UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Pat Wood, III, Chairman;
Nora Mead Brownell, Joseph T. Kelliher,
and Suedeen G. Kelly.

Northeast Generation Services Company — Project Nos. 2576-022 and 2597-019

ORDER ISSUING NEW LICENSE

(Issued June 23, 2004)

I. Introduction

1. On August 31, 1999, Northeast Generation Services Company (NGS)[1] filed an application for a single new license, pursuant to sections 4(e) and 15 of the Federal Power Act (FPA),[2] for the continued operation and maintenance of the existing 105.9-megawatt (MW) Housatonic Project No. 2576 and 9.0-MW Falls Village Project No. 2597.[3] In this order we issue a single license for all of the developments at both projects, as the Housatonic River Project No. 2576. This order is in the public interest because it provides for the continued generation of a substantial amount of electric energy to serve growing regional demand, together with many enhancements to the fish and wildlife, recreation, and cultural resources of the Housatonic River Basin.

[1] The application was actually filed by Connecticut Light & Power Company (CL&P), a wholly-owned subsidiary of Northeast Utilities. In November 1999, the licenses and application for new license were transferred to NGS. 89 FERC ¶ 62,130.

[2] 16 U.S.C. ээ 797(e) and 808, respectively.

[3] The original licenses for the two projects were issued at 16 FERC ¶ 62,475 (1981) (Housatonic Project No. 2576) and 16 FERC ¶ 62,285 (Falls Village Project No. 2597), and expired on September 30 and August 30, 2001, respectively. The projects have operated on annual licenses since that time, pursuant to FPA section 15(a)(1), 16 U.S.C. § 808(a)(1).

II. Project Facilities and Operations

2. The Housatonic River flows southward 149 miles through western Massachusetts and Connecticut before reaching Long Island Sound. The watershed drains some 2,000 square miles consisting of rugged terrain in the north, and rolling hills and flat stretches of marshland in the south. The project licensed herein consists of five developments, all located on the Housatonic River in Connecticut.[4] From upstream to downstream the developments are as follows:[5]

(1) Falls Village, located at River Mile (RM) 78, consists generally of a dam; a 3.8-mile-long, 100-acre impoundment; a 3,000-foot-long power canal; and a powerhouse with three turbine generators with a combined rating of 9.0 MW. During high flows, Falls Village is operated in a run-of-river mode up to its hydraulic capacity. Any excess flows pass over the spillway. During low flows, the development is operated in a store-and-release mode, with releases made to meet daily demand peaks. NGS proposes to continue operating the Falls Village development in this mode, subject to protections during the summer months for the downstream fishery. It will also make minor modifications to the powerhouse equipment that would yield an additional 0.41 MW of capacity without altering the hydraulic discharge.[6]

(2) Bulls Bridge, located at RM 53, consisting generally of two dams and a dike (going downstream, they are a stone masonry and concrete gravity dam, a rock-filled, concrete-topped gravity dam, and an earth-filled forebay dike); a 2.25-mile-long, 117-acre impoundment; a 2-mile-long power canal; and a powerhouse with six turbine generators with a combined rating of 7.2 MW. Bulls Bridge is

[4] The project is located on a navigable stream. See Connecticut Light & Power Co. v FPC, 557 F.2d 349 (2nd Cir. 1977), the subject of which was the Bulls Bridge, Rocky River, Shepaug, and Stevenson developments.

[5] A map showing the location of the facilities in the Housatonic River Basin is found at page 1 of Appendix A to the Environmental Impact Statement (EIS) issued in this proceeding.

[6] EIS at pp. 2-1, 2-2, 2-6, and 2-7.

currently operated similarly to Falls Village. NGS proposes to continue the current operating scheme, subject to minimum flow requirements in the bypassed reach and downstream from the powerhouse.[7]

(3) Rocky River, located at RM 47, is a pumped storage development which uses the Housatonic River as its lower reservoir and the 5,600-acre Candlewood Lake as its upper reservoir. The development consists of a main dam, dikes, and canals, and a 31-MW turbine generator. Pumping is curtailed during low flow periods, and Candlewood Lake fluctuates up to three feet during the summer and can be drawn down as much as 12 feet during the winter.[8]

(4) Shepaug, located at RM 30, consists generally of a dam, Lake Lillinonah (1,870 acres), a 93-foot-long penstock, and a powerhouse with a single turbine rated at 37.2 MW. The storage capacity of the impoundment is used for flood control and, during low water periods, for electric generation. The development is operated for daily and weekly peaking, and impoundment fluctuations average about three feet on a weekly basis and one foot on a daily basis. NGS proposes no changes to existing operations.[9]

(5) Stevenson, located at RM 19, consists of a dam, the 1,063-acre Lake Zoar, and a powerhouse with four turbine-generators with a combined rating of 30.5 MW. Stevenson is operated in tandem with Shepaug. Weekly fluctuations average 1.5 feet per week during the summer and five feet during the winter, with daily summer fluctuations averaging 0.7 feet. NGS proposes to maintain the existing operating regime, subject to increased minimum flows below the powerhouse and moving the annual maintenance drawdown from late spring to fall to avoid disturbing nesting fish and wildlife. [10]

3. A detailed description of the project facilities is contained in Ordering Paragraph (B) below.

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[7] EIS at 2-2, 2-3, and 2-7.

[8] EIS at pp.2-3.

[9] EIS at p. 2-4.

[10] EIS at pp. 2-4 to 2-5.

III. Background

4. The Commission accepted NGS' license application and on April 18, 2000, requested comments and interventions.[11] Motions to intervene or protests were filed by many entities.[12]

5. A scoping document for the Commission's environmental review of the application pursuant to the National Environmental Policy Act (NEPA)[13] was issued and publicly noticed.[14] Three public scoping meetings were held on December 4, 5, and 7, 2000, in Falls Village, New Milford, and Hartford, respectively. Many persons and organizations filed comments following the scoping meetings.[15] A revised scoping document was issued on October 19, 2001.

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[11] 65 Fed. Reg. 21,740-41 (April 24, 2000).

[12] In alphabetical order, motions to intervene were filed by: Adirondack Mountain Club; American Rivers; Appalachian Mountain Club; Appalachian Trail Conference; Frederick Benedikt; Candlewood Lake Authority; Connecticut Light and Power Company; Connecticut Department of Environmental Protection; Connecticut State Representative Mary Ann Carson (representing New Fairfield, New Milford, and Sherman); jointly by Adirondack Mountain Club, American Whitewater, Clarke Outdoors, Housatonic Area Kayak and Canoe Squad, Housatonic River Sports Alliance, Kayak and Canoe Club of New York, Merrimack Valley Paddlers, and New England Flow (Conservation Intervenors); City of Danbury; Housatonic River Commission; Housatonic Valley Association; Housatonic Valley Council of Elected Officials; Lake Lillinonah Authority; Michael Humphreys; Pomperaug Social Club; Schaghticoke Tribal Nation; the Towns of Brookfield, Kent, New Fairfield, and Southbury (separately); Trout Unlimited and Housatonic Coalition; U.S. Department of the Interior; and U.S. Environmental Protection Agency.

[13] 42 U.S.C. ə 4321 et seq.

[14] 66 Fed. Reg. 69,301-02 (November 16, 2000).

[15] See EIS at p. 1-5.

6. On July 3, 2002, the Commission issued a Notice of Ready for Environmental Analysis, soliciting comments, recommendations, terms and conditions, and prescriptions.[16] Several entities filed responsive comments.[17]

7. A Draft Environmental Impact Statement (EIS) was issued on July 18, 2003, with comments due by September 17, 2003.[18] Over 700 letters and comments from organizations commented on the Draft EIS, the vast majority of them in support of the water quality certification issued by the Connecticut Department of Environmental Protection (CTDEP).[19]

8. The Final EIS was issued on May 21, 2004.[20] The EIS concludes that issuance of a new license for the Housatonic River Project, as conditioned herein, will meet the comprehensive development and public interest standards of the FPA.

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[16] 67 Fed. Reg. 45,977-78 (July 11, 2002).

[17] Comments in response to the REA notice were filed by the Housatonic Valley Council of Elected Officials, Housatonic Valley Association, the Town of Canaan, Interior, Trout Unlimited and Housatonic Coalition, NGS, Appalachian Mountain Club on behalf of itself and several other organizations, Adirondack Mountain Club, Housatonic River Commission, and Candlewood Lake Authority. See EIS at p. 1-7.

[18] 68 Fed. Reg. 42,704-05 (July 18, 2003).

[19] Responses to the comments are found in Appendix C to the Final EIS.

[20] 69 Fed. Reg. 31,612 (June 4, 2004). EPA's regulations at 40 C.F.R. §1506.10 ordinarily require an agency to withhold its decision on a proposed action until 30 days after publication of notice of a final EIS in the Federal Register, in this instance June 27, 2004. However, if the agency provides an appeal process following publication of the final EIS, it may issue its decision at the time the final EIS is published. 40 C.F.R. § 1506.10(b)(2). The opportunity to request rehearing provided by the FPA and our regulations at 18 C.F.R. § 385.713 satisfies this requirement.

IV. Water Quality Certification

9. Under section 401(a)(1) of the Clean Water Act (CWA), the Commission may not issue a license for a hydroelectric project unless the State water quality certifying agency has issued water quality certification for the project or has waived certification.[21] Under section 401(d) of the CWA, any conditions of the certification become conditions of the license,[22] and only a reviewing court may revise or delete those conditions.[23]

10. Connecticut DEP issued water quality certification for the project on August 24, 2000. Ordering Paragraph (D) incorporates the certification into this license, and a copy of the certification is attached as Appendix A.[24]

V. Coastal Zone Consistency Certification

11. Section 307(c)(3)(A) of the Coastal Zone Management Act[25] states that after final approval of a State's shoreline management program by the U.S. Secretary of Commerce, any applicant for a federal license or permit to conduct an activity affecting land or water uses in the coastal zone of the State shall provide in the application a certification that the proposed activity complies with the State's program. At the same time it must furnish the State a copy of the certification with the supporting data. The State must notify the federal agency at the earliest possible time as to whether it concurs with or objects to the certification. If it fails to notify the federal agency within six months, its concurrence is conclusively presumed. The federal authorization cannot be given until the State either concurs with the certification or concurrence is conclusively presumed.

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[21] 33 U.S.C. ə 1341(a)(1). Certification (or waiver) is required in connection with any application for a Federal license or permit to conduct an activity which may result in a discharge into U.S. waters.

[22] 33 U.S.C. ə 1341(d).

[23] See American Rivers v. FERC, 229 F.3d 99 (D.C. Cir. 1997).

[24] The certification includes fishway conditions that are consistent with Interior's fishway prescription made pursuant to FPA section 18.

[25] 16 U.S.C. ə 1456(c)(3)(A).

12. By letter filed January 25, 2002, Connecticut DEP stated that State coastal consistency concurrence is not required for the Housatonic River Project.

VI. Threatened and Endangered Species

13. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA)[26] requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in destruction or adverse modification of designated critical habitat. The only federally listed species known to use the project area is the threatened bald eagle, which nests and overwinters in the project area.[27]

14. On September 10, 2003, Commission staff submitted a biological assessment (BA) to the U.S. Fish and Wildlife Service (FWS) under section 7 of the ESA. Staff requested FWS' concurrence that the proposed project would not be likely to adversely affect the bald eagle. On October 29, 2003, FWS filed a letter concurring with staff's determination.

15. FWS also requested that the Land Management Plan for Bulls Bridge be coordinated with Connecticut DEP and FWS, with a view toward preserving undeveloped riparian forest and maintaining healthy fishery resources for the benefit of bald eagles. Article 407, Shoreline Management Plans, provides for consultation with these agencies.

VII. Section 18 Fishway Prescriptions

16. Section 18 of the FPA[28] states that the Commission shall require construction, maintenance, and operation by a licensee of such fishways as the Secretaries of Commerce or the Interior may prescribe. The Commission's policy is to reserve such authority in a license upon the request of either designated Secretary.

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[26] 16 U.S.C. ə 1536(a)(2).

[27] EIS at p. 3-107.

[28] 16 U.S.C. ə 811.

17. On November 14, 2003, Interior filed a fishway prescription with its record of decision.[29] It calls for upstream and downstream eel passage at Stevenson by 2014 and at Shepaug and Bulls Bridge by 2024, and upstream and downstream fish passage at Shepaug and Stevenson, contingent on the installation of fish passage facilities at the Derby Dam, a non-NGS facility located downstream from Stevenson, where Connecticut DEP and Interior hope to have passage facilities operational by 2005.[30] Interior's prescription, which is consistent with the water quality certification, is attached to this order as Appendix B.

VIII. Recommendations of Federal and State Fish and Wildlife Agencies

18. Pursuant to section 10(j)(1) of the FPA,[31] the Commission, when issuing a license, includes conditions based on the recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act,[32] for the protection and enhancement of fish and wildlife and their habitat affected by the project. The Commission makes a preliminary determination of whether the recommendations are consistent with the FPA or other applicable law. If there is a preliminary inconsistency determination, the agency in question is invited to meet with the Commission staff to try to resolve the matter prior to action on the license application.[33]

19. FWS made 28 recommendations in this proceeding,[34] of which the Commission staff preliminarily determined that five were not consistent with the FPA or other applicable law. Based on comments filed by Interior and others on the Draft EIS, and

[29] The prescription is summarized in EIS Table 3.3.3-2.

[30] Derby dam is the only structure in the river downstream of Stevenson before the tidally-controlled Housatonic estuary.

[31] 16 U.S.C. ə 803(j)(1).

[32] 16 U.S.C. ə 661 et seq.

[33] See 18 C.F.R. § 4.34(e).

[34] EIS Table 5.3-1.

additional staff analysis, it was determined that three of the five recommendations are not within the scope of section 10(j), and the Final EIS recommends that they be included in the license.[35]

20. The two remaining inconsistencies are Interior's recommendations to operate the Falls Village and Bulls Bridge developments in a run-of-river mode year-round. The EIS found that year-round run-of-river operation would disadvantage recreational users and businesses associated with whitewater boating, and would cost NGS about $108,000 in lost generation. The EIS recommended that these developments be operated in run-of-river mode during the spring, and in peaking mode from July through March to benefit the whitewater-boating community and reduce economic impacts to NGS.[36] This issue was however mooted by Connecticut DEP's water quality certification, which requires run-of-river operation at these developments year round.

IX. Cultural Resources

21. Before it may issue a new license for the project, the Commission must comply with the consultation requirements of section 106 of the National Historic Preservation Act and the implementing regulations of the Advisory Council on Historic Preservation (Advisory Council).[37] Consultation under section 106 usually results in the preparation of a programmatic agreement among the Commission, the State Historic Preservation Officer (SHPO), and the Advisory Council which provides for the protection of historic and cultural resources through the establishment of an Historic Resources Management Plan. Other interested entities, such as Indian tribes, may be asked to concur with the programmatic agreement.

[35] These three measures are Interior's recommended refill minimum flows at Falls Village and Bulls Bridge, and reservoir level restrictions on Lake Zoar related to maintenance and normal drawdowns.

[36] EIS at pp. 3-166 and 3-167.

[37] 36 C.F.R. Part 800.

22. In August 2003 the Commission circulated a draft programmatic agreement for review and comment and invited the Schaghticoke Tribal Nation (Schaghticoke) to concur.[38] Comments were filed in response by NGS, Interior's Bureau of Indian Affairs (BIA), the SHPO, and the Delaware Nation.[39]

23. NGS requests clarification that the consultation requirements in the programmatic agreement with respect to Indian tribes apply only in certain circumstances required by the Advisory Council's regulations. NGS evidently refers to 36 C.F.R. § 800.2(c)(2), which states that consultation with Indian tribes is required with regard to undertakings "occurring on or affecting historic properties on tribal lands," and where the tribe "attaches religious and cultural significance to historic properties that may be affected by an undertaking . . . regardless of the location of the historic property." We agree that the programmatic agreement should be construed consistent with this regulation.

24. BIA noted that consultation had occurred only with the Schaghticoke,[40] and stated that certain other federally-recognized Indian tribes, including the Delaware Nation,[41] may also attach aboriginal, religious, or cultural significance to sites in the project area, and must therefore be consulted about cultural resources affected by the project.[42] The

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[38] Separate mailings were made on August 22 and 26, 2004.

[39] The Delaware Nation is located in Oklahoma.

[40] The Schaghticoke Nation has been recognized as a tribe by Connecticut for some years. It was also Federally recognized as of January 1, 2004. 69 Fed. Reg. 5,570 (February 5, 2004). On May 3, 2004, the State of Connecticut and numerous other entities filed a request for reconsideration of the Federal recognition decision. In re Federal Acknowledgement Petition of the Schaghticoke Tribal Nation, U.S. Department of the Interior, Interior Board of Indian Appeals.

[41] BIA specifically identifies the Delaware Nation, Delaware Tribe of Indians, Mohegan Indian Tribe, and Stockbridge-Munsee Community of Wisconsin.

[42] Letter from the Director, Eastern Regional Office, BIA, filed September 22, 2003. BIA added that there may be Native American grave sites within the project boundary and, if so, the Native American Graves Protection and Repatriation Act applies and should be recognized in the programmatic agreement and Historic Resources Management Plan. The SHPO also questions the applicability of the Protection and Repatriation act, on the ground that no Federal or tribal lands are located within the

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Delaware Nation requested that the license require an archeological survey, a mitigation plan with respect to any archeological sites threatened by the project, and an opportunity to review and comment on the plan. The Delaware Nation also requested notification if any human remains are found.

25. The SHPO made certain technical recommendations. It also requested in its letter to the Commission that the Delaware Nation provide any information that would demonstrate the federally-recognized tribes' historic affiliation with the Housatonic River valley.[43]

26. On March 4, 2004, the Commission circulated for review and signature a revised PA, which would have required NGS to consult with the SHPO, Schaghticoke, and the Delaware Nation, Delaware Tribe of Indians, Mohegan Tribe, and Mohican Nation, Stockbridge-Munsee Band, and which invites the tribes to concur in the development of the HPMP. On April 6, 2004, the SHPO responded by objecting to the invitation for the tribes other than Schaghticoke to concur, and recommending that all references to them be struck from the PA. It states that the NHPA and implementing regulations provide no authority for the participation of these tribes.

27. None of the tribes referenced by BIA is currently located in the Housatonic River Valley, and the evidence available to the Commission indicates that only Schagticoke has an aboriginal affiliation with the Housatonic River Valley.[44] Therefore, on April 7, 2004, the Commission recirculated for signature the programmatic agreement with the

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proposed boundaries.

[43] Letter from J. Paul Loether, Deputy State Historic Preservation Officer, filed November 11, 2003. The SHPO's letter indicates that it copied only NGS and the Advisory Council. However, the Commission's August 26, 2003 letter concerning the draft programmatic agreement was sent to all of the tribes. Only the Delaware Nation responded.

[44] The Smithsonian Institution's Handbook of North American Indians, Volume 15, "Northeast," 1978, at 166-89, indicates that Schaghticoke appeared in the Housatonic River Valley some time following King Philip's war (1675-76), and that none of the other tribes identified by BIA, all of which were culturally and linguistically distinct from Schaghticoke, have occupied the valley since that time.

modifications requested by the SHPO, and invited the concurrence of NGS and Schaghticoke.[45] The SHPO executed, and NGS concurred with, the programmatic agreement on April 15, 2004.

28. On May 6, 2004, BIA filed a letter in response to the SHPO's April 6 letter and the Commission's April 7 request for signatures on a revised programmatic agreement that references only Schagticoke. BIA asserts that the Advisory Council's regulations require consultation with "any" Indian tribe, regardless of where the tribe is located, that attaches religious and cultural significance to historic properties that may be affected by an undertaking.[46]

29. We understand that a tribe need not currently occupy or use an area or place to which it has historically attached religious or cultural significance in order for the consultation requirement to attach. Indeed, Commission staff has both in prior and current proceedings consulted with tribes living apart from such areas and places.[47] We do not, however, find support for BIA's view that the consultation requirement applies based merely on a tribe's statement that an area is significant to it. The Advisory Council's regulations refer in this context to "ancestral, aboriginal, or ceded lands of Indian tribes,"[48] which we take to mean that that the tribe must have some demonstrable connection with the historic properties. As discussed above, we can find no connection between the project area and any tribe other than Schaghticoke. We also note that the Advisory Council was fully apprised of, and did not object to, the SHPO's requested revision to the programmatic agreement. Nor have we heard anything from any of the other tribes except the Delaware Nation, which has not provided evidence of any connection to the project area.

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[45] The April 7, 2004 letter was also copied to the Delaware Nation, which has not responded.

[46] BIA cites 36 C.F.R. § 800.2(c)(2)(B)(ii).

[47] For instance, in the relicense proceeding for the Morgan Falls Project No. 2237, which is located in Georgia, consultation is currently underway with the Mississippi Band of Choctaw Indians and with the Muscogee Nation of Oklahoma, which is located in Oklahoma.

[48] 36 C.F.R. § 800.2(c)(2)(D).

30. Finally, we note that the EIS adopts the SHPO's recommendation that the license include a condition requiring notification to the Archaeological Conservancy[49] concerning the potential availability for sale of archaeologically sensitive parcels within the project boundaries, and conditioning any such sales with a preservation restriction that requires professional archaeological investigation and consultation with the SHPO prior to proposed development or ground-disturbance in any transfer, sale, or other arrangements.[50]

31. To the extent the SHPO may be recommending that the sale and removal of any lands from within the project boundary be accompanied by a requirement for the purchaser to carry out the archaeological investigation and consultation, that is beyond our jurisdiction. Project works, including lands, are permitted to be removed from the project boundary and license only when they are not needed for project purposes, and when thus removed become non-jurisdictional.[51] We do, however, agree that the removal from the project of any lands or interests in lands should be preceded by appropriate investigation and consultation. Article 412 so provides.

X. Other Issues

32. The Housatonic River Project as licensed herein includes numerous enhancements to the fish and wildlife, recreation, and cultural resources of the Housatonic River Basin. These enhancements include:

- run-of-river operation at the Falls Village and Bulls Bridge developments;

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[49] The Archaeological Conservancy is a private, non-profit entity that works to preserve archaeological sites.

[50] EIS at p. 3-196.

[51] See, e.g., Niagara Mohawk Power Corp. and Fourth Branch Associates (Mechanicville), 98 FERC ¶ 61,227 (2002), reh'g denied, 100 FERC ¶ 61,185 (2002) (declining to condition surrender to require licensee to undertake various measures to maintain project works for historical display purposes following effective date of surrender); Policy Statement on Project Decommissioning at Relicensing, III FERC Stats. & Regs., Regs. Preambles & 31,011 at 31,233 (1994) (60 Fed. Reg. 339 (January 4, 1995).

- bypassed-reach minimum flows at Falls Village and Bulls Bridge;
- minimum flows downstream of the Shepaug development tailrace and the Stevenson development dam;
- fish passage facilities for various species of fish and American eel;
- a shoreline management plan for all five developments;
- critical habitat management plans for the Falls Village and Bulls Bridge developments;
- a recreation plan for all five developments;
- oxygenation equipment to improve the dissolved oxygen content of water released from Shepaug to the Stevenson development;
- nuisance plant monitoring at Candlewood Lake and Lakes Lillinonah and Zoar;
- debris management plans for Lakes Lillinonah and Zoar; and
- implementation of a Programmatic Agreement for managing historic properties.

33. The project, under existing conditions, generates about 276,090 MWh annually. The project will generate about 266,770 MWh annually as licensed, as a result of changing the operating mode of Falls Village and Bulls Bridge from peaking to run-of-river. The project will continue to generate approximately 97 percent of the energy and capacity it currently generates. Overall, we conclude that the project, licensed with these provisions, will best serve the public interest in the comprehensive development of the Housatonic River Basin consistent with the requirements of FPA section 10(a)(1).

34. The license does not include all of the provisions requested by the parties. We explain some of the more significant recommendations that we are not adopting.

Buffer Zones and Enhancement Fund

35. Several parties[52] recommend that NGS be required to establish a 200-foot vegetated buffer zone on all riverfront lands within the project boundaries, and to acquire conservation easements on other lands adjacent to the project boundaries to protect fish and wildlife, water quality, aesthetic, and recreational resources. Housatonic River Commission requests that we require NGS to establish a fund for this purpose. The Conservation Intervenors and others[53] similarly recommend a 200-foot-wide buffer zone on all NGS and CL&P lands fronting the river and any project reservoirs, with land purchases or conservation easements as needed. Interior recommends that NGS also protect all lands adjacent to the project boundaries owned by its regulated utility affiliate, CL&P, through the acquisition of conservation easements. Interior is particularly concerned about riparian buffers and floodplain forest habitat.

36. The EIS finds that the cost of acquiring a 200-foot buffer in all areas where the shoreline abuts CL&P property would be from $5 to $10 million.[54] It also finds that acquisition of additional CL&P lands adjacent to the project boundaries is not necessary to protect the non-power resources.

37. Conservation Intervenors recommend that NGS be required to establish a $10-15 million fund for the purposes of enhancing riverine and wetland ecology and for recreational purposes in the project area. NGS maintains that it lacks the financial resources to purchase or obtain conservation easements on significant amounts of additional lands, and that waterfront property, particularly at Candlewood Lake, is very expensive. It maintains that the Shoreline Management Plan requirements will provide sufficient protection.

38. In order to protect these non-power resources, the EIS recommends that NGS

[52] Conservation Intervenors, Candlewood Lake Authority, Housatonic River Commission, Housatonic Valley Association, and Housatonic Valley Council of Elected Officials.

[53] Candlewood Lake Authority, Housatonic Valley Association, and Housatonic Valley Council of Elected Officials.

[54] EIS Table 4.2-1, p. 4-17.

prepare, in consultation with governmental and non-governmental entities, a project Shoreline Management Plan that includes a vegetated buffer zone of up to 200 feet measured horizontally from the high-water mark on lands that it owns within the project boundaries. Where NGS's project lands do not extend that far, the buffer zone would extend to the project boundary. The plan should be developed consistent with the principles set forth in the Commission staff's Guidance for Shoreline Management Planning at Hydropower Projects.[55] The EIS also recommends that the Shoreline Management Plan identify disturbed lands within the buffer zone with potential for successful revegetation. We have incorporated these requirements into the license.[56] The EIS also recommends that shoreline resources be protected through the development of recreation and critical-habitat maintenance plans, and we have included these in other license articles.[57]

39. Although additional buffer zone lands could further benefit various non-power resources in the project area, we must consider those additional benefits relative to the significant costs NGS is already being required to incur to satisfy the license conditions we are including, as well as the mandatory water quality certification and fishway requirements. These enhancements will reduce the project's current total generation by about 9,320 MWh (3.4 percent) and cost about $1,883,000 to implement on an annualized basis. We conclude that this level of investment in non-power resources appropriately balances the public-interest considerations with respect to the relicensing of this project.

Lake Management Authorities

40. NGS has historically provided voluntary financial support to the Candlewood Lake Authority, Lake Lillinonah Authority, and Lake Zoar Authority. For example, NGS currently provides one-sixth of the Candlewood Lake Authority's operating budget. The lake management authorities operate pursuant to State laws as agents for municipalities bordering lakes in the enforcement of boating laws, control and abatement of aquatic weeds and algae, and various other water management issues.[58]

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[55] http://www.ferc.gov/industries/hydropower/enviro/guidelines.asp.

[56] Article 407.

[57] Article 408 (Recreation Plan); Article 405 (Critical Habitat Management Plan).

[58] See, e.g., motion to intervene and protest by the Lake Lillinonah Authority, filed June 16, 2000, at 1.

41. Candlewood Lake Authority and Housatonic Valley Council of Elected Officials recommend that NGS increase its contribution to Candlewood Lake Authority to one-third of the Authority's operating budget, on the basis that the lake authorities will be undertaking new responsibilities in the context of the lake and shoreline management processes established by the new license.[59] The Housatonic Valley Council also requests increased financial support for the Lake Zoar Authority,[60] and that NGS be required to donate lands at the Shepaug development as a staging and storage area for Lake Lillinonah Authority activities.[61] The Housatonic Valley Association recommends that the license formalize and index to inflation NGS's historic financial support for the lake authorities.

42. The EIS proposes that NGS consult with the Lake Lillinonah Authority to identify land that might be used as a staging area for lake patrol and water-quality monitoring activities, and that NGS continue to support and fund the activities of the lake management authorities.[62] We adopt the proposal that the licensee identify a staging area for the Lake Lillinonah Authority. But while these entities intend to participate in the development and possibly the administration of the project Shoreline Management Plan, their activities primarily involve implementation of State law. It is accordingly not appropriate for the license to require NGS to fund their activities. NGS is however free to continue to provide funding in its discretion.

User Fees

43. Candlewood Lake Authority and the Housatonic Valley Council of Elected Officials request that the license regulate dock and access fees to ensure that they remain reasonable.[63] The Commission's longstanding policy is that permission from a licensee to use project property for such things as boat docks and marinas is a benefit which imposes administrative and other costs on the licensee and for which a fee may be

[59] EIS at p. 3-130.

[60] EIS at p. 3-136.

[61] EIS at pp. 3-133 and 3-134.

[62] EIS at pp. 3-131, 3-134, and 3-136.

[63] EIS at p. 3-130.

properly charged.[64] Because this matter is largely a local issue, the Commission will establish or modify such charges only if there has been a clear showing of abuse on the part of the licensee.[65] No such showing has been made here, or even alleged. We will therefore not include in the license any specific provisions with regard to such fees. Proposed fees may, however, appropriately be discussed in the context of developing shoreline or lake management plans.

Whitewater Boating

44. The Housatonic Project has historically supported whitewater boating in the bypassed reaches and below the powerhouses at the Falls Village and Bulls Bridge developments. This has been economically beneficial to the local community. The necessary flows occur as a result of generation flows and releases for the specific purpose of enhanced boating.[66] The water quality certification, as discussed below, requires these developments to be operated in run-of-river mode year-round. That will limit whitewater boating in the bypassed reaches to periods when the inflow exceeds the hydraulic capacity of the powerhouses (i.e., when the projects are spilling). Whitewater boating downstream of the powerhouses will be available when inflow provides suitable generation flows. Such opportunities will therefore be less frequent and predictable. Certain whitewater boating events that have been held during the term of the original license may still be held, depending on flow conditions.[67] Article 408 requires the project recreation plan to include measures to facilitate such events.

45. The Conservation Intervenors requested operating requirements that would direct inflows first to the bypassed reaches to support whitewater boating, with excess flows available for power generation. We believe this could be accommodated within the terms of the water quality certification's run-of-river requirement, because it specifies bypassed-reach minimum flows, but not maximum flows.[68] The EIS found that this

[64] See 18 C.F.R. § 2.7 (2004).

[65] See, e.g., Union Electric Co. dba Ameren UE, 90 FERC & 61,249 (2000), reh'g denied, 93 FERC & 61,158 (2000), aff'd, The Coalition for the Fair and Equitable Regulation of Docks on the Lake of the Ozarks, 297 F.3d 771 (8th Cir. 2002).

[66] EIS at pp. 3-138 to 3-148.

[67] EIS at pp. 3-161 to 3-167.

[68] See Water Quality Certification, Appendix A, Special Terms and Conditions.

would cost in the range of $1.25 million to $2 million annually in lost generation, compared to the no-action alternative. We find that it would be unreasonable to require NGS, for the benefit of whitewater boaters, to forego generation in addition to that lost as a result of the change to run-of-river operation, particularly in light of the additional costs to NGS of other mitigation and enhancement measures discussed herein.

XI. Comprehensive Plans

46. Section 10(a)(2)(A) of the FPA[69] requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.[70] Federal and State agencies filed 31 qualifying comprehensive plans, of which we identified one Connecticut plan and three federal comprehensive plans[71] that are relevant. We did not find any conflicts.

XII. Applicant's Plans and Capabilities

47. In accordance with sections 10 and 15 of the FPA,[72] we have evaluated NGS's record as a licensee with respect to the eight matters set forth next.

[69]16 U.S.C. ə 803(a)(2).

[70]Comprehensive plans are defined at 18 C.F.R. § 2.19 (2004).

[71]The applicable Federal plans are: (1) U.S. Fish and Wildlife Service. Canadian Wildlife Service. North American Waterfowl Management Plan. Department of the Interior, May 1986; (2) Fish and Wildlife Service. Fisheries USA: The Recreational Fisheries Policy of the U.S. Fish and Wildlife Service, Washington, D.C., Undated; and (3) National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. January 1982. The Connecticut plan is Connecticut Statewide Department of Environmental Protection, Statewide Comprehensive Outdoor Recreation Plan, 1987-1992. Hartford, CT.

[72]16 U.S.C. əə 803 and 808.

A. Conservation Efforts

48. FPA section 15(a)(2)(D) requires the Commission to consider the extent of electric consumption efficiency programs in the case of license applicants engaged primarily in the generation or direct sale of electric power. Although NGS is engaged in the generation and direct sale of electric power, this requirement does not apply to NGS, because it sells power only at wholesale and has no customers that directly consume power.[73]

B. Compliance History and Ability to Comply with the New License

49. FPA section 15(a)(3)(A) requires the Commission to take into consideration an existing licensee's record of compliance with the terms and conditions of the existing license. We have done so, and find that NGS's overall record of making timely filings and compliance with its license is satisfactory.

C. Safe Management, Operation, and Maintenance of the Project

50. FPA section 15(a)(2)(B) requires us to review NGS's plans to safely manage, operate, and maintain the Housatonic River Project. We reviewed NGS's operation and management of the project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines, as well as all applicable safety requirements, such as its Public Safety Plan, Emergency Action Plan, and periodic Independent Consultant's Safety Inspection Reports. We conclude that the dams and other project works are safe, and we have no reason to believe that NGS cannot continue to safely manage, operate, and maintain these facilities under a new license.

D. Ability to Provide Efficient and Reliable Service

51. FPA section 15(a)(2)(C) requires us to review NGS's ability to operate the project in an efficient and reliable manner. Based on our review, NGS has been operating the project in an efficient manner within the constraints of the existing license, and is likely to continue to do so under a new license.

[73] See license application at p. i.

E. Need for Power

52. FPA section 15(a)(2)(D) requires the Commission to consider the license applicant's short-term and long-term need for the project power. The EIS finds there is a need for project power in both the short and long terms.[74] The project is located in the Northeast Power Coordinating Council (NPCC) region of the North American Electric Reliability Council (NERC). NERC annually forecasts electrical supply and demand in the Nation and the region for a 10-year period. NERC's most recent report on annual supply and demand projections indicates that, for the period 2002-2011, the New England system summer peak demand for electric energy in the NPCC region will grow from 24,200 MW to 27,750 MW, an annual growth rate of about 1.4 percent.

53. If a new license is issued to NGS, continued operation of the project would provide about 266,770 Megawatt-hours of energy annually. This generation would help meet New England's expanding power demand projections. In the short and long term, the capacity supplied by relicensing the project would help to maintain sufficient capacity to meet regional demand, while maintaining resource diversification and displacing nonrenewable fossil fuel generation. Also, the project will continue to displace emissions from fossil-fueled power generation.

F. Transmission Lines

54. FPA section 15(a)(1)(3)(A) requires the Commission consider existing and planned transmission services of the applicant. The project has no transmission lines; the transmission lines connecting the project to the electric grid are owned and operated by CL&P.

G. Cost-Effectiveness of Plans

55. The only change proposed by NGS in project facilities or operations for power development purposes at this time is conversion of the retired waterwheel exciters to low-flow generators, which would increase the capacity of the Falls Village development by about 0.41 MW. NGS is also proposing several measures for the enhancement of fish and wildlife, recreation, and cultural resources. Our review of NGS's record as an existing licensee indicates that these plans are likely to be carried out in a cost-effective manner.

[74] EIS at pp. 1-1 and 1-2.

H. Actions Affecting the Public

56. The Housatonic River Project generates electricity used to serve the needs of the public. Environmental enhancement measures and recreational improvements included in the license will generally improve environmental quality, particularly in aquatic and wildlife resources, and will have a beneficial effect on public use of project facilities for recreational purposes.

XIII. Economic Benefits of Project Power

57. In determining whether a proposed project will be best adapted to a comprehensive plan for developing a waterway for beneficial public purposes, the Commission considers the economic benefits of project power.

58. Under its approach to evaluating the economics of hydropower projects, as articulated in Mead Corp.,[75] the Commission employs an analysis that uses current costs to compare the costs of the project and the likely alternative power, with no forecasts concerning future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and costs of a project, and reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license. In making its decision, the Commission considers the project power benefits both with the applicant's proposed mitigation and enhancement measures and with the Commission's modifications and additions to the applicant's proposal.

59. To determine whether the proposed project is currently economically beneficial, we subtract the cost of project power as licensed from the cost of the most likely source of alternative power. When licensed in accordance with the conditions adopted herein, the project power would produce about 226,770 MWh of energy annually at a cost of about $15,273,000, or $2,951,800 more than the $12,321,200 cost to obtain the same amount of power in the market.[76] It is the applicant's responsibility to determine whether continued operation of an existing project under these conditions is a prudent business decision.

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[75]Mead Corp., 72 FERC & 61,027 (1995).

[76]EIS at p. xxi.

60. We also take into account that hydropower projects offer unique operational benefits to the electric utility system (ancillary benefits). These benefits include their value as almost instantaneous load-following response to dampen voltage and frequency instability on the transmission system, system-power-factor-correction through condensing operations, and a source of power available to help in quickly putting fossil-fuel based generating stations back on line following a major utility system or regional blackout.

XIV. License Term

61. Pursuant to section 15(e) of the FPA,[77] relicense terms shall not be less than 30 years nor more than 50 years from the date on which the license is issued. Our general policy is to establish 30, 40, or 50-year terms for projects with, respectively, little, moderate, or extensive redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures.

62. We find that the environmental mitigation measures required by this license are moderate in scope, and that a 40-year term is appropriate.

XV. Comprehensive Development

63. Based on our independent review and evaluation of the Housatonic River Project as proposed by NGS, and with the additional measures we are requiring, recommendations from the resource agencies, Schaghticoke, and other participants, and the no-action alternative, as documented in the Final EIS, we have selected the Housatonic River Project as proposed by NGS, with staff's recommended measures as modified by the requirements of the water quality certification.

64. For the reasons discussed in the Final EIS and in this order, the Housatonic River Project, as licensed herein, will be best adapted to the comprehensive development of the Housatonic River for beneficial public uses. The project will provide about 115 MW of electric energy, including valuable peak period energy, generated from a renewable resource that continues to offset fossil-fueled, steam-electric generating plants, thereby conserving non-renewable resources and protecting and enhancing fish, wildlife, recreation, and aquatic resources in the Project vicinity.

[77] 16 U.S.C. ə 808(e).

The Commission orders:

(A) This license is issued to the Northeast Generation Services Company (Licensee) for a period of 40 years, effective the first day of the month in which the license is issued, to operate and maintain the Housatonic River Project No. 2576. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, enclosed by the project boundary shown by Exhibit G filed on August 31, 1999:

Exhibit G Drawings	FERC No. 2576-	Showing
Sheet 1 of 3	1001	Falls Village Project Map
Sheet 2 of 3	1002	Falls Village Project Map
Sheet 3 of 3	1003	Falls Village Project Map
Sheet 1 of 3	1004	Bulls Bridge Project Map
Sheet 2 of 3	1005	Bulls Bridge Project Map
Sheet 3 of 3	1006	Bulls Bridge Project Map
Sheet 1 of 29	1007	Rocky River Project Map
Sheet 2 of 29	1008	Rocky River Project Map
Sheet 3 of 29	1009	Rocky River Project Map
Sheet 4 of 29	1010	Rocky River Project Map
Sheet 5 of 29	1011	Rocky River Project Map
Sheet 6 of 29	1012	Rocky River Project Map
Sheet 7 of 29	1013	Rocky River Project Map
Sheet 8 of 29	1014	Rocky River Project Map
Sheet 9 of 29	1015	Rocky River Project Map
Sheet 10 of 29	1016	Rocky River Project Map
Sheet 11 of 29	1017	Rocky River Project Map
Sheet 12 of 29	1018	Rocky River Project Map
Sheet 13 of 29	1019	Rocky River Project Map
Sheet 14 of 29	1020	Rocky River Project Map
Sheet 15 of 29	1021	Rocky River Project Map
Sheet 16 of 29	1022	Rocky River Project Map
Sheet 17 of 29	1023	Rocky River Project Map
Sheet 18 of 29	1024	Rocky River Project Map
Sheet 19 of 29	1025	Rocky River Project Map

Exhibit G Drawings	FERC No. 2576-	Showing
Sheet 20 of 29	1026	Rocky River Project Map
Sheet 21 of 29	1027	Rocky River Project Map
Sheet 22 of 29	1028	Rocky River Project Map
Sheet 23 of 29	1029	Rocky River Project Map
Sheet 24 of 29	1030	Rocky River Project Map
Sheet 25 of 29	1031	Rocky River Project Map
Sheet 26 of 29	1032	Rocky River Project Map
Sheet 27 of 29	1033	Rocky River Project Map
Sheet 28 of 29	1034	Rocky River Project Map
Sheet 29 of 29	1035	Rocky River Project Map
Sheet 1 of 8	1036	Shepaug Project Map
Sheet 2 of 8	1037	Shepaug Project Map
Sheet 3 of 8	1038	Shepaug Project Map
Sheet 4 of 8	1039	Shepaug Project Map
Sheet 5 of 8	1040	Shepaug Project Map
Sheet 6 of 8	1041	Shepaug Project Map
Sheet 7 of 8	1042	Shepaug Project Map
Sheet 8 of 8	1043	Shepaug Project Map
Sheet 1 of 4	1044	Stevenson Project Map
Sheet 2 of 4	1045	Stevenson Project Map
Sheet 3 of 4	1046	Stevenson Project Map
Sheet 4 of 4	1047	Stevenson Project Map

(2) Project works consisting of the following five developments:

The Falls Village Development, consisting of: (1) a 300-foot-long, 14-foot-high concrete gravity dam topped with 1.6-foot-high flashboards with two spillways having a combined overflow length of approximately 280 feet; (2) a 3.8-mile-long, 100-acre impoundment with a full pool water surface elevation of 633.2 feet National Geodetic Vertical Datum (NGVD); (3) a 2,700-foot-long, 30-foot-wide, 15.5-foot-deep power canal; (4) a canal intake structure equipped with three 6.1-foot-high, 11.1-foot-wide gates; (5) a trash rack structure; (6) three 300-foot-long, 9.0-foot-diameter penstocks; (7) a powerhouse containing three generating units with a combined installed capacity of 9.0 megawatts (MW), and two proposed low-flow generators with a combined capacity of 0.41 MW; and (8) appurtenant facilities.

The Bulls Bridge Development, consisting of: (1) a 203-foot-long, 24-foot-high stone masonry and concrete gravity dam; (2) a 156-foot-long, 17-foot-high rock-filled concrete-capped gravity dam topped with 3.0-foot-high flashboards; (3) a 660-foot-long, 39-foot-high earth-filled forebay dike; (4) a 2.25-mile-long, 117-acre impoundment with a full pool water surface elevation of 354.0 feet NGVD; (5) a two-mile-long power canal; (6) a canal intake structure equipped with four 13.2-foot-high, 8.8-foot-wide gates; (7) a trash rack structure; (8) two 420-foot-long penstocks, one 8-foot-diameter and one 13-foot-diameter; (9) a powerhouse containing six generating units with a combined total installed capacity of 7.2 MW; and (10) appurtenant facilities.

The Rocky River Pumped Storage Development, consisting of: (1) a 952-foot-long, 100-foot-high earth-filled dam; (2) four dikes comprising: (a) the North Lanesville 181-foot-long, 6.5-foot-high concrete gravity dike; (b) the Middle Lanesville 167-foot-long, 45-foot-high earth-filled dike; (c) the South Lanesville 391-foot-long, 16.5-foot-high concrete gravity dike; and (d) the two section Dandury 20-foot-long, 6.0-foot-high earth-filled dike, and the 900-foot-long, 42-foot-high dike; (3) the 7-mile-long, 5,600-acre Candlewood Lake with a full pool water surface elevation of 428.1 feet NGVD; (4) a 3,190-foot-long power canal; (5) a 84-foot-high, 35-foot-diameter circular intake structure equipped with trash racks and six 18.0-foot-high, 18.5-foot-wide gates; (6) a penstock consisting of: (a) a 246-foot-long, 16-foot-diameter concrete section; (b) a 943-foot-long, 15-foot-diameter wood-stave section; and (c) a 670-foot-long, 12.0-foot to 13.0-foot-diameter steel section; (7) a 76-foot-high, 20-foot-diameter steel surge tank; (8) a powerhouse containing one generating unit with an installed capacity of 24 MW, and two reversible pump-generating units with a combined installed capacity of 7.0 MW; and (9) appurtenant facilities.

The Shepaug Development, consisting of: (1) a 1,412-foot-long, 140-foot-high concrete gravity dam with a spillway topped with five 28-foot-high, 35-foot-wide Taintor gates; (2) the 1,870-acre Lake Lillinonah with a full pool water surface elevation of 198.3 feet NGVD; (3) a trash rack structure; (4) a 93-foot-long, 25-foot-diameter penstock; (5) a powerhouse containing one generator unit with an installed capacity of 37.2 MW; and (6) appurtenant facilities.

The Stevenson Development, consisting of: (1) a 1,250-foot-long, 80-foot-high concrete gravity dam topped with 3.0-foot-high flashboards and a spillway topped with two 29-foot-high, 35-foot-wide Taintor gates; (2) the 1,063-acre Lake Zoar with a full pool water surface elevation of 101.3 feet NGVD; (3) a trash rack

structure; (4) four 111-foot-long, 15-foot-diameter penstocks; (5) a powerhouse containing four generating units with a combined total installed capacity of 30.5 MW; and (6) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of Exhibit A and F shown below:

Exhibit A: Pages A-1 through A-51 filed on August 31, 1999.

Exhibit F: The following Exhibit F drawings filed on August 31, 1999:

Exhibit F Drawings	FERC No. 2576-	Showing
Sheet 1 of 7	1048	Falls Village Plan & Sections of Dam
Sheet 2 of 7	1049	Falls Village Plan & Sections of Canal
Sheet 3 of 7	1050	Falls Village Intake Structure Plan & Sections
Sheet 4 of 7	1051	Falls Village Canal Ice Sluice Plan & Sections
Sheet 5 of 7	1052	Falls Village Main Floor Plan of Powerhouse
Sheet 6 of 7	1053	Falls Village Typical Cross Section of Generator Bay
Sheet 7 of 7	1054	Falls Village Typical Cross Section-Through Exciter Bays
Sheet 1 of 7	1055	Bulls Bridge Plan-Power Canal
Sheet 2 of 7	1056	Bulls Bridge Dam Sections
Sheet 3 of 7	1057	Bulls Bridge Gate Sections
Sheet 4 of 7	1058	Bulls Bridge Canal Intake Structure & Sections
Sheet 5 of 7	1059	Bulls Bridge Mountainside Spillway-Sections
Sheet 6 of 7	1060	Bulls Bridge Forebay & Headgate Structures
Sheet 7 of 7	1061	Bulls Bridge Powerhouse
Sheet 1 of 10	1062	Rocky River Candlewood Lake Plan

Exhibit F Drawings	FERC No. 2576-	Showing
Sheet 2 of 10	1063	Rocky River Main Dam & Canal Dike
Sheet 3 of 10	1064	Rocky River North & South Lanesville Dikes
Sheet 4 of 10	1065	Rocky River Middle Lanesville Dike
Sheet 5 of 10	1066	Rocky River Dike Point
Sheet 6 of 10	1067	Rocky River Danbury Dike
Sheet 7 of 10	1068	Rocky River Intake Structure
Sheet 8 of 10	1069	Rocky River Plans & Profile of Intake Penstock
Sheet 9 of 10	1070	Rocky River Powerhouse Sections
Sheet 10 of 10	1071	Rocky River Powerhouse Sections
Sheet 1 of 5	1072	Shepaug Power Plant Plan & Elevation
Sheet 2 of 5	1073	Shepaug Typical Sections & Discharge Curves
Sheet 3 of 5	1074	Shepaug Dam Stability-Anchor Plan, Elevation & Sections
Sheet 3a of 5	1075	Shepaug Dam Stability-Anchor Schedule & Sections
Sheet 4 of 5	1076	Shepaug Powerhouse Floor Plans
Sheet 5 of 5	1077	Shepaug Powerhouse & Intake Section
Sheet 1 of 6	1078	Stevenson Power Plant Plan & Elevation
Sheet 2 of 6	1079	Stevenson Power Plant Sections
Sheet 3 of 6	1080	Stevenson Typical Sections & Discharge Curves
Sheet 4 of 6	1081	Stevenson Dam Stability-Anchor Plans, Elevation & Sections

Exhibit F Drawings	FERC No. 2576-	Showing
Sheet 4a of 6	1082	Stevenson Dam Stability-Anchor As-Built Schedule
Sheet 5 of 6	1083	Stevenson Power Plant Plans
Sheet 6 of 6	1084	Stevenson Power Plant Section

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

(C) The Exhibits A, F, and G described above are approved and made part of this license.

(D) This license is subject to the conditions submitted by the State of Connecticut Department of Environmental Protection under section 401 of the Clean Water Act, as those conditions are set forth in Appendix A to this order.

(E) This license is subject to the prescription submitted by the U.S. Department of the Interior, Fish and Wildlife Service, under section 18 of the Federal Power Act, as set forth in Appendix B to this order.

(F) This license is subject to the articles set forth in Form L-5 (published at 54 FPC 1832-42 (1975)), "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters and Lands of the United States," and the following additional articles:

Article 201. *Administrative Annual Charges.* The licensee shall pay the United States the following annual charges, effective the first day of the month in which the license is issued, for the purposes of:

(1) Reimbursing the United States for the Commission's administrative costs, pursuant to Part I of the Federal Power Act, a reasonable amount as determined in accordance with provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 114,900 kilowatts.

(2) In addition to the above charge a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized additional capacity at the Falls Village Development is 410 kilowatts. This annual charge shall be effective as of the date of commencement of construction of the new capacity.

Article 202. *Exhibit Drawings.* Within 45 days of the date of issuance of the license, the licensee shall file the approved exhibit drawings in aperture card and electronic file formats.

(a) Three sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Drawing Number (e.g., P-2576-1001 through P-2576-1084) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (e.g., F-1, G-1, etc.), Drawing Title, and date of this license shall be typed on the upper left corner of each aperture card.

Two of the sets of aperture cards shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office.

(b) The licensee shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office. The drawings must be identified as (CEII) material under 18 CFR § 388.113(c). Each drawing must be a separate electronic file, and the file name shall include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license and file extension [e.g., P-2576-1001, G-1, Project Boundary, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

IMAGERY - black & white raster file
FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4
RESOLUTION – 300 dpi desired, (200 dpi min)
DRAWING SIZE FORMAT – 24" X 36" (min), 28" X 40" (max)
FILE SIZE – less than 1 MB desired

Article 203. *Amortization Reserve.* Pursuant to section 10(d) of the Federal Power 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. The licensee shall set aside in a project amortization reserve account at the end of each fiscal year one-half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment.

To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly included 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 government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 204. *Headwater Benefits.* If the licensee's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license.

Article 301. *Exhibit G Drawings.* Within 45 days of issuance date of the license, the licensee shall file for Commission approval, revised Exhibit G drawings enclosing the earthen remains at the lower level of the old canals at the Falls Village Development, including all project land that accurately reflect any changes to the project boundary resulting from the Connecticut Light and Power Company

divestiture. The Exhibit G drawings shall enclose all the principle project lands necessary for operation and maintenance of the project within the project boundary line and meet the requirements of 18 CFR sections 4.39 and 4.41.

Article 302. *Contract Plans and Specifications.* At least 60 days before starting construction of license-related construction activities, the licensee shall submit one copy to the Division of Dam Safety and Inspections – New York Regional Engineer (Regional Engineer) and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of a supporting design report and final contract plans and specifications. The Commission may require changes to the plans and specifications to ensure the work is completed in a safe and environmentally sound manner. Construction may not commence until authorized by the Regional Engineer.

Article 303. *Quality Control and Inspection Program.* At least 60 days before starting any license-related construction activities, the licensee shall submit one copy to the Division of Dam Safety and Inspections – New York Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the Quality Control and Inspection Program (QCIP) for the Commission's review and approval. The QCIP shall include a sediment and erosion control plan.

Article 304. *Cofferdam Construction Drawings.* Before starting any license-related construction activities, the licensee shall review and approve the design of contractor-designed cofferdams and deep excavations. At least 30 days before starting construction of the cofferdams, the licensee shall submit one copy to the Division of Dam Safety and Inspections B New York Regional Engineer and two copies to the Commission (one of these copies shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the approved cofferdam construction drawings and specifications and the letters of approval.

Article 305. *Temporary Emergency Action Plan.* At least 60 days before starting any license-related construction activities, the licensee shall submit one copy to the Division of Dam Safety and Inspections – New York Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the Temporary Emergency Action Plan (TEAP) for the Commission's review and approval. The TEAP shall describe emergency procedures in case failure of a cofferdam, large sediment control structure, or any other water retaining structure could endanger construction workers or the public. The TEAP shall include a notification list of emergency response agencies, a plan drawing of the proposed cofferdam

arrangement, the location of safety devices and escape routes, and a brief description of testing procedures.

Article 306. *As Built Drawings.* Within 90 days of completion of construction of the facilities authorized by any article of this license (e.g., American eel passage, upstream-downstream fish passage facilities, oxygen line diffuser system, low flow generating units at the Falls Village Development), the licensee shall file for Commission approval revised Exhibits A, F, and G, as applicable, to describe and show those project facilities as built. The licensee shall file six copies with the Commission, one copy to the Division of Dam Safety and Inspections – New York Regional Engineer and two copies to the Commission (one of which shall be a courtesy copy to the Director, Division of Hydropower Administration and Compliance, Office of Energy Projects).

Article 401. *Commission Approval and Filing of Amendments.*

(a) Requirement to File Plans, Drawings, and Schedules for Commission Approval.

Various conditions required by the Connecticut Department of Environmental Protection (CTDEP) section 401 Water Quality Certification (Appendix A) and the U.S. Department of the Interior's Fish and Wildlife Service (FWS) section 18 Fishway Prescription (Appendix B) require the licensee to prepare plans, design drawings, and schedules in consultation with CTDEP and FWS. Each such plan, drawing, and schedule identified below, with a reference to a source of its requirement, shall also be submitted to the Commission for approval and must be approved by the Commission before being implemented by the licensee. Within 6 months of issuance of this license, the licensee, after consultation with CTDEP and FWS, shall file with the Commission a schedule for submittal of each of these plans, drawings, and schedules for Commission approval. The Commission reserves the right to make changes to the plans, drawings, and schedules.

401 condition no. (section 18 condition in parentheses)	Description
General conditions	
1	Operational compliance monitoring plan
Falls Village	
2	Minimum flow release plan
Bulls Bridge	
2	Minimum flow release plan
4 (10.2.3.1, item 1 and 10.2.3.2, item 1)	Design drawings for upstream and downstream American eel passage facilities
4 (10.2.3.1, item 1 and 10.2.3.2, item 1)	Effectiveness monitoring plan for American eel passage facilities
Shepaug	
1	Design drawings for the oxygen diffuser system
1	Effectiveness monitoring plan for oxygen diffuser system
2 (10.2.2.1, item 2)	Design drawings and schedule for interim American eel passage facilities
3 (10.2.2.1, item 3 and 10.2.2.2, item 2)	Design drawings and schedule for upstream and downstream American eel passage facilities
3 (10.2.2.1, item 3 and 10.2.2.2, item 2)	Effectiveness monitoring plan for American eel passage facilities
4 (10.2.2.1, item 1 and 10.2.2.2, item 1)	Design drawings and schedule for upstream and downstream anadromous fish passage facilities
4 (10.2.2.2, item 1)	Effectiveness monitoring plan for anadromous fish passage facilities
6	Plan to study littoral zone community
Stevenson	
2	Dissolved oxygen monitoring plan
3	Ramping rates effectiveness monitoring plan
4 (10.2.1.1, item 2)	Design drawings and schedule for interim American eel passage facilities
5 (10.2.1.1, item 3 and 10.2.1.2, item 2)	Design drawings and schedule for upstream and downstream American eel passage facilities
5 (10.2.1.1, item 3)	Effectiveness monitoring plan for American eel passage facilities
6 (10.2.1.1, item 1 and 10.2.1.2, item 1)	Design drawings and schedule for upstream and downstream anadromous fish passage facilities

6 (10.2.1.2, item 1)	Effectiveness monitoring plan for anadromous fish passage facilities
8	Plan to study littoral zone community

As to each plan, drawing, or schedule, the licensee shall submit to the Commission documentation of its consultation, copies of comments and recommendations made in connection with the plan, drawing, or schedule, and a description of how the plan, drawing, or schedule accommodates the comments and recommendations. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information. The Commission reserves the right to make changes to any plan, drawing, or schedule submitted. Upon Commission approval, the plan, drawing, or schedule becomes a requirement of the license, and the licensee shall implement the plan, drawing, or schedule, including any changes recommended by the Commission.

(b) Requirement to File Amendment Applications.

Certain conditions in the section 401 Water Quality Certification contemplate unspecified long-term changes to project operations or facilities for the purpose of mitigating environmental impacts. These changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license. The conditions are listed below.

401 Condition No.	Modification
Rocky River	
1	Alternative pumping protocols
Shepaug	
1	Remedies resulting from monitoring the effectiveness of the oxygen diffuser system
6	Corrective actions based on littoral zone study
Stevenson	
2	Corrective actions based on dissolved oxygen monitoring
3	Changes in ramping rates based on effectiveness monitoring results
8	Corrective actions based on littoral zone study

Article 402. *Refill protocol after reservoir drawdown*. The licensee shall, during refill of the Falls Village and Bulls Bridge reservoirs following reservoir drawdown for flashboard replacement, dam maintenance, or emergencies, release the following minimum flows downstream of the powerhouse, or 90 percent of inflow, whichever is less:

(a) Falls Village:

July 1 to October 31	November 1 to February 28	March 1 to April 30	May 1 to June 30
317 cubic feet per second (cfs)	634 cfs	2,536 cfs	634 cfs

(b) Bulls Bridge:

July 1 to October 31	November 1 to February 28	March 1 to April 30	May 1 to June 30
400 cfs	634 cfs	2,536 cfs	634 cfs

The refill protocols above may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement among the licensee and the Connecticut Department of Environmental Protection and U.S. Fish and Wildlife Service. If the flow is so modified, the licensee shall notify the Commission as soon as possible but no later than 10 days after each such incident.

Article 403. *Candlewood Lake operating levels.* The licensee shall operate Candlewood Lake levels between elevations 425.1 and 427.6 feet National Geodetic Vertical Datum (NGVD) during the summer recreation season (Memorial Day through October 15) with a winter drawdown to an elevation no less than 416.1 feet NGVD for weed control in alternating years and to elevation 422.1 feet NGVD in the alternate years.

The Candlewood Lake operating levels specified above may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement among the licensee and the Connecticut Department of Environmental Protection and U.S. Fish and Wildlife Service. If the lake levels are so modified, the licensee shall notify the Commission as soon as possible but no later than 10 days after each such incident.

Article 404. *Shepaug minimum flows.* Within six months of license issuance, the

licensee shall prepare a plan to maintain a leakage flow of 100 cubic feet per second (cfs) from the Shepaug Development. The plan should be prepared in consultation with the Connecticut Department of Environmental Protection (CTDEP) and U.S. Fish and Wildlife Service (FWS). At a minimum, the plan shall describe how the 100-cfs leakage flow would be maintained and monitored through the term of the license.

The licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 405. *Critical habitats management plan for the Falls Village and Bulls Bridge developments.* Within six months of license issuance, the licensee shall prepare a Critical Habitats Management Plan for the protection and enhancement of sensitive resources at the Falls Village and Bulls Bridge developments.

The plan shall include at a minimum provisions for:

a) annual monitoring of sensitive populations;

b) identifying protection measures and potential restoration projects based on the results of the monitoring;

c) consulting with the appropriate federal and state agencies concerning the results of the monitoring; and

d) filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service, National Park Service, and the Connecticut Department of Environmental Protection.

The licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 406. *Littoral-zone monitoring at Candlewood Lake (Rocky River Development).* Within six months of license issuance, the licensee shall prepare a plan to monitor the effects of impoundment fluctuations due to normal operations on the littoral zone community of Candlewood Lake at the Rocky River Development. The plan should be similar in scope to the littoral zone studies required by the 401 water quality certification for the Shepaug and Stevenson developments.

The plan shall include:

a) a description of monitoring methods;

b) a schedule for consulting with the agencies; and

c) a schedule for providing the results of the monitoring to the agencies.

The licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service and the Connecticut Department of Environmental Protection.

The licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall

allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 407. *Shoreline Management Plan.* Within eighteen months of license issuance, the licensee shall file for Commission approval a comprehensive plan for managing reservoir shorelines and riverfront lands within the project boundary at each of the project developments.

The Shoreline Management Plan (SMP) shall provide for: (1) safe public access to shoreline and riverfront lands and waters for informal recreational and navigational use; (2) the conservation of important resource and environmental qualities surrounding the project's shorelines and riverfront lands; and (3) the development of shoreline and riverfront areas and facilities that are consistent with both project and non-project needs and demands.

The SMP shall at a minimum include descriptions of: (1) the purpose and scope of the plan; (2) how the plan was prepared including identification of the entities involved in its preparation; (3) the licensee's policies and guidelines on shoreline use including a shoreline-use classification system (if applicable), and associated permitting and property-conveyance procedures; and (4) any special management measures to be administered under the plan (such as a clean-marina initiative, adopt-a-shoreline program, parkland lease program, etc).

The SMP shall also describe how the plan will be implemented, including: (1) guiding prospective applicants for non-project uses of project lands in conforming their proposals to the plan's provisions; (2) reviewing pending proposals for use of project lands to determine their consistency with the plan's policies, classifications, prescriptions, and application requirements; and (3) monitoring existing shoreline activities to ensure their compliance with the plan.

Further, the SMP shall include:

a) Identification of a vegetated buffer zone around reservoir shorelines and riverfront lands of up to 200 feet measured horizontally from the high water mark on lands that it owns within the project boundaries, consistent with the Commission's regulations at 18 C.F.R. § 4.51(h)(2).

b) Identification on maps of disturbed NGS-owned lands with the potential for re-vegetation and provisions to re-vegetate these areas within the project boundaries.

c) A public education component that could include brochures, seminars, or signs to encourage the planting and/or establishment (i.e., implementation of no-cut zones along the shoreline, shoreline stabilization, buffer-zone maintenance, habitat protection and enhancement) of native species in the buffer zone by private landowners for adjoining residential property owners.

d) Identification of procedures to maintain access for recreational purposes for adjacent landowners.

e) Provisions for identifying opportunities to provide conservation easements for greenway and trail development and improved public access within the project boundary including a description of a permitting system to allow management of such easements by a qualified entity.

f) A provision to share existing digital mapping data upon request.

g) An inventory of existing shoreline development facilities (such as boat docks, marinas, landings, and bulkheads/shoreline stabilization structures) located on project lands, the conditions of the facilities, and the entity that manages the facilities (details on ownership and condition of each private dock are not necessary).

h) An inventory of aesthetic resources on project lands and lands adjacent to the project boundary and areas thought to have high aesthetic value, including vegetated shorelines and views of water.

i) Measures to control erosion from trails and parking lots and shoreline areas, and restrictions on pedestrian traffic in areas with sensitive habitats.

j) Identification of conservation restrictions or other similar protective measures on those NGS-owned lands within the project boundary that are not already dedicated to open space.

k) A report on the feasibility of conserving those project lands that are deemed critical for protecting the scenic, recreational, and natural values of the project area, as well as lands that can be used for greenway and trail development, and, as appropriate, a plan and schedule for acquiring those easements.

l) A discussion of local government zoning and other land use regulations affecting project resources and any coordination efforts between the licensee and local governments about land and aesthetic conservation goals.

m) A schedule and process for periodically reviewing and updating the plan every six years.

n) The identification of land that could be used as staging areas by local lake associations or authorities for patrol and water quality monitoring activities.

The Shoreline Management Plan shall be prepared in consultation with the U.S. Fish and Wildlife Service, National Park Service, Connecticut Department of Environmental Protection, Housatonic Environmental Action League, Housatonic Valley Council of Elected Officials, Housatonic Valley Association, Appalachian Trail Conference, Appalachian Mountain Club, Housatonic River Commission (representing the towns of Cornwall, Kent, New Milford, North Canaan, Salisburg, and Sharon), Adirondack Mountain Club, American Whitewater, Trout Unlimited, Lake Lillinonah Authority, Candlewood Lake Authority, and Lake Zoar Authority.

The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the consulted entities, and specific descriptions of how the entities comments and recommendations are accommodated by the plan. The licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reason's based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon approval of the plan, the licensee shall implement the plan, including any changes required by the Commission.

Article 408. *Recreation Plan.* Within twelve months of license issuance, the licensee shall file with the Commission, for approval, a Recreation Plan for the project that includes the provisions set forth below:

(a) The following recreation enhancements, described in more detail in the licensee's additional information filed February 7, 2002:

Recreation Site	**Proposed Recreation Measures**
Upper Falls Village Recreation Area	Completion of the Amesville Historical Interpretive Trail.
Lower Falls Village Recreation Area	Grading the parking area, driveway, and boat launch. ADA-compliant picnic tables, and portable toilet. A crushed aggregate path network, and additional use and safety signage.
Lower Falls Village Hiking and Parking Area	An interpretive trail, picnic tables, portable toilet, trash receptacle, and parking area.
Bulls Bridge Scenic Area	An additional parking area. A raft slide to the put-in location. A raft stairway to the put-in location. Upgrading of and additional signage along hiking and portage trails.
Bulls Bridge Bypassed Reach Overlook Platform	Improved parking and trail access. Additional signage.
Bulls Bridge Bypassed Reach Access Area	Additional signage.

Recreation Site	Proposed Recreation Measures
Bulls Bridge Take-Out Area	Picnic tables, a parking area, and river accessway.
Dike Point Recreation Area	ADA-compliant picnic tables, portable toilet, and a crushed aggregate path network.
Shepaug Bald Eagle Observation Area	An interpretive trail, and ADA pathway.
Shepaug Recreation Area	ADA-compliant picnic tables, portable toilet, and parking. A crushed aggregate path network.
Stevenson Dam Canoe Portage Area	ADA-accessible picnic tables, and parking spaces.

(b) Final designs, estimated costs, and a construction schedule for the above enhancements.

(c) An on-site management presence at Bulls Bridge Gorge during the summer and on weekends from April through October to monitor use, keep the area litter free, and provide information to the public.

(d) Soil erosion and sedimentation control measures for the above enhancements.

(e) A map showing the upgraded or new facilities in relation to existing recreation facilities.

(f) A discussion on how each recreation facility at the project will be operated and maintained.

(g) A discussion of existing crowding problems and potential recreational use conflicts and measures to reduce such conflicts during peak-use periods and special events such as fishing tournaments and whitewater competitions.

(h) A program for monitoring recreational use and updating the recreation plan on a 6-year cycle concurrent with the preparation and filing of FERC Form 80.

(i) A discussion of the effects of project recreation on Appalachian Trail use and management recommendations to address any negative effects identified.

(j) A provision for trash collection and removal.

(k) Provisions for facilitating the Rattlesnake Slalom, Covered Bridge Slalom, and Housatonic Downriver whitewater races.

The Recreation Plan shall be prepared in consultation with the U.S. Fish and Wildlife Service, National Park Service, Connecticut Department of Environmental Protection, Housatonic Environmental Action League, Housatonic Valley Council of Elected Officials, Housatonic Valley Association, Appalachian Trail Conference, Appalachian Mountain Club, Housatonic River Commission (representing the towns of Cornwall, Kent, New Milford, North Canaan, Salisburg, and Sharon), Adirondack Mountain Club, American Whitewater, Trout Unlimited, Lake Lillinonah Authority, Candlewood Lake Authority, and Lake Zoar Authority.

The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the consulted entities, and specific descriptions of how the entities comments and recommendations are accommodated by the plan. The licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reason's based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon approval of the plan, the licensee shall implement the plan, including any changes required by the Commission.

Article 409. *Nuisance Plant Monitoring.* Within twelve months of license issuance, the licensee shall file with the Commission for approval, a Nuisance Plant Monitoring Plan. The plan shall include annual monitoring of Candlewood Lake, Lake Lillinonah, and Lake Zoar, for Eurasian watermilfoil and other invasive plants. The plan shall include a provision for establishing a technical committee composed of representatives from the licensee, Connecticut Department of Environmental Protection, the Candlewood Lake Authority, Lake Lillinonah Authority, and Lake Zoar Authority to evaluate the results of the monitoring.

The plan shall be prepared in consultation with the U.S. Fish and Wildlife Service, Connecticut Department of Environmental Protection, Candlewood Lake Authority, Lake Lillinonah Authority, and Lake Zoar Authority.

The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the consulted entities, and specific descriptions of how the entities comments and recommendations are accommodated by the plan. The licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reason's based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon approval of the plan, the licensee shall implement the plan, including any changes required by the Commission.

Article 410. *Debris Management Plan.* Within six months of license issuance, the licensee shall file for Commission approval, a plan to remove floating woody debris from Lake Lillinonah and Lake Zoar.

The Debris Management Plan (DMP) shall include: (1) the method to mechanically remove woody debris using a floating trash skimmer craft; (2) the schedule and frequency of woody debris removal; (3) the location of the disposal area; (4) notification procedures; (5) and the method to evaluate the effectiveness of the woody debris removal program.

The DMP shall be prepared in consultation with the U.S. Fish and Wildlife Service, National Park Service, American Whitewater, Trout Unlimited, Lake Lillinonah Authority, and Lake Zoar Authority.

The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the consulted entities, and specific descriptions of how the entities comments and recommendations are accommodated by the plan. The licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reason's based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon approval of the plan, the licensee shall implement the plan, including any changes required by the Commission.

Article 411. *Reservation of Authority-Fishways*. Pursuant to section 18 of the Federal Power Act, authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance, of such fishways as may be prescribed by either the Secretary of the Interior or the Secretary of Commerce.

Article 412. *Historic Properties.* (a) The licensee shall implement the "Programmatic Agreement Among the Federal Energy Regulatory Commission and the State of Connecticut, State Historic Preservation Officer for Managing Historic Properties that May be Affected by a License Issuing to Northeast Generating Company, for the Continued Operation of the Housatonic and Falls Village Projects as the Housatonic River Project in Fairfield, New Haven and Litchfield Counties, Connecticut" (FERC No. 2576)," executed on April 15, 2004, including but not limited to the Historic Properties Management Plan (HPMP) for the project required to be developed by the Programmatic Agreement.

(b) The HPMP shall provide, among other things, for the licensee to: (1) document eligibility of the Bulls Bridge, Rocky River, Shepaug, and Stevenson developments for inclusion in the National Register and protect the historic iron furnace ruins on project lands at Bulls Bridge; (2) notify the Archeological Conservancy of the potential transfer or sale of archeologically sensitive parcels within the project boundary, and attach a preservation restriction to any transfer or sale of land that remains within the project boundary; (3) complete Historic American Engineering Record documentation prior to installation of any fish passage facilities or any other modification to project facilities at any development and provide an opportunity for the SHPO to review the design of fishway facilities; (4) complete reconnaissance surveys at archeologically sensitive areas threatened by erosion and prior to commencing any ground-disturbing activities; (5) restrict access to the Bulls Bridge Iron Blast Furnace site and implement site-specific measures to stabilize the site; and (6) implement site-specific measures to complete the documentation/educational report for the Bridgeport Wood Finishing– ithowhite Silex Company.

(c) In the event that the Programmatic Agreement is terminated, the licensee shall implement the provisions of its approved HPMP. The Commission reserves the authority to require changes to the HPMP at any time during the term of the

license. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the licensee shall obtain approval before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the project's area of potential effect.

Article 413. *Use and Occupancy.* (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article.

If a permitted use and occupancy violates any condition this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use and occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are:

(1) landscape plantings;
(2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single family type dwellings;
(3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and
(4) food plots and other wildlife enhancement.

To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are

maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall:

(1) inspect the site of the proposed construction;
(2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site; and
(3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline.

To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of the standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or right-of-way across, or leases of, project lands for:
(1) replacement, expansion, realignment, or maintenance of bridges or roads there all necessary state and federal approvals have been obtained;
(2) storm drains and water mains;
(3) sewers that do not discharge into project waters;
(4) minor access roads;
(5) telephone, gas, and electric utility distribution lines;
(6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary;
(7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69 kV or less); and
(8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.

No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for:

(1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained;
(2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained;
(3) other pipelines that cross project lands or waters but do not discharge into project waters;
(4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained.
(5) private or public marines that can accommodate no more than 10 watercraft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina;
(6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and
(7) other uses, if; (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year.

At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Energy Projects, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

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

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.
(2) Before conveying the interest, the licensee shall determine that the

proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project, and (iii) the grantee shall not unduly restrict public access to project waters.

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

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

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(G) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(H) This order is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in section 313(a) of the Federal Power Act. The filing of a request 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. The licensee's failure to file a request for rehearing shall constitute acceptance of this license.

By the Commission.

(S E A L)

Linda Mitry,
Acting Secretary.

APPENDIX A

CONNECTICUT DEPARTMENT OF
ENVIRONMENTAL PROTECTION
WATER QUALITY CERTIFICATE

Licensee: Northeast Generation Company
Post Office Box 270
Hartforn, Connecticut 06141-0270

Project: Federal Energy Regulatory Commission
Project No. 2576-CT
Housatonic Project

Pursuant to section 401 of the Federal Clean Water Act, (33 USC 1341) as amended and the Connecticut Water Quality Standards dated April 18, 1997, a water quality certificate, with conditions, is hereby granted by the Commissioner of Environmental Protection to the Licensee for the Housatonic Project and is more specifically described below.

SCOPE OF AUTHORIZATION

The Licensee is hereby authorized to operated, with the conditions described herein, the five hydropower developments (Falls Village, Bulls Bridge, Rocky River, Shepaug and Stevenson) that comprise the Housatonic Project. The Project is described in the license application filed with the Federal Energy Regulatory Commission dated August 25, 1999. The special terms and conditions of this certificate are arranged below under each development and are specific to that facility.

SPECIAL TERMS AND CONDITIONS

Falls Village

1. The Licensee shall operate the development in conformance with a run-of-river mode, so that the outflow from the project shall equal the inflow on an instantaneous basis. The Licensee may, with the prior approval of the Department of Environmental Protection (Department), suspend run-of-river operations for the purpose of lowering the project impoundment to perform required maintenance.

2. The Licensee shall maintain an instantaneous minimum stream flow release of 80 cubic feet per second (cfs) or inflow, whichever is less, from the dam to the bypassed stream segment. The point and method of releasing this minimum stream flow shall be submitted to the Department for its review and approval prior to implementation. This release should maximize the amount and distribution of water that is allowed over the Great Falls.

3. The Licensee shall not use impoundment storage to provide enhanced flows to the bypassed stream segment.

Bulls Bridge

1. The Licensee shall operate the development in conformance with a run-of-river mode, so that the outflow from the project shall equal the inflow on an instantaneous basis. The Licensee may, with the prior approval of the Department of Environmental Protection (Department), suspend run-of-river operations for the purpose of lowering the project impoundment to perform required maintenance.

2. The Licensee shall maintain an instantaneous minimum stream flow release of 200 cfs or inflow, whichever is less, to the bypassed stream segment. The point and method of releasing this minimum stream flow shall be submitted to the Department for its review and approval prior to implementation.

3. The Licensee shall not use impoundment storage to provide enhanced flows to the bypassed stream segment.

4. The Licensee shall, in a manner approved by the U.S. Fish and Wildlife Service (Service) and the Department, design, construct, operate, maintain and monitor the effectiveness of upstream and downstream American eel passage facilities. The Licensee shall complete the design of these facilities by January 31, 2021. The Licensee shall complete construction and commence operation of the facilities by April 1, 2024. the Licensee shall implement the American eel passage effectiveness monitoring plan when the facilities are place in operation. The above schedule and condition may be amended with the mutual agreement of the Licensee, Service and Department.

Rocky River

The pumping of the Housatonic River at this development shall be limited to when the stage of the River at the development is above 196.4 feet NGVD (National Geodetic Vertical Datum). The Bleachery Dam, which is below the subject development, has an influence on the above water surface elevation. If this dam is breached or altered in some

manner that impacts the pumping ability of the development, the Licensee may propose an alternative pumping protocol to the Department for its approval.

Shepaug

1. The Licensee shall install an oxygen line diffuser system at the development. The design of this system shall be reviewed and approved by the Department prior to its installation. This system shall be operational within three year after issuance of the project license. A monitoring plan shall be developed to assess the effectiveness of the diffuser system in achieving and maintaining the target dissolved oxygen level below the project. The plan shall also identify measure to evaluate whether the diffuser system has other consequences to water quality and aquatic resources. This plan shall be submitted to the Department for its review and approval and be ready for implementation upon startup of the system. Any water quality or aquatic resource impacts that are identified by this monitoring effort shall be remedied by the Licensee to the satisfaction of the Department.

2. The Licensee shall, in a manner approved by the Service and Department, provide interim American eel passage within ten years after interim passage is initiated at Stevenson Dam. The above schedule and conditions may be amended with the mutual agreement of the Licensee, Service, and Department.

3. The Licensee shall, in a manner approved by the Service and Department, design construct, operate, maintain and monitor the effectiveness of upstream and downstream American eel passage facilities. The Licensee shall complete the design of these facilities by January 31, 2021. The Licensee shall complete construction and commence operation of the facilities by April 1, 2024. The Licensee shall implement the American eel passage effectiveness-monitoring plan when the facilities are placed in operation. The above schedule and conditions may be amended with the mutual agreement of the Licensee, Service and Department.

4. The Licensee shall, in a manner approved by the Service and the Department, design, construct, operate, maintain and monitor the effectiveness of upstream and downstream anadromous fish passage facilities that are capable of excluding the passage of sea lamprey. The Licensee shall complete the design of these facilities by January 31, 2021. The License shall complete construction and commence operation of the facilities by April 1, 2024. The Licensee shall implement the anadromous fish passage effectiveness-monitoring plan when the facilities are placed in operation. The above schedule and conditions may be amended with the mutual agreement of the Licensee, Service and Department.

5. A draw down of 4.5 feet (198.3 to 193.8 feet NGVD) shall not be exceeded unless: (1) to effect annual maintenance of the facilities and related structures, in which case the draw down shall not exceed 10 feet (198.3 to 188.3 feet NGVD), shall occur between October 15th and December 31st of any year and shall last no more than 14 consecutive days; (2) to minimize flooding impacts as prescribed in the Housatonic River Operating Procedures Manual; (3) in response to a public safety emergency at the development; or (4) approved by the Department in writing in advance of the draw down.

6. The Licensee shall, in a manner approved by the Service and the Department, develop a plan to assess the impact on the littoral-zone community due to impoundment fluctuations associated with normal operations (excluding emergency or maintenance draw downs). The assessment will analyze impacts on aquatic resources such as fish, mussels, wetlands and wildlife that inhabit the littoral-zone of Lake Lillinonah. The results of the assessment will be presented in a report and submitted to the Department and the Service. If the Department and the Service determine that significant adverse impacts occur during normal operations, the Licensee will implement corrective actions to mitigate the impacts.

Stevenson

1. The Licensee shall maintain below the project an instantaneous minimum stream flow of 300 cfs or inflow, whichever is less. Inflow to this development shall be determined based on the discharge at the U.S. Geological Survey's streamflow-gaging station at Gaylordsville (01200500) times a drainage factor of 1.6.

2. The Licensee shall develop and implement a monitoring plan, that is approved by the Service and Department, to demonstrate that the project's minimum stream flow release of 300 cfs is in conformance with the water quality standards for dissolved oxygen. If monitoring demonstrates dissolved oxygen deficiencies, the Licensee shall take corrective measures that are approved by the Service and the Department.

3. The Licensee shall achieve operational discharges by increasing the water release rate in three approximately equal steps that are evenly spaced over approximately a one-hour period. This process shall be reversed when reestablishing the minimum streamflow release. This operational protocol shall be evaluated by the Licensee, the Service and the Department to determine its effectiveness in minimizing fishery impacts. Based on this evaluation, the Department may require changes in the channel watering/dewatering schedule.

4. The Licensee shall, in a manner approved by the Service and the Department, design, construct (as appropriate), operate and maintain interim upstream American eel passage. Interim passage shall be operational during the first upstream migration period after the issuance of a final project license provided that the license is received ninety (90) days before the start of the migration period. If passage cannot be achieved, due to timing, during the first season, then passage shall be available for the next migration period. The above schedule and conditions may be amended with the mutual agreement of the Licensee, Service and Department.

5. The Licensee shall, in a manner approved by the Service and the Department, design, construct, operate, maintain, and monitor the effectiveness of upstream and downstream American eel passage facilities. The Licensee shall complete the design of these facilities by January 31, 2011. The Licensee shall complete construction and commence operation of the facilities by April 1, 2014. The Licensee shall implement the American eel passage effectiveness-monitoring plan when the facilities are placed in operation. The above schedule and conditions may be amended with the mutual agreement of the Licensee, Service and Department.

6. The Licensee shall, in a manner approved by the Service and the Department, design, construct, operate, maintain, and monitor the effectiveness of upstream and downstream anadromous fish passage facilities that are capable of excluding the passage of sea lamprey. The Licensee shall complete the design of these facilities by January 31, 2011. The Licensee shall complete construction and commence operation of the facilities by April 1, 2014. The Licensee shall implement the anadromous fish passage effectiveness-monitoring plan when the facilities are placed in operation. The above schedule and conditions may be amended with the mutual agreement of the Licensee, Service and Department.

7. A draw down of 2.5 feet (101.3 to 98.8 feet NGVD) shall not be exceeded unless: (1) to effect annual maintenance of the facilities and related structures in which case the draw down shall not exceed 5 feet (96.3 feet NGVD), shall occur between Octorber 15th and December 31st of any year and shall last no more than 14 consecutive days; (2) in response to a public safety emergency at the development; (3) approved by the Department in writing in advance of the draw down.

8. The Licensee shall, in a manner approved by the Service and the Department, develop a plan to assess the impact on the littoral-zone community due to impoundment fluctuations associated with normal operations (excluding emergency or maintenance draw downs). The assessment will analyze impacts on aquatic resources such as fish, mussels, wetlands and wildlife that inhabit the littoral-zone of Lake Zoar. The results of the assessment will be presented in a report and submitted to the Department and the

Service. If the Department and the Service determine that significant adverse impacts occur during normal operations, the Licensee will implement corrective actions to mitigate the impacts.

GENERAL TERMS AND CONDITIONS

1. The Licensee shall prepare and implement a plan for monitoring run-of-river and pumping operations and minimum stream flow release requirements, as applicable. This plan shall include the operation of two flow gaging stations that conform to the U.S. Geological Survey standards and protocols as set forth in U.S. Geological Survey, 1982, Measurement and Computation of Streamflow: Volume 1 and 2: U.S. Geological Survey Water Supply Paper 2175"; or as subsequently amended or superceded. The monitoring plan shall be reviewed and approved by the Department.

2. The project shall be operated in accordance with the conditions contained in this certification and the information included in the FERC application dated August 25, 1999. Any modifications made to the FERC application during the initial licensing process that would have a significant or material effect on the conclusions or conditions contained in this water quality certification must be submitted to the Department for prior review and written approval.

3. Any changes to the Project, throughout the licensing period, that would have a significant or material effect on the conditions of this certification, including project operations, must be submitted to the Department for prior review and written approval.

4. All construction, maintenance and repair activities shall be conducted in a manner to not violate water quality standards.

5. The Department may request, at any time during which this certificate is in effect, that the FERC reopen the license to make modifications necessary to maintain compliance with Connecticut's water quality standards or other requirements of state law.

6. The Department reserves the right to add and alter the terms and conditions of this certification when authorized by law and as appropriate to carry out its water quality responsibilities.

Issued August 24, 2000

APPENDIX B

United States Department of the Interior
Prescription for Fishways Pursuant to
Section 18 of the Federal Power Act

1. Prescription for Fishways

Pursuant to section 18 of the Federal Power Act, as amended, the Secretary of the Department of the Interior, as delegated to the Service, exercises her authority to prescribe the construction, operation and maintenance of such fishways as deemed necessary.

1.1 General Prescriptions for the Housatonic River Project

A. The Department reserves authority to modify this Prescription for Fishways at any time before a license is issued, as well as any time during the term of the license, after review of new information.

B. The fishway shall be constructed, operated, and maintained to provide effective (safe and timely) passage for American shad, blueback herring, alewife, sea-run brown trout and American eel at the licensee's expense.

To ensure the immediate and timely contribution of the fishways to the ongoing and planned diadromous fish restoration program in the Housatonic River, the following measures are included and shall be incorporated by the Licensee to ensure the effectiveness of the fishways pursuant to section 1701(b) of the 1992 National Energy Policy Act (P.L. 102-486, Title XVII, 106 Stat.3008.

C. Design Populations

The total number of returning fish reaching the lowermost of the Licensee's five developments covered in this relicensing would depend on a number of factors. Overall fishway efficiency and cumulative losses of fish attempting to use upstream and downstream fish passage facilities also would affect the total potential restored run of shad, river herring, and eels.

2. Shad and river herring:

The total number of returning fish reaching the mainstem dams covered in this relicensing would depend on a number of factors. Overall fishway efficiency and cumulative losses of fish attempting to use upstream and downstream fish passage facilities will affect the total potential restored run of shad and driver herring. However, based on the amount of potential available habitat that exists in the reach of river to be restored, the CT DEP/FD estimates that over 225,000 American shad and almost 3.5 million river herring could be produced between Derby Dam and Bulls Bridge Dam.[78] The bulk of production would occur between the Shepaug and Bulls Bridge dams. The numbers of fish expected to pass each of the dams on the river are contained in Table 1 below, and also may be found in the CT DEP/FD's Diadromous Fisheries Plan and the Commission's DEIS (DEIS, page 3-50).

Table 1. Design capacities for upstream anadromous fishways at Housatonic river dams

Dam	Capacity: Shad	Capacity: River herring
Derby	236,980	3,404,700
Stevenson	207,300	3,109,500
Shepaug	148,800	2,232,000

3. American eel:

American eels already are present in the lower Housatonic River. The number of juvenile eels (glass eels, elvers, and yellow-phase eels) ascending the Housatonic River could vary dramatically from year-to-year, depending on how many are brought to that geographic location on ocean currents, and how many choose to enter the river versus remaining in the estuary. These factors make it difficult to estimate how many eels may utilize the habitat that would be made available by implementing fish passage on the Housatonic River. However, the State predicts that passage numbers would be in the tens of thousands.

[78] Population estimates for American shad were derived using a production estimate of 60 fish/acre of nursery habitat. Production estimates for river herring were based on multiplying the shad estimate by 15. In: Diadromous Fisheries Plan for the Upper Housatonic River Basin, CTDEP, 2000. Pages 16-17.

While the Department does not have a precise estimate of the numbers of eels that would be expected to use fish passage at the Project developments, such passage would enhance the eel stocks and help achieve overall management goals. In addition, upstream passage needs for eels differ from those of shad and river herring. Separate upstream eel fishways typically are installed at barriers in addition to those that are provided for anadromous fish.

4. Other species:

Fish passage measures installed at Housatonic River dams would be expected to pass gizzard shad, sea-run brown trout, white perch, striped bass, as well as riverine species. The numbers of non-target migratory and riverine fish using the fishways are likely to be small (with the possible exception of gizzard shad), relative to target anadromous and catadromous species.

D. Upstream and downstream fishways shall be operational during the migration periods specified in Table 2 below.

E. Scheduling

The timing of fish passage implementation at the three Housatonic River Project developments will depend upon the growth of migratory and riverine fish populations in the Housatonic River. The State intends to utilize a phased management approach. The first milestone will be achieving fish passage at the Derby Dam. The Service and the CT DEP/FD have been working with the Derby Project owners to develop upstream and downstream fish passage, with an anticipated implementation date of 2005.

The next phase of restoring anadromous fish to the Housatonic River involves securing fish passage at Stevenson Dam. The State's 401 WQC requires fish passage designs to be completed by 2011, with upstream and downstream fishways operational by April 1, 2014. Subsequent to completing that milestone, the next phase entails developing fish passage designs for Shepaug Dam by 2021, with fishways complete and operational by April 1, 2024.

Although we anticipate that passage facilities will be installed at Derby by 2005, or shortly thereafter, it is possible that passage at Derby is not achieved by 2014. It is also possible that fishways are operational at Derby by that date, but restoration occurs more slowly than anticipated. Due to these factors, the Department's prescription requires Stevenson to have upstream and downstream fishways operational by April 1, 2014, unless this date is amended upon mutual agreement of the Licensee, the Service, and the

CT DEP. Likewise, Shepaug shall have upstream and downstream fishways operational by April 1, 2024, unless this date is amended upon mutual agreement of the Licensee, the Service, and the CTDEP.

The phased approach and implementation dates are appropriate based on: (1) the current status of migrant populations in the watershed; (2) the biology of the target species; and (3) the State's management objectives.

Catadromous restoration will follow a slightly different schedule. American eels are already present in the river below Stevenson, and would benefit from the immediate implementation of upstream fish passage. Therefore, interim passage shall be operational during the first upstream migration period after license issuance, provided that the license is received 90 days before the start of the migration period. Otherwise, interim passage shall be operational by the following migration period.

Until permanent upstream eel passage is operational, interim management will consist of collecting eels at the base of Stevenson Dam and transporting them to Lake Zoar (the headpond of the Stevenson development). Baseline information will be gathered on the interim collections, and used later in designing a permanent upstream fishway. Data to be collected will include: (1) locating areas where juvenile eels congregate below the dam (to aid in siting the permanent fishway): (2) quantifying the timing and duration of upstream migration (to help define dates of permanent fishway operation); (3) identifying the different life stage of eel that will utilize a permanent fishway (to determine which substrates should be used in the permanent fishway).

Downstream passage for eels at Stevenson is not needed in the immediate future because of two factors. First, there are very few eels upstream of Stevenson at the present time. Second, juvenile eels spend many years rearing in the river before maturing into silver eels and migrating out to sea. Therefore, once the first eels pass upstream of Stevenson, it could be close to 10 years before the first mature eels would be expected to leave the system.

The licensee shall complete the design of permanent upstream and downstream fishways for eels at Stevenson by January 31, 2011, and complete construction and commence operation of the fishways by April 1, 2014.

Interim upstream eel passage at Shepaug (utilizing the same protocol as described for Stevenson) will be required within 10 years of initiating interim eel passage at Stevenson. The licensee shall complete the design of permanent upstream and downstream fishways for eels at Shepaug by January 31, 2021, and complete construction and commence operation of the fishways by April 1, 2024. Permanent upstream and downstream fish

passage facilities for eels at Bulls Bridge will be implemented concurrent with Shepaug eelways. Commission staff states that the timetable for development of eel passage facilities appears reasonable (DEIS, p. 3-95).

The Commission will need to include appropriate license articles requiring preparation of detailed design plans, installation schedules, and studies to evaluate effectiveness of all upsteam and downstream measures to be developed in consultation with the service and the CT DEP.

F. The timely installation of the prescribed fishway structures, facilities, or devices is a measure directly related to those structures, facilities, or devices and is necessary to ensure the effectiveness of such structures, facilities, or devices. Therefore, the Department's Prescription includes the express requirement that the licensee (1) notify, and (2) obtain approval from the Service for any extensions of time to comply with the provisions included in the Department's Prescriptions for fishways.

G. Regarding the timing of seasonal fishway operations, fishways shall be maintained and operated, at the licensee's expense, to maximize fish passage effectiveness throughout the upstream an downstream migration periods for American shad, blueback herring, alewife, sea-run brown trout, and American eel. The migration periods for these fish species in the Housatonic River are shown in Table 2 below.

Table 2. Upstream and downstream migration periods for species covered in this Prescription for Fishways. (*)

Upstream Passage	April 1 to June 30	All species except American eel
	April 1 to November 15	American eel
	October 1 to November 15	Sea-run brown trout
Downstream Passage	April 15 to July 15	Spent adults of all anadromous species
	September 15-November 15	adult eel; juveniles of other species

* During the term of the license, any of these migration periods may be changed by the Service, in consultation with the CT DEP/FD and the Licensee, based on new information.

H. The Licensee shall keep the fishways in proper order and shall keep fishway areas clear of trash, logs, and material that would hinder passage. Anticipated maintenance shall be performed sufficiently before a migratory period such that fishways can be tested and inspected, and will operate effectively prior to and

during the migratory periods. In consultation with the Service and the CT DEP/FD, the licensee shall develop a fishway maintenance plan describing the anticipated maintenance, a maintenance schedule, and contingencies. The plan shall be submitted to the Service for final review and approval, and the plan shall contain the consultation comments of the fishery agencies. If any agency recommendation is not incorporated, the Licensee's explanation shall be in the plan that is filed with the Commission. Upon approval by the Service, the Licensee shall submit the plan to the Commission for approval.

I. The Licensee shall develop plans for and conduct fishway effectiveness evaluations in consultation with the Service and the CT DEP/FD on all prescribed fish passage. The plans and results of effectiveness studies shall be submitted to the Service for final review and approval, and the plan shall contain the consultation comments of the fishery agencies. If any agency recommendation is not incorporated, the Licensee's explanation shall be in the plan that is filed with the Commission. Upon approval by the Service, the Licensee shall submit the plan to the Commission for approval.

J. The Licensee shall provide personnel of the Service, and other Service-designated representatives, access to the project site and to pertinent project records for the purpose of inspecting the fishways to determine compliance with the fishway Prescriptions.

K. The Licensee shall develop in consultation with, and submit for approval by the Service, all functional and final design plans, construction schedules, and operations and maintenance plans for the fishways described herein.

2 Specific Prescriptions for the Housatonic River Project

The State's restoration plan calls for a phased implementation of fish passage. Because fishways at some sites will not be required for a number of years, new fishway design technology could be developed between now and when the passage facilities are to be constructed. If alternative designs are found to be as, or more effective than those prescribed here, the Department may use its reservation of authority to modify this prescription.

Given that fishway technology and construction costs likely will change between now and when the fishways are scheduled to be built, it would be of limited use to include cost estimates of the permanent fishways at the present time. However, the Department will provide the estimates (in 2003 dollars) to any interested party that makes such a request.

Based on an initial review of the information in the license application and a site visit by Service regional engineering staff, the Department provides the following details on fishway installation at three of the mainstem developments covered in this proceeding.

2.1 Stevenson Dam

2.1.1 Upstream Fisheries

Prescription item #1 – Construct a single entrance fish lift at the Stevenson Dam powerhouse capable of passing approximately 200,000 American shad and 3.1 million river herring. The fishway facilities should be capable of excluding the passage of sea lamprey. Functional designs shall be completed by January 31, 2011, and the lift shall be operational by April 1, 2014. The implementation schedule may be amended upon mutual agreement of the Licensee, the service and the CT DEP.

Prescription item #2 – Provide interim upstream eel passage, to be operational by the first upstream migration period after license issuance, or the following migration season if the license is issued within 90 days of the start of the migration period. Interim management shall consist of collecting eels at the base of Stevenson Dam and transporting them to Lake Zoar (the headpond of the Stevenson development). Baseline information will be gathered on the interim collections, and used later in designing a permanent upstream fishway. Data to be collected will include: (1) locating areas where juvenile eels congregate below the dam (to aid in siting the permanent fishway); (2) quantifying the timing and duration of upstream migration (to help define dates of permanent fishway operation); and (3) identifying the different life stages of eel that will utilize a permanent fishway (to determine which substrates should be used in the permanent fishway).

Prescription item #3 – Construct, operate, maintain and monitor the effectiveness of permanent upstream eel passage facilities. Functional designs shall be completed by January 31, 2011, and the facilities shall be operational by April 1, 2014.

2.1.2 Downstream Fishways

Prescription item #1 – Design, construct, operate, maintain and monitor the effectiveness of downstream anadromous fish passage facilities. Functional designs shall be completed by January 31, 2011, and the downstream passage facilities shall be operational by April 1, 2014. The implementation schedule

may be amended upon mutual agreement of the Licensee, the Service and the CT DEP. Passage shall consist of intake screening and/or guidance measures, and a surface bypass combined with a conveyance sluice or pipe discharging up to 312 cfs into a plunge pool of adequate depth during the downstream migration periods. Operational measures (e.g., shutdowns) may be used in lieu of screening/guidance. Alternative designs/measures may be considered if they have proven to be as effective as, or more effective than those prescribed here.

Prescription item #2 - Design, construct, operate, maintain and monitor the effectiveness of downstream eel passage facilities. Functional designs shall be completed by January 31, 2011, and the downstream passage facilities shall be operational by April 1, 2014. Passage shall consist of operational measures (shutdowns) combined with surface and/or bottom bypasses. Plunge pools of sufficient depth shall be provided below bypass outfalls. Alternative designs/measures may be considered if they have proven to be as effective as, or more effective than those prescribed here.

2.2 Shepaug Dam

2.2.1 Upstream Fishways

Prescription item #1 – Construct a single-entrance fish lift at the Shepaug Dam powerhouse capable of passing approximately 150,000 American shad and 2.2 million river herring. The fishway facilities should be capable of excluding the passage of sea lamprey. Functional designs shall be completed by January 31, 2021, and the lift shall be operational by April 1, 2024. The implementation schedule may be amended upon mutual agreement of the Licensee, the service and the CT DEP.

Prescription item #2 – Provide interim upstream eel passage within 10 years after interim passage is initiated at Stevenson Dam. Interim management shall consist of collecting eels at the base of Shepaug Dam and transporting them to Lake Lillinonah (the headpond of the Shepaug development). Baseline information will be gathered on the interim collections and used later in designing a permanent upstream fishway. Data to be collected will include: (1) locating areas where juvenile eels congregate below the dam (to aid in siting the permanent fishway); (2) quantifying the timing and duration of upstream migration (to help define dates of permanent fishway operation); and (3) identifying the different life stages of eel that will utilize a permanent fishway (to determine which substrates should be used in the permanent fishway).

Prescription item #3 – Construct, operate, maintain and monitor the effectiveness of permanent upstream eel passage facilities. Functional designs shall be completed by January 31, 2021, and the facilities shall be operational by April 1, 2024.

2.2.2 Downstream Fishways

Prescription item #1 – Design, construct, operate, maintain and monitor the effectiveness of downstream anadromous fish passage facilities. Functional designs shall be completed by January 31, 2021, and the downstream passage facilities shall be operational by April 1, 2024. The implementation schedule may be amended upon mutual agreement of the Licensee, the Service and the CT DEP. Passage shall consist of intake screening and/or guidance measures, and a surface bypass combined with a conveyance sluice or pipe discharging up to 310 cfs into a plunge pool of adequate depth during the downstream migration periods. Operational measures (e.g., shutdowns) may be used in lieu of screening/guidance. Alternative designs/measures may be considered if they have proven to be as effective as, or more effective than those prescribed here.

Prescription item #2 – Design, construct, operate, maintain and monitor the effectiveness of downstream eel passage facilities. Functional designs shall be completed by January 31, 2021, and the downstream passage facilities shall be operational by April 1, 2024. Passage shall consist of operational measures (shutdowns) combined with surface and/or bottom bypasses. Plunge pools of sufficient depth shall be provided below bypass outfalls. Alternative designs/measures may be considered if they have proven to be as effective as, or more effective than those prescribed here.

2.3 Bulls Bridge Dam

2.3.1 Upstream Fishways

Prescription item #1 – Construct, operate, maintain and monitor the effectiveness of permanent upstream eel passage facilities. Functional designs shall be completed by January 31, 2021, and the facilities shall be operational by April 1, 2024.

2.3.2 Downstream Fishways

Prescription item #1 – Design, construct, operate, maintain and monitor the effectiveness of downstream eel passage facilities. Functional designs shall be completed by January 31, 2021, and the downstream passage facilities shall be operational by April 1, 2024. Passage shall consist of either (1) angled, full-depth exclusionary screening near the canal intake gates coupled with surface spill via the canal spillway, spill gates, or skimmer gate; or (2) operational measures (nightly shutdowns) coupled with surface spill. Plunge pools of sufficient depth shall be provided below spill gates. Alternative designs/measures may be considered if they have proven to be as effective as, or more effective than those prescribed here.