edu>
Cc: ropeferry@yahoo.com, rbailey@crrel.usace.army.mil,
Richard.E.Nordgren@hitchcock.org, "Brian F. Kunz"
<Brian.F.Kunz@dartmouth.edu>

I've talked to Carolyn a few times since the meeting and this is what she could find:

In 1981, there was work done on the bank and it was after a permit from New England Power Co. was granted by George McGee from the water resources board in Concord NH to the people doing the work. Carolyn has minutes stating that "work was done according to flowage agreements between NE Power Co and the abutters (us and others on the conn. river)

And that may be the last time work was done.

(We both looked at minutes from the early 1990'a and we found no mention of work. I do not have a good set of minutes, but I am sure Carolyn does.)

Which begs the question: what is the agreement and who is it between? It would be nice if we could find something with some power company.

I will be away from sat morning to tues morning.

Ag

2009/5/21 Linda L. Fowler <Linda.L.Fowler@dartmouth.edu>

> All--Here are the minutes from last week's meeting. Please note the action
> items in CAPS.
> Cheers, Linda
>

From Linda.L.Fowler@Dartmouth.EDU Thu May 19 20:01:12 2011
To: Matthew_cole@transcanada.com
Subject: Wednesday's walk
Cc: pine park
Bcc:
Date: Thu, May 19, 2011 8:01 PM

Dear Matt,

Thanks for meeting with me yesterday to survey the riverbank erosion in Pine Park. I was pleased to hear that you had done some scouting with Ken last year.

I think that some tree cutting to preserve the root balls and use of the downed trees to reinforce the bank sounds like a good idea. I am sure the board will be pleased that you intend to have an expert on riverbank restoration take a look at it.

I'll be in touch as we agreed in about a month to see what plan you have come up with.

Again, thank you on behalf of the Pine Park trustees for taking this project forward.

Linda

Linda L. Fowler
Professor of Government and Frank J. Reagan Chair in Policy Studies
6108 Silsby Hall
Dartmouth College
Hanover, NH 03755
Tel: 603-646-0009
Fax: 603-646-2152
linda.fowler@dartmouth.edu



MAP
showing
BORDER OF THE

CONNECTICUT RIVER

THE MIDDLE

S

PINE
WOOD
ROAD
1900

Heavy Timber

PINE

Argo da
Poulin

JOHNSON
DARTMOUTH

TEMPER

RIVER BANK SUBJECT D. 9109 1911

WOODS TERRACE

SHARP HOOKED GLOVES

GREEN HILL

FILL OUT ACCURATELY AND COMPLETELY TO AVOID RETURN AND DELAY

STATE OF NEW HAMPSHIRE

PERMIT NO. _____ DATE _____

APPLICATION FOR PERMIT TO EXCAVATE, DREDGE,
FILL, MINE OR CONSTRUCT, IN ANY WATERS OF
THE STATE.

Permit Approved/Denied _____

For the Special Board _____

Application is hereby made for a permit to accomplish work described below relating to excavating, dredging, or filling, in accordance with the Rules and Regulations established under the provisions of RSA Chapters 483-A and 149:8A. One copy of your application will be acted upon by the W. S. P. C. C. and such action will be incorporated in one distribution.

1. Name of Owner New England Power Company Telephone No. 617-366-9011
(print or type)
Residence or principal business address 25 Research Drive, Westborough, MA 01581

LOCATION OF PROPOSED CONSTRUCTION

2. Town or City Hanover, New Hampshire County Grafton

3. Project Address East Side of Connecticut River 1 mi. north of
Hanover N.H. bridge
(at road, road, highway)

4. Adjacent to, or in (salt) (fresh) water Connecticut River
(name of water body)

5. Type of project - Fill () Dredge () Wharf () Other Maintenance
(Specify)

6. Reason(s) for proposed construction: Reconstruction of an existing 12' x 12' pier and
the replacement of 1,800' of stone riprap along 7,500' of shore line.

7. (a) Proposed starting date August 17, 1981 (b) Completion date September 30, 1981

8. If work is to be done by self, contractor, or agent, give his name and address below:
Miller Construction Company, Windsor, Vt. Telephone No. 802-674-5525

9. Description of construction (use reverse side for additional information):
(a) Type of material 18 in. max. rock
(b) Estimated quantity of dredged material (cu. yd.): N/A
(c) Estimated quantity of fill material (cu. yd.): 9,000
(d) Final disposition of dredged material: N/A
(e) If any channel is to be constructed, the distance the flow of water is to be re-routed: N/A

10. I hereby certify that the applicant has filed three copies of said application with the Town/City of Hanover as required by Chapter 483-A.1 as amended 1973.

DATE Aug 28, 1981 Signature Sandra L. Pichey
Town/City Clerk Deputy

11. Complete list of all abutting owners, their addresses and phone numbers: (They have been contacted and the work proposed has been explained to them. Note on separate sheet objections raised by abutters)

24 STONE LIPPLAN along 1,500' of shore line.

7. (a) Proposed starting date August 17, 1981 (b) Completion date September 30, 1981
8. If work is to be done by self, contractor, or agent, give his name and address below:

Miller Construction Company, Windsor, Vt. Telephone No. 802-674-5525

9. Description of construction (use reverse side for additional information):
(a) Type of material 18 in. max. rock
(b) Estimated quantity of dredged material (cu. yd.): N/A
(c) Estimated quantity of fill material (cu. yd.): 9,000
(d) Final disposition of dredged material: N/A
(e) If any channel is to be constructed, the distance the flow of water is to be re-routed: N/A

10. I hereby certify that the applicant has filed three copies of said application with the Town/City of Windsor as required by Chapter 483-A.1 as amended 1973.

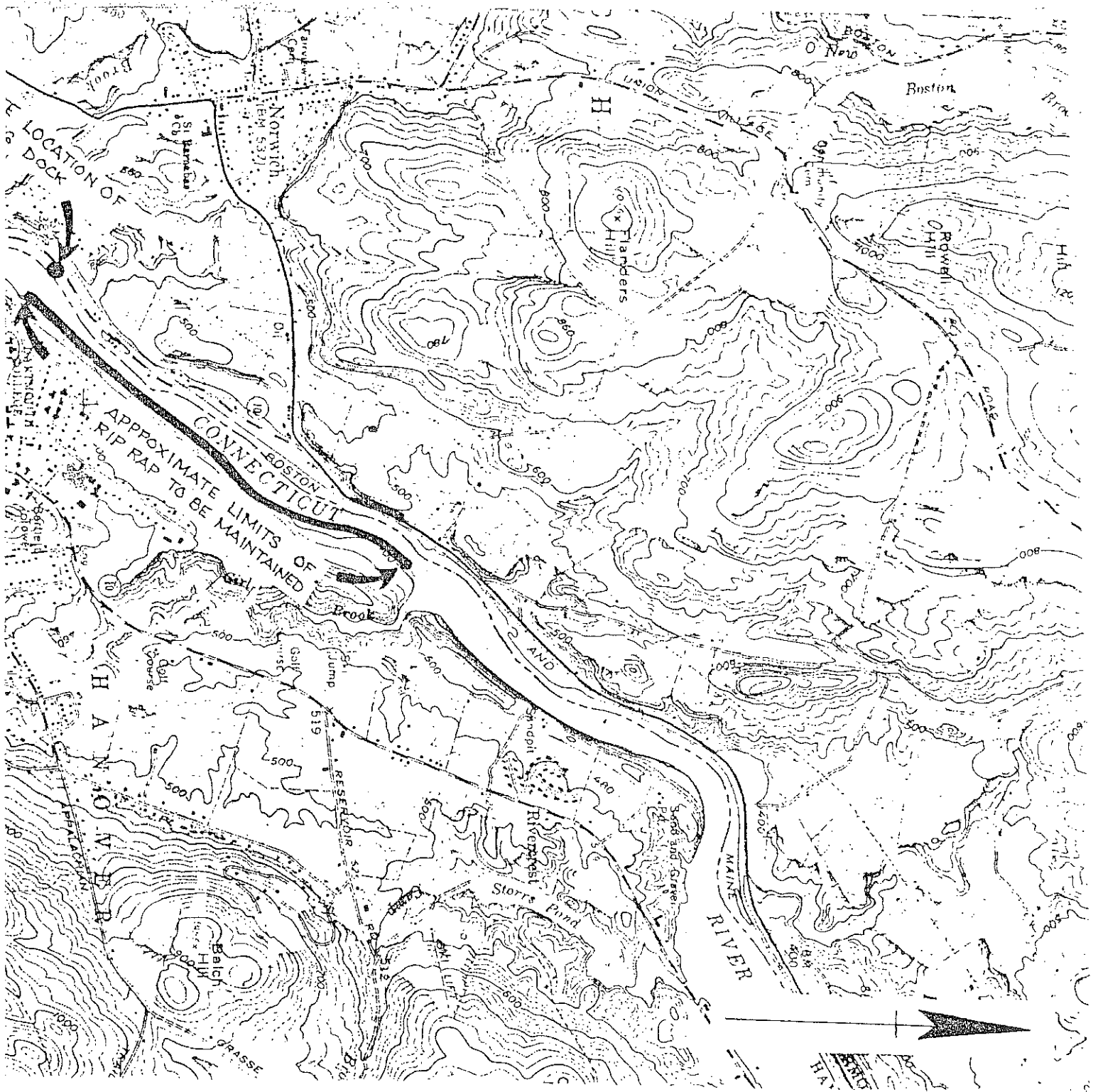
DATE Aug 28, 1981 Signature [Signature]
Town/City Clerk [Signature]

11. Complete list of all abutting owners, their addresses and phone numbers: (They have been contacted and the work proposed has been explained to them. Note on separate sheet objections raised by abutters).
This work is being done in accordance with flowage agreements between New England Power Company and certain abutters. These agreements stipulated that New England Power Company would install and maintain bank protection in this area.

A permit issued under this application shall be non-transferable and shall expire two year from date of issue.

Signature of Owner [Signature] Edward A. Plumley
or Authorized Agent
Date August 24, 1981 Vice President
New England Power Company

SEE REVERSE SIDE FOR INSTRUCTIONS



MAINE

CLARK B. STOR
W.D. 23

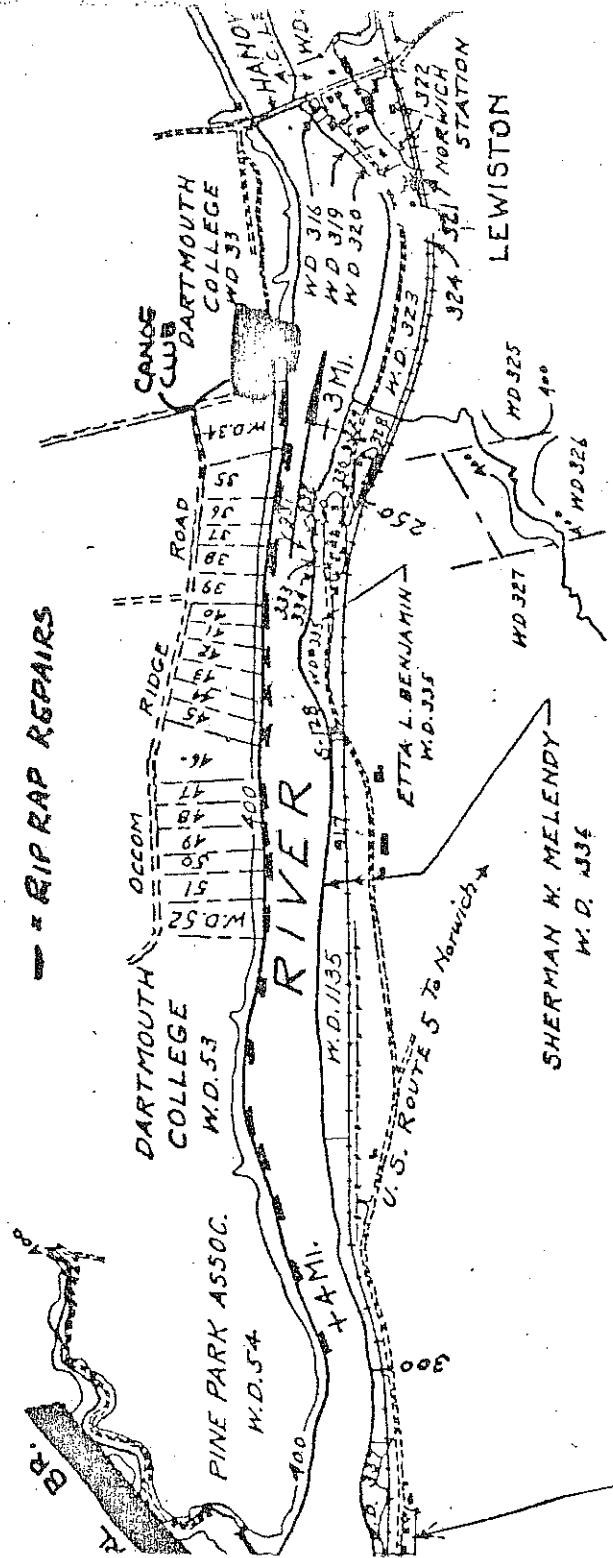
HALSEY C. EDGE
W.D. 20

GRANITE STATE ELEC. S
W.D. 25
DARTMOUTH COLLEGE
W.D. 22

KATE R. LEWIN
W.D. 26

HALSEY C. E.
W.D. 2

284 000 ft
120 000 ft
300 000 ft



- - - RIP RAP REPAIRS

DARTMOUTH COLLEGE
W.D. 53

PINE PARK ASSOC.
W.D. 54

OCCOM RIDGE

CANOE CLUB
DARTMOUTH COLLEGE
W.D. 33

ETTA L. BENJAMIN
W.D. 335

SHERMAN W. MELENDY
W.D. 336

LEWISTON

NORWICH STATION

U.S. ROUTE 5 to Norwich

W.D. 316
W.D. 319
W.D. 320

W.D. 323

W.D. 324

W.D. 325

W.D. 326

W.D. 327

W.D. 328

W.D. 329

W.D. 330

W.D. 331

W.D. 332

W.D. 333

W.D. 334

W.D. 335

W.D. 336

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W.D. 341

W.D. 342

W.D. 343

W.D. 344

W.D. 345

W.D. 346

W.D. 347

W.D. 348