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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: James J. Hoecker, Chairman;
Vicky A. Bailey, William L. Massey,
Linda Breathitt, and Curt Hébert, Jr.

Holyoke Water Power Company

Project No. 2004-073

Holyoke Gas & Electric
Department, Ashburnham
Municipal Light Plant, and
Massachusetts Municipal
Wholesale Electric Company

Project No. 11607-000

ORDER ISSUING NEW LICENSE AND
DENYING COMPETING LICENSE APPLICATION

(Issued August 20, 1999)

The 43.8-megawatt (MW) Holyoke Hydroelectric Project is located on the Connecticut River in Hampden, Hampshire, and Franklin Counties, Massachusetts. 1/ On September 2, 1997, the licensee, Holyoke Water Power Company (Holyoke Power), 2/ filed an application for a new license for the project. 3/ A competing

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- 1/ The Holyoke Project is required by Section 23(b)(1) of the Federal Power Act to be licensed, because the Connecticut River at the project site is a navigable water of the United States. See Holyoke Water Power Company, 8 FPC 471, 477 (1949), citing In the Matters of Bellows Falls Hydroelectric, et al., 2 FPC 381, 938 (1941).
 - 2/ Holyoke Power is a subsidiary of Northeast Utilities, an electric utility holding company that provides electric service to about 1.7 million customers through operating subsidiaries in Western Massachusetts, New Hampshire, and Connecticut.
 - 3/ The competing applicants (Municipalities) argue that Holyoke Power's application was not timely. Filing of September 30, 1997. Section 15(c)(1) of the Federal Power Act (FPA) provides that each application for a new license shall be filed with the Commission at least 24 months before the expiration of the term of the existing license. 16 U.S.C. § 808(c)(1). August 31, 1997, 24 months before the expiration of the original license, fell on a Sunday, and the next day, September 1, was Labor Day. September 2, 1997, the day

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license application was filed by the Holyoke Gas & Electric Department of the City of Holyoke (HG&E); Ashburnham Municipal Light Plant (Ashburnham); and the Massachusetts Municipal Wholesale Electric Company (MMWEC) (collectively, Municipalities.) 4/

For the reasons discussed below, we will issue a new license to Holyoke Power and deny Municipalities' competing application.

BACKGROUND

In response to published notice of Holyoke Power's license application (Project No. 2004), motions to intervene were filed by the Town of South Hadley, Massachusetts; 5/ Trout Unlimited; Connecticut River Watershed Council; Holyoke DAM Committee; U.S. Department of the Interior (Interior); U.S. Environmental Protection Agency (EPA); Commonwealth of Massachusetts; the National Marine Fisheries Service (NMFS); Connecticut River Atlantic Salmon Commission; HG&E; and City of Holyoke. All but one of the motions to intervene were timely and uncontested and thus automatically granted under Rule 214 of the Commission's Rules of Practice and Procedure. 6/ The City of Holyoke filed a late motion, which was uncontested and will be granted. All these same parties moved to intervene with respect to the competing application (Project No. 11607), except the City of Holyoke. In addition, Holyoke Power moved to intervene. These motions were timely and uncontested and therefore automatically granted.

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- 3/ (...continued)
Holyoke Power's application was filed, was the first day after August 31, 1997, that the Commission was open to receive filings. Under Rule 2007 of the Commission's Rules of Practice and Procedure, Holyoke Power's filing was timely. 18 C.F.R. § 385.2007 (1999).
- 4/ Ashburnham and MMWEC amended the application on January 30, 1998, to include HG&E. Ashburnham and HG&E are municipal electric departments. MMWEC is a corporate and political subdivision of the State of Massachusetts, with cities and towns as members, which is empowered to own and operate electric power facilities, and buy and sell power on behalf of its members. Under the amended application, HG&E would own and operate the project, Ashburnham would have a right to a portion of the project output, and MMWEC would provide services in marketing the project output.
- 5/ One end of the project's dam is in the City of Holyoke, the other is in the Town of South Hadley.
- 6/ 18 C.F.R. § 385.214 (1999).

On January 28 and 29, 1998, the Commission staff conducted meetings in the City of Holyoke in order to determine the scope of issues to be addressed in the environmental document to be prepared for this proceeding. On August 25, 1998, the staff convened another public meeting in the City of Holyoke to consider arguments regarding which of the two competing applications presents the better adapted plan, and to entertain further comments on the environmental issues to be addressed.

The Commission staff issued a Draft Environmental Impact Statement (Draft EIS) on the competing applications on April 16, 1999. It received written and oral comments thereon at a public meeting in Holyoke on May 26, 1999, as well as written comments from Interior, Interior's Fish and Wildlife Service (FWS), NMFS, Connecticut River Watershed Council, Holyoke Power, HG&E, Connecticut River Atlantic Salmon Commission, Trout Unlimited, et al., Town of South Hadley, EPA, Massachusetts Departments of Fisheries and Wildlife (Massachusetts DFW) and Environmental Management (DEM), Twenty Fivers, Inc., Holyoke DAM Committee, City of Holyoke Mayor's Office and City Councillor Helen Norris, State Representative Nancy Flavin, and Mary Virginia Rickel.

On the basis of these comments, and further analysis of the entire record in these proceedings, the Commission staff prepared a Final EIS, issued July 27, 1999.

PROJECT DESCRIPTION 1/

The Holyoke Project, originally licensed in 1949, 8/ consists of a 30-foot-high, 985-foot-long dam (topped by 3-foot-high wooden flashboards) that impounds a 2,290-acre reservoir with a normal maximum surface elevation of 100.6 feet National Geodetic Vertical Datum; a three-level canal system extending through the lower areas of the City of Holyoke and providing water for industrial and hydropower generation; 2/ six hydroelectric generating stations; and fish passage facilities at five locations.

The project regulates Connecticut River flows by means of releases through the Hadley Falls generating station and the Holyoke Canal Gatehouse, both located at the south abutment of the dam. All other river flows are passed over the dam. Flows

1/ For a more detailed description, see ordering paragraph (E) of this order and the Final EIS at pp. 2-1 through 2-13.

8/ 8 FPC 471, 490-92.

2/ The hydropower stations on the canal system generate by use of water flowing from a higher elevation canal to a lower canal, or from a canal into the Connecticut River.

diverted through the gatehouse into the canal system are returned to the river through various "overflows" (masonry spillways). Flows passed through the Hadley Falls station (which can accommodate up to about 8,800 cubic feet per second (cfs) are discharged into a 2,750-foot-long tailrace, a walled channel between the shore and the stream bed.

The existing license requires the release of a continuous minimum flow from the project of 1,660 cfs, or inflow, whichever is less. Of this flow, 560 cfs is released into the canals; the remaining 1,100 cfs is released from the Hadley Falls station into the tailrace. When inflows to the project fall below 1,100 cfs, the available flow is released through the Bascule gate into the bypassed reach. ^{10/}

The project is currently operated in a daily peaking mode, i.e., daily storage capacity is used for peak load generation. Pool elevations are allowed to fluctuate below normal pool elevation as much as 1.5 feet, and elevations are occasionally drawn down as much as 3.0 feet from the crest of the flashboards.

There are two fishlifts at the Holyoke (south) end of the dam, one serving the tailrace, the other serving the project's bypassed reach. ^{11/} Both fishlifts dump into a common exit flume (ending by the canal gatehouse), along which are a fish-counting station and trapping facility.

Anadromous fish are also passed downstream through the Bascule gate, which discharges into the bypassed reach. Downstream migrants that enter the canal system are guided by a permanent louver array in the first level of the canal to a steel pipe, which transports them to a sampling facility adjacent to the tailrace, and then discharges them into the tailrace. During seasons when Atlantic salmon smolt are migrating downstream, Holyoke Power installs 10-foot-deep overlays over the intakes for the Hadley Falls Station to divert the smolts toward the spillway for safe passage downstream.

^{10/} The 25-foot-wide by 8.5-foot-high Bascule gate, located adjacent to the abutment on the south side of the dam, is used to pass ice and debris, and for downstream fish passage. A Bascule gate is a flat, counterbalanced gate which is hinged at the bottom edge and is lowered by tipping it in the downstream direction to the extent necessary to allow the desired amount of water to flow past.

^{11/} Each fishlift consists of an entrance, crowding bay, lift bucket, and lift elevator.

DESCRIPTION OF COMPETING PROPOSALS

A. Holyoke Power's Relicensing Proposal

Holyoke Power does not propose to expand the generating capacity of the existing project, but does propose to replace the existing three-foot-high wooden flashboards with an inflatable rubber dam system, institute run-of-river operation, and provide minimum flow releases to the bypassed reach. Holyoke Power would maintain the impoundment elevation at 100.6 feet, with a fluctuation of ± 0.2 foot, rather than the ± 0.5 -foot fluctuation proposed by Municipalities. ^{12/} The minimum flow into the bypassed reach would be 420 cfs, or inflow, whichever is less, adjusted to 800 cfs from April 1-July 15 to operate upstream and downstream fish passage facilities.

Holyoke Power also proposes to improve its existing upstream fishlift system, by modifying the existing trapping facility in the counting station, expanding the capacity of the fishlift system when the numbers of upstream migrating American shad and herring warrant the expansion, and modifying the method for determining the frequency of fishlift operations. Holyoke Power also proposes to install a transport system ("flyover") from the Bascule gate to the tailrace to improve the effectiveness of the spillway fishlift, ^{13/} and install an upstream passage facility for American eels on the South Hadley side of the dam.

Holyoke Power proposes to operate the canal system in a manner similar to its current operation. It would however maintain a larger wetted area in parts of two canals during drawdowns and perform maintenance drawdowns during cooler months, measures which would alleviate adverse impacts from drawdowns on the canals' fish and mussel populations.

Holyoke Power's proposal also includes the provision of eagle nesting platforms, the development of a Cultural Resources Management Plan under the terms of a Programmatic Agreement with the Massachusetts Historical Commission, the provision of additional public access to the river on properties owned by Holyoke Power, and an annual contribution of \$5,000 for channel marking in the impoundment. Holyoke Power would also commit to consider proposals of a local committee to participate in the development of a Holyoke Canal walkway on property along the

^{12/} The inflatable rubber dam on the crest of the masonry dam, in lieu of the existing flashboards, will enable the licensee to maintain more stable impoundment elevations.

^{13/} Holyoke Power agreed to install the flyover in a 1990 Memorandum of Agreement with the Connecticut River Atlantic Salmon Commission.

canal owned by Holyoke Power, and to transfer, or grant conservation restrictions to a state agency to manage approximately 700 feet of undeveloped river frontage which it owns below the dam in South Hadley. This river frontage could be developed for nature study, sightseeing, picnicking, and hiking (although Holyoke Power does not propose to pay for such development). Holyoke Power also proposes to grant conservation restrictions to a state agency to prohibit future development of certain parcels it owns along the impoundment. Finally, Holyoke Power proposes to continue sponsoring an annual shad derby, and providing canoe portage around the dam.

B. Municipalities' Relicensing Proposal

Municipalities propose to construct a new powerhouse containing one 15-MW generating unit adjacent to the existing powerhouse, construct a new forebay and tailrace to accommodate the new powerhouse, thereby increasing the project's installed capacity to 58.756 MW. ^{14/} Construction of this proposed new capacity would not begin until 2004/2005 and would not be completed until 2006. Municipalities would also install an inflatable rubber dam atop the existing masonry dam, in lieu of the existing flashboards, and propose to have the rubber dam operable within a year of the acceptance of the license.

Municipalities also propose to operate the project in a run-of-river mode, although permitting impoundment levels to fluctuate \pm 0.5 foot from the normal operating elevation, rather than the \pm 0.2 foot fluctuations proposed by Holyoke Power. However, Municipalities do not propose to implement run-of-river operation until after the new generating unit is on line, several years from now. Municipalities propose to provide a year-round minimum flow of 420 cfs, or inflow if less, into the bypassed reach, to be supplemented with an additional 300 cfs in the spring and 500 cfs in the fall. Furthermore, Municipalities propose to maintain a base canal flow of 810 cfs (560 cfs for generation at the hydroelectric facilities on the canal, and 250 cfs for leakage). ^{15/}

Municipalities propose to nearly double the capacity of the fishlift facilities, and to modify those facilities, as

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- ^{14/} Municipalities also propose to construct new transmission and interconnection facilities, estimated to cost \$3.6 million, to connect the output of the project generators to HG&E's system.
- ^{15/} Flows for the canal would be subordinate to flows for the bypassed reach, fish passage facilities, and tailrace. During low-flow periods of the summer and early fall, little or no flows will be available for the canal.

necessary, to permit their operation at higher flows (up to 40,000 cfs). This expansion would not be undertaken until construction of the new development. The existing spillway fishlift would be removed, redesigned, and reinstalled in connection with construction of the proposed new powerhouse. 16/ The existing downstream fish passage facilities would be replaced with a fish screen in the new forebay intended to prevent entry into the canal system, as well as the intake structure for the turbines, and guide downstream migrants to a fish passage conduit which would transport them to a fish sampling station and discharge them into the tailrace. If the new fish screen proves to be effective in preventing downstream migrants from entering the canal, Municipalities propose to remove the existing louver system in the canal and eliminate the discharge through the bypass conduit from the louvers to the tailrace, as well as the bypass system and discharge into the tailrace from the Boatlock Station on the canal downstream from the louvers. 17/ Municipalities propose to construct two eel ladders, one at each end of the dam, rather than the one ladder proposed by Holyoke Power.

Municipalities propose to spend \$1 million to acquire various parcels from Holyoke Power, not within the current project boundary, for a canal walk along the Holyoke Canal, river front parks below the dam in Holyoke, and a regional trail/bikeway on the Holyoke side of the river below the dam. This land acquisition would be funded out of an initial issuance of revenue bonds to purchase the project from Holyoke Power. 18/ Municipalities also propose to contribute \$325,000 over ten years to start a fund to acquire land or conservation easements along the impoundment shoreline. In addition, Municipalities propose to develop a master plan at an estimated cost of \$50,000 to develop and manage Log Pond Cove on the impoundment. 19/

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- 16/ Municipalities propose to increase the capacity of the existing tailrace fishlift and propose several interim measures to increase the capacity of existing spillway fishlift, prior to installing the new spillway fishlift in connection with the new powerhouse.
- 17/ Municipalities have stated that they would consider leaving the louver system in place, even after installation of the new fish screen, if the resource agencies believe the louver system is still needed.
- 18/ Municipalities' application, as amended January 30, 1998, Vol. I, p. D-13.
- 19/ Municipalities estimate that approximately \$300,000 per year will be available from the project's net operating income

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Municipalities propose various improvements to Fish Lift Park (adjacent to the Hadley Falls Power Station): improved signage, access roads, parking, picnic areas, and walkways, and improved viewing and educational opportunities at the fishway. Municipalities propose to install guide boards with maps at various sites along the impoundment, and to distribute free navigation maps. Municipalities also propose to provide a dam release warning system, and a communication system (e.g., a telephone hotline) to provide boaters information about water levels of the impoundment, contribute \$100,000 over ten years to the channel marking program, and provide \$200,000 to construct a boat ramp below the dam in South Hadley.

Most of the above proposals would be included as conditions of a license. However, Municipalities' application contains additional proposals that are beyond the scope of what would ordinarily be included in a license. For example, Municipalities propose to provide funds to improve several existing parks within the City of Holyoke, and maintain security at those parks. In addition, Municipalities propose to establish a Hadley Falls Development Trust, to be initially funded by \$2 million of the proceeds from the issuance of revenue bonds to acquire project property from Holyoke Power, and thereafter out of surplus revenues from the project, to be used for rate reduction, environmental and recreational programs, and economic redevelopment of the inner city. ^{20/}

EVALUATION OF COMPETING APPLICATIONS

Section 15(a)(2) of the FPA ^{21/} requires the Commission, in determining which proposal is better adapted to the public interest, to compare the licensing proposals of competing applicants with respect to the following: (1) plans and abilities to comply with the license; (2) plans for the safe

^{19/} (...continued)
for their proposed recreational and environmental enhancement measures. *Id.* at p. D-15.

^{20/} The Development Trust would also be used for development in South Hadley along the remains of an historic navigation canal. Municipalities anticipate that the Development Trust would receive grants and low-interest loans from a variety of state, federal and private sources, in addition to contributions from project surpluses. The Development Trust would be used to underwrite the Canal District Redevelopment Plan, which envisions, over a 25-year period, the redevelopment of 280 acres, with a public investment or subsidy of \$100,000 per acre.

^{21/} 16 U.S.C. § 808(a)(2).

management, operation, and maintenance of the project; (3) plans and abilities to provide efficient and reliable electric service; (4) applicant's need for power; (5) transmission service; (6) cost effectiveness of plans; and (8) other factors considered relevant by the Commission, except that an applicant's plans concerning fish and wildlife shall not be compared. 22/ The section further provides that "insignificant differences with regard to [these factors] shall not result in the transfer of a project [from the incumbent licensee]."

A. Sections 15(a)(2)(A), (B), and (C): Ability to Comply with the New License, Operate Project Safely, and Provide Efficient and Reliable Electric Service

It appears that both applicants have the ability to comply with any license issued for the Holyoke Project, operate the project safely, and provide efficient and reliable electric service. Holyoke Power and HG&E, the co-applicant for the competing proposal that would be responsible for project operation, are experienced hydroelectric project operators. Holyoke Power has owned and operated this project for nearly 140 years. Its parent company, Northeast Utilities, is also an experienced hydroelectric project operator. 23/ Similarly, HG&E is licensee for five licensed hydroelectric projects along the Holyoke Canal. 24/ That both applicants have a history of complying with the conditions of their respective licenses is further evidence of their ability to comply with the terms of the new Holyoke license. 25/

Holyoke Power's and Municipalities' plans for operating the project safely and in compliance with the license are essentially the same. Holyoke Power currently operates and maintains the

22/ By filings of June 30, 1998, Holyoke Power and Municipalities each filed a statement (commonly referred to as a better-adapted statement) explaining how its proposal is superior to the plans of its competitor.

23/ Northeast Utilities' subsidiaries own and operate 20 hydroelectric projects in New England. See Holyoke Power's better-adapted statement at 4.

24/ Project Nos. 2386, 2387, 2388, 7758, and 10806.

25/ Both Holyoke Power and HG&E have excellent records of compliance with their respective licenses, and periodic project inspections by staff of the Commission's New York Regional office to verify dam safety and public safety indicate that neither applicant has experienced significant dam safety or public safety problems at its licensed projects.

project with a crew of 23 employees, and maintains personnel at the gatehouse of the canal, near the powerhouse, on a 24-hour per day basis, with additional staff on call, near the project, at all times. 26/ Municipalities have indicated that they will not make any material changes in safety procedures at the project. 27/

B. Section 15(a)(2)(D): Applicants' Need for Power

Most of the power from the project is used for the regional power needs of Holyoke Power's parent company, Northeast Utilities. If Holyoke Power does not receive the new license for this project, the power lost to the Northeast Utilities system will have to be replaced by other units on the system or by purchases from outside the system.

HG&E is a wholesale customer of Holyoke Power. If Municipalities receive the project license, the project will continue to supply power to the City of Holyoke's retail customers. Surplus power will supply co-applicant Ashburnham's Municipal Light Plant or other MMWEC members or be sold for distribution elsewhere in New England.

It appears that there are no differences between the competing applicants' need for the power from the project. It also appears that the gain or loss of power from the project would not adversely affect the capability of either applicant to continue meeting the needs of its customers. Under either proposal, the public interest will continue to be served by the availability of renewable hydroelectric resources that do not contribute to the world's greenhouse gases, and which can displace nonrenewable fossil-fueled generation capacity.

C. Section 15(a)(2)(E): Existing and Planned Transmission Services

Holyoke Power proposes no changes or additions to the existing transmission facilities. If the license is awarded to Municipalities, the project would be disconnected from Holyoke Power and connected to HG&E's distribution system. This would entail additional costs of transmission and transformer equipment for both entities, and some of the new facilities would be redundant. The transmission facilities that Municipalities propose to interconnect with the project may not provide service

26/ See Holyoke Power's better-adapted statement at 3-6.

27/ See Municipalities' better-adapted statement at 14.

as reliable, for lack of "back up" ties to Holyoke Power's existing facilities. 28/

D. Section 15(a)(2)(F): Cost Effectiveness of Plans

Under the policy established in Mead Corp., 29/ we make no attempt to estimate possible future energy prices over the term of a license. The basic purpose is rather to provide a general estimate of the potential power benefits and the costs of a project. We thus do not deny the issuance of a license on the basis of our own economic analysis of the economic prospects of a long-term project, but leave it to the licensee to decide whether to proceed with licensed construction and other measures on the basis of its own economic analyses. In a relicensing proceeding where there are competing applications, however, we must consider the cost-effectiveness of each applicant's plans.

Our evaluation of the economics of the two proposals shows that both appear to cost more than currently-available alternative power. As discussed below, 30/ Holyoke Power's proposal, with measures recommended by Commission staff, would produce about 198,300 MWh annually, at a cost of \$8,752,000. The net annual benefit would be -\$954,000. Municipalities' proposal, with measures recommended by Commission staff, would produce about 244,000 MWh annually, at a cost of \$11,696,000. The net annual benefit would be -\$2,815,000. 31/ Based on current economic conditions, the net annual economic benefit of Holyoke Power's proposal is almost 200 percent greater than that of Municipalities' (i.e., it is less negative). 32/ Clearly,

28/ Holyoke Power's better-adapted statement at 10-11.

29/ 72 FERC ¶ 61,027 (1995).

30/ See Comprehensive Development section of the order.

31/ See Final EIS, Table 5-6. As explained in the Final EIS, at p. 5-23, n. 183, we use similar criteria in comparing the two proposals.

32/ Indeed, as Holyoke Power points out, it periodically evaluates the feasibility of increasing capacity or generation at its hydroelectric facilities, and its most recent evaluation of this project indicated it is not economically feasible to increase capacity under the incremental cost test, because the levelized cost of expanded capacity would be higher than the levelized cost of alternative energy to any utility in the region that could be served by the new capacity. Our analysis of the economic feasibility of Municipalities' proposed expansion reaches
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Holyoke Power's proposal is significantly more cost-effective than Municipalities' proposal. 33/

E. Section 15(a)(2)(G): Other Factors

Municipalities argue that their proposal with respect to recreation enhancements is significantly better than Holyoke Power's. 34/ Municipalities propose acquiring properties along the Connecticut River, to be developed for recreational uses, or protected for environmental and aesthetic purposes, a proposal somewhat more extensive than Holyoke Power's. The proposal involves, for the most part, purchasing properties or acquiring easements in properties already owned by Holyoke Power.

Holyoke Power, on the other hand, proposes working with the City of Holyoke in the development of the proposed Canal Walk and is willing to grant easements on some of its properties adjacent to the canals for this purpose. Furthermore, Holyoke Power states its intention to explore the potential recreational use of its undeveloped riverfront property below the dam in South Hadley, and to grant conservation restrictions and provide public access to other riverfront properties it owns along the project impoundment. 35/ However, Holyoke Power does not propose that we

32/ (...continued)

the same conclusion. Using the figures in Table 5-6 of the Final EIS, the expansion proposal would increase generation by about 45,700 MWh annually at an annual cost of \$2,944,000. This would result in a net annual economic benefit of -\$1,861,000 for the expansion. Moreover, the expansion would have some minor unmitigable adverse effects on the Connecticut River's anadromous fish resources and fish restoration programs.

33/ In evaluating competing proposals for original license for an unconstructed project, we have said that a difference of 20 percent or more is significant. See City of Augusta, Kentucky, 72 FERC ¶ 61,114 at pp. 61,599-600, n. 58.

34/ Municipalities also seek to revitalize the economy of the City of Holyoke, and especially its Canal District, to reduce the rates of its electric customers, and provide additional recreation and environmental measures along the Connecticut River. The major commitment of resources to these endeavors would be from surplus revenues from the project, and would be dependent on the level, if any, of such surplus revenues.

35/ See Holyoke Power's better-adapted statement at 13-14, and 17.

condition its license to require it to provide these specific recreational resources.

Both proposals are somewhat speculative. Holyoke Power's proposal is to only consider providing more extensive recreation amenities. Municipalities' proposal would provide such amenities, but only if there are surplus project revenues in the future. We therefore conclude that any differences between the proposals as they relate to recreation enhancements at the project are insignificant.

F. Conclusion

We have compared the applicants' proposals as they relate to the above factors and find that Holyoke Power's proposal is significantly more cost-effective than Municipalities' proposal. In other respects, the proposals are not significantly different. We therefore conclude that the license for the continued operation of the project should be granted to Holyoke Power. 36/

THE PROJECT NO. 2004 APPLICATION (HOLYOKE POWER)

WATER QUALITY CERTIFICATION

Under Section 401(a) of the Clean Water Act (CWA), 37/ the Commission may not issue a license for a hydroelectric project unless the state water quality certifying agency has either issued water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year.

36/ Had we simply found no significant differences between the proposals, we would next have examined Holyoke Power's compliance record with respect to the Holyoke Project, and its actions affecting the public. See FPA Section 15(a)(3), 16 U.S.C. § 808(a)(3); and 18 C.F.R. § 16.13(b) (1999). As noted previously, Holyoke Power has an excellent record of compliance with the conditions of its license for the almost 50 years that it has held the license. Moreover, Holyoke Power has spent over \$16 million on fish passage facilities at this project, and, in 1954 and 1955, constructed an innovative and highly successful fishlift. The company was awarded a Conservation Service Award in 1956 from Interior in recognition of its willingness to cooperate with conservation agencies, and for its accomplishments in the field of conservation and rehabilitation of natural resources.

37/ 33 U.S.C. § 1341(a)(1).

Section 401(d) of the CWA provides that state certification shall become a condition on any license that is issued. 38/

Holyoke Power and Municipalities each requested water quality certification from Massachusetts DEP. The DEP issued one certification on July 28, 1999, with conditions applicable to the license proposals of both applicants. The certification is attached to this order as Appendix A, and the conditions applicable to Holyoke Power's proposal are conditions to the license issued in this order.

Massachusetts DEP's water quality certification imposed 37 conditions on the license for this project, although seven of those conditions are applicable only to Municipalities' proposal for construction of a third turbine and generator, and are thus moot in view of our award of the license to Holyoke Power.

Condition Nos. 1-3 require that the project be operated in compliance with provisions of the Massachusetts Surface Water Quality Standards, the Massachusetts Wetlands Protection Act, and Massachusetts General Laws Chapter 91. Condition No. 4 requires that all maintenance and repair activities be conducted in a manner that will not impair water quality.

Condition No. 5 provides that any change to the project that would have a significant or material effect on the conditions of the certification must be submitted to Massachusetts DEP for prior review and approval. Condition No. 6 provides that Massachusetts DEP may request the Commission to reopen the license to make any modifications necessary to maintain compliance with applicable state law. Condition No. 7 reserves to Massachusetts DEP the right to add or alter the terms and conditions of the certification when authorized by law. Condition No. 8 requires that the certification be posted at the project powerhouse.

Condition No. 9 requires instantaneous run-of-river operation, and stabilization of the impoundment elevation to within 0.2 feet of normal pond elevation. Condition No. 12 requires a continuous minimum flow of 840 cfs in the bypassed reach from July 15 through September 15, and between November 15 and April 1. Condition No. 13 provides for minimum flows of

38/ 33 U.S.C. § 1341(d). Pursuant to *American Rivers v FERC*, 129 F.3d 99 (2d Cir. 1997), the Commission must accept as license conditions all conditions attached to a valid water quality certification. In any event, nothing in the conditions of a water quality certification shall be viewed as restricting the Commission's ability or the licensee's obligation, under Part I of the FPA, to take timely action to protect human life or the environment.

1,300 cfs from April 1 through July 15 and September 15 through November 15, as zone-of-passage flows for salmon and shad.

Condition No. 16 requires the licensee to distribute the flows of the project during the Atlantic salmon downstream migratory period (April 1-July 15) first to provide sufficient flows to operate fish passage facilities, second to provide 1,300 cfs in the bypassed reach for zone of passage flows, third to provide minimum flows of 810 cfs through the canal system, fourth to provide 4,200 cfs to operate Unit No. 1 at the Hadley Falls Station, fifth to provide flows into the canal at full capacity, and sixth to provide full capacity flows through the Hadley Falls Station. Condition No. 18 requires an interim regime of flows in the canal system of 810 cfs from April 1 through November 15 and 400 cfs from November 16 through March 31.

Condition No. 27 requires the licensee to continue operating the Boatlock Station downstream bypass facility until otherwise ordered by the Massachusetts DEP.

In addition to the above, the certification requires the licensee to submit, for Massachusetts DEP's approval, the following:

- a plan for operating and monitoring the run-of-river operation (Condition No. 10);
- a plan for replacing the wooden flashboards along the dam crest with an inflatable rubber fabric dam (Condition No. 11);
- a plan to redistribute flows in the bypassed reach into three channels, with minimum flows of 600 cfs to the East Channel, 100 cfs to the Center Channel, and 140 cfs to the West Channel (Condition No. 14);
- a plan for gauging flows in the bypassed reach (Condition No. 15);
- a plan for allocating available low flows outside of fish passage season (Condition No. 17);
- a plan to provide permanent continuous flows (Condition No. 19);
- a plan for protecting aquatic resources during canal drawdowns (Condition No. 20);
- a five-year plan for monitoring mussel populations in the canals, and proposals for changes in canal operations, or structures, if any, to protect those populations (Condition No. 21);

- a plan to implement improvements to existing fishlift facilities, including widening the existing exit flume, increasing the capacity of the spillway and tailrace lift hoppers, widening the gated spillway entrance and channel, and providing fishway entrance attraction flows at the spillway entrance and at each of the tailrace collection gallery entrances. The fishlift facilities are to be operated whenever feasible beginning on or about March 15 for white sucker passage, from April 1 through July 15 for herring, shad, and salmon, as well as white sucker passage, and from September 15 through November 15 for fall salmon passage. Hours of operation are to be determined by the resource agencies (Condition No. 22);
- designs for a second salmon trapping device in the fishway exit flume, a new entrance to the tailrace fishlift, and ledge excavation on the west wall of tailrace downstream of the existing tailrace fishlift entrance; and

proposals for operating the fish passage facilities (including counting, trapping, monitoring and collection of biological data) under the licensee-paid supervision of Massachusetts DFW; and for monitoring the use of the upstream fish passage facilities by resident fish and submitting proposals for any changes necessary to protect and enhance such passage (Condition No. 23);
- designs for a new fish-trapping and hauling system, and a study of the effectiveness thereof; for a conveyance that will intercept downstream-migrating anadromous fish at the Bascule gate and transport them to the Hadley Falls Station tailrace; for a barrier to migrating fish across the Number 2 overflow raceway in the canal system; for American eel ladders on both the spillway and tailrace sides of the dam; and for a study of the effectiveness of the barrier and ladders (Condition No. 24);
- a plan for downstream passage of American eels, and a study of the effectiveness of measures taken (Condition No. 25);
- a plan to meet the upstream and downstream passage needs of shortnose sturgeon, and a study of the effectiveness of measures taken (Condition No. 26);
- a riparian management plan, including all property owned by Holyoke Power within 200 feet of the Connecticut River around and above the Holyoke Dam (Condition No. 28);
- plans to monitor and fight invasive species (including zebra mussel and water chestnut) within the project boundary, and to protect, enhance and manage animals and plants listed as

protected under the Massachusetts Endangered Species Act (Condition No. 29); and

- a water quality monitoring plan (Condition No. 30).

Any Massachusetts DEP-approved proposed modifications to the license, including project-related construction, operation, and maintenance, must be the subject of a licensee application to the Commission to amend the license.

In our judgment, a number of the certification conditions, which do not reflect a balancing of developmental and environmental considerations, entail measures that are very costly in light of their benefits or current need. In this category we include the bypass and zone-of-passage flows (Condition Nos. 12 and 13); the redistribution of project flows during the downstream migratory season (Condition No. 16); the extensive expansion of the upstream fish passage facilities, and the hours of fishlift operation (Condition Nos. 22 and 23); and a third entrance to the Hadley Falls tailrace fishlift, as well as licensee funding of the state's oversight thereof (Condition No. 23).

SECTION 18 FISHWAY PRESCRIPTIONS

Under Section 18 of the FPA, 39/ the Commission must require a licensee to construct, operate, and maintain such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce. Prescriptions were filed by FWS, on behalf of the Secretary of the Interior, on June 11, 1999, and by NMFS, on behalf of the Secretary of Commerce, on June 7, 1999. These prescriptions are set forth in license Articles 411, 412, and 413. Most of these prescriptions are also contained in the mandatory conditions to the above-referenced water quality certification issued for this project pursuant to Section 401 of the CWA, 40/ such that no further analysis is required here.

We next address the prescriptions submitted under FPA Section 18 that are not contained in the mandatory certification conditions. Although we do not consider them to be within the scope of Section 18 of the FPA, we are adopting the following under our general conditioning authority in Section 10(a)(1) of the FPA. Of FWS' Section 18 filing: Paragraphs 9.1.D (requiring a timetable for fishway construction and initial operation), 9.1.G (requiring proper fishway maintenance and a maintenance

39/ 16 U.S.C. § 811.

40/ As noted above (n. 51), we must accept all certification conditions, even if they include fishway prescriptions that we believe fall beyond the scope of FPA Section 18.

plan), 9.1.H (requiring fishway effectiveness studies of prescribed facilities), 9.1.I (FWS access to the project site and project records), and 9.2.2.4 and 9.3.3.5 (licensee evaluation of effectiveness of downstream fishways). Of NMFS' Section 18 filing: paragraphs 9.1.E (requiring a timetable for fishway construction and initial operation), 9.1.G (requiring proper fishway maintenance and a maintenance plan), 9.1.H (requiring fishway effectiveness studies of prescribed facilities), 9.1.J (prior consultation with NMFS on all plans, schedules, models and studies), 9.1.I (NMFS access to project site and project records), and 9.3.4.d) (licensee evaluation of effectiveness of downstream fishways).

In paragraph 9.1.E of FWS' prescriptions and in the comparably-worded paragraph 9.1.F of NMFS' prescriptions, we will adopt the requirement that the licensee notify FWS and NMFS of any request it makes to us for an extension of time to comply with the provisions of the fishway prescriptions adopted herein, but we will not require the licensee to obtain the approval of FWS or NMFS for such an extension. Extensions of time are not fishways, and therefore fall beyond the scope of Section 18. The Commission, as the agency having statutory responsibility for license compliance, needs to maintain control over its compliance processes, including the timing thereof. 41/

We will adopt the requirements of paragraph 9.1.J of FWS' prescriptions (plans, schedules, models and studies) to the extent it requires prior consultation with FWS, but not to the extent it requires prior approval of FWS. 42/ Again, the Commission has the statutory responsibility for compliance with the articles of the license, including the fishway prescriptions incorporated therein, and the prior approval requirement falls beyond the scope of Section 18.

We will adopt the requirements of paragraphs 9.2.2.2 and 9.3.3.2 of FWS' prescriptions and paragraph 9.3.5.b of NMFS' prescriptions (angled bar rack in the project's forebay), except for FWS' imposition of any restrictions on the generation of power from the project. The generation of power (and restrictions thereon) is not a fishway, and falls beyond the scope of Section 18.

41/ See, e.g., Central Maine Power Co., 82 FERC ¶ 61,190 at pp. 61,732-33 (1998); Bangor Hydro-Electric Co., 83 FERC ¶ 61,038 at p. 61,108 n. 12 (1998).

42/ Compare paragraph 9.1.I of Commerce's prescriptions, referred to above, which requires prior consultation with NMFS but not prior approval.

In their respective Section 18 prescriptions, FWS and NMFS each requested that we reserve our authority to require such fishways as Interior or Commerce may prescribe in the future. Accordingly, license Article 415 does so. 43/

ESSENTIAL FISH HABITAT

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act 44/ requires federal agencies to consult with the Secretary of Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) identified under the Act. Under Section 305(b)(4)(B) of the Act, 45/ an agency must, within 30 days after receiving recommended measures from NMFS or a Regional Fishery Management Council, describe the measures proposed by the agency for avoiding, mitigating, or offsetting the effects of the agency's activity on EFH. 46/

On December 19, 1997, NMFS published an interim final rule in the Federal Register that outlined procedures for implementing the EFH provisions of the Magnuson-Stevens Act. 47/ The interim final rule strongly encourages incorporation of EFH consultation into existing consultative processes (e.g., NEPA) as a mechanism for satisfying EFH consultation requirements. The Commission has consulted with NMFS and provided NMFS with proposed procedures for incorporating EFH consultation into our existing consultative processes. The Commission's proposed procedures are still under review by NMFS.

According to the Commission's proposed procedures, a project for which a notice has been issued indicating the project is ready for environmental review prior to Secretarial approval of a

43/ The Commission's reservation of the agencies' Section 18 authority solely on the basis of their request has been affirmed. See Wisconsin Public Service Corp. v. FERC, 32 F.3d 1165 (7th Cir. 1994).

44/ 16 U.S.C. § 1855(b)(2).

45/ 16 U.S.C. § 1855(b)(4)(A).

46/ The measures recommended by NMFS are advisory, not prescriptive. However, if the federal agency does not agree with the recommendations of the Secretary of Commerce, the agency must explain its reasons for not following the recommendations.

47/ Fed. Reg Vol. 62, No. 244.

Fishery Management Plan (FMP) or, as is the case here, 48/ a FMP amendment that identifies EFH, would not be retroactively subject to EFH consultation. However, by letter filed June 7, 1999, NMFS requested EFH consultation regarding the Holyoke Project operation's effect on Atlantic salmon in the Connecticut River. By letter dated July 2, 1999, the Commission requested that NMFS provide its final EFH recommendations for Atlantic salmon habitat at the Holyoke Project.

On August 2, 1999, the Department of Commerce, on behalf of NMFS, filed its response, stating that issuance of a new license for the Holyoke Project, as described in the Draft EIS with either the staff-recommended alternative or the applicants' proposed actions, would degrade and adversely affect habitat designated as essential fish habitat for Atlantic salmon. Consequently, Commerce filed four EFH recommendations for Atlantic salmon in the Connecticut River.

Contrary to Commerce's assertion, we assess that the action described herein would not adversely affect EFH designated for Atlantic salmon in the Connecticut River. 49/ Rather, EFH for Atlantic salmon would be enhanced by run-of-river operation, the increase in minimum flows to the bypassed reach, and improved fish passage measures, as described in the Final EIS (see sections 4.1.1.3., 4.1.2.3., 4.2.1.3., 4.2.2.3., 5.4.2., and 5.4.3.).

In EFH Recommendation A, Commerce recommends that the licensee design, construct, operate, monitor and maintain such fish passage facilities as may be required to provide safe and efficient upstream and downstream passage of Atlantic salmon at the Holyoke Project. Also, in EFH Recommendation B, it appears that Commerce is recommending that certain fish passage facilities be installed and operational in a timely manner, 50/

48/ Pursuant to Section 303(a)(7) of the Magnuson-Stevens Act (16 U.S.C. § 1853(a)(7)), the Secretary of Commerce approved Amendment 1 to the Atlantic Salmon Fishery Management Plan, designating EFH for Atlantic salmon, on March 3, 1999. The ready-for-environmental-assessment notice for the Holyoke Project was issued on November 3, 1998.

49/ We define baseline as existing conditions, rather than pre-project conditions. Using this definition, essential fish habitat for Atlantic salmon would be enhanced under any alternative outlined in the Final EIS, except the no-action alternative.

50/ The facilities include: (1) improvements to the fishlift system for operation up to 40,000 cfs; (2) expansion of the
(continued...)

as well as that certain of the new fish passage facilities proposed by Municipalities be installed and operational by 2006.
51/

While we would not propose the extensive expansion of the fishlift system or the angled bar rack at this time, the measures described in Commerce's EFH Recommendations A and B are a part of this license, by dint of their inclusion in the fishway prescriptiona filed pursuant to Section 18 of the FPA.

Commerce, in its EFH Recommendation C, recommends that the licensee provide a continuous minimum zone-of-passage flow of 1,300 cfs in the river reach below the spillway from April 1 through November 15. This recommendation includes the mid-July to mid-September period when upstream passage requirements for adult Atlantic salmon would be minimal or non-existent. 52/

Adult Atlantic salmon exhibit a well-defined, seasonal (late May to early July) period of abundance at the Holyoke Project during upstream spawning migrations. Between 1993 and 1997, 95 to 100 percent of all spring/early summer migrants were collected by June 30 each year. 53/ In colder than normal, high-flow springs, single individuals have been collected as late as July 15, and a small percentage of the run has occurred in September/October with decreasing water temperatures and increasing flow. Seasonally high water temperatures occur in the Connecticut River during mid-summer, which, coupled with seasonally low flows, are not energetically or physically supportive of upstream migration.

50/ (...continued)
fishlift system, including exit channel, to accommodate passage of the design populations of anadromous fish; (3) the downstream migrant structure at the Bascule gate; and (4) the angled bar rack at the Hadley Falls station.

51/ Since we are awarding the new license for the Holyoke Project to Holyoke Power, the EFH recommendations specific to Municipalities, proposed project are moot.

52/ We also assume this recommendation applies to the downstream migration season for adult and juvenile Atlantic salmon. As outlined in FWS' and NMFS' fishway prescriptions, the designated downstream migratory period for juvenile salmon is from April 1 to June 15, while post-spawn adult salmon generally move downstream in the late fall and winter.

53/ See Municipalities' additional information response filed on December 23, 1998.

Further, as outlined in its conditions filed pursuant to Section 18 of the FPA, NMFS did not require operation of the Holyoke fishlifts between July 15 and September 15 for upstream migrating Atlantic salmon. Hence, the basis for Commerce's EFH recommendation for a zone-of-passage flow of 1,300 cfs between July 15 and September 15 is unclear. Given the aforementioned information, we find that there is no biological basis or evidence supporting a recommendation for zone-of-passage flows of 1,300 cfs from mid-July to mid-September for adult Atlantic salmon.

The staff's analysis and recommendations did not reject or contradict the agencies' recommendations for higher bypass flows for downstream migration (i.e., up to 1,300 cfs). ^{54/} Rather, the staff concluded that any bypass reach flow recommendation, including the 1,300 cfs proffered by NMFS, should be evaluated for its influence on passage effectiveness. Monitoring of recommended flows would lead to improved decisions regarding flows needed to ensure safe and adequate passage of anadromous fish through the bypassed reach.

Finally, Commerce's EFH Recommendation D includes a provision that the licensee provide interpretive information at the Robert E. Barrett Fishway ^{55/} about the essential fish habitat designation and its importance to restoring Atlantic salmon in the Connecticut River Basin. We agree, and will make such measure a requirement of the project recreation plan required by Article 418.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

Section 10(j) of the FPA ^{56/} requires the Commission, when issuing a license, to include license conditions, based on recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act, to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project.

^{54/} In the Final EIS, the staff outlines the rationale for its recommendation for interim zone-of-passage flows of 800 cfs during the spring and 420 cfs during the fall (see sections 4.1.1.3., 4.2.1.3., 5.4.2., 5.4.3., and staff response to Comment No. 16 in Appendix C).

^{55/} The Fishway is open to the public in May and June to observe fish migration.

^{56/} 16 U.S.C. § 803(j).

If the Commission believes that any such recommendation may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law, Section 10(j)(2) requires the Commission and the agencies to attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies. If the Commission then does not adopt a recommendation, it must explain how the recommendation is inconsistent with applicable law, and how the conditions selected by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife.

Interior, FWS, NMFS, and Massachusetts DFW filed recommendations pursuant to Section 10(j). ^{57/} In the Draft EIS, Commission staff concluded that eleven of the agency recommendations did not fall within the scope of Section 10(j), because they were not specific measures for the protection, mitigation of damages to, or enhancement of fish and wildlife resources. These included recommendations for: (1) a plan for sharing costs and/or responsibilities for fish passage operations, (2) a plan for short-nosed sturgeon passage, (3) plans for downstream passage of American eel and shortnose sturgeon, (4) the evaluation of the use of Boatlock bypass and louver facilities, (5) service on the resource agencies of requests for license amendments and requests for extension of time, (6) development and implementation of a cultural resources management plan, (7) creation of an environmental and recreation trust fund, (8) funding for a channel marking program, (9) installing a flow fluctuation warning system, (10) implementing unspecified entrainment measures to protect shortnose sturgeon, and (11) implementing unspecified downstream passage measures for the American eel.

Because staff concluded that these recommendations did not fall within the scope of Section 10(j), staff instead considered them under FPA Section 10(a), and recommended accepting seven of the eleven recommendations: (1) upstream passage plan for the shortnose sturgeon; (2) downstream passage plans for the shortnose sturgeon and American eel; (3) a cultural resources management plan; (4) a channel marking program; (5) a flow fluctuation warning system; (6) an effectiveness study of the

^{57/} These recommendations were generally applicable to both Holyoke Power's and Municipalities' proposed projects, although the agencies made some recommendations that apply only to Municipalities' proposal, because it involves proposed new construction, while Holyoke Power's proposal does not.

louvered guidance device and bypass facility, and (7) serving pleadings on the resource agencies. 58/

Of the recommendations within the scope of Section 10(j), Commission staff concluded that all or part of 18 appeared to be inconsistent with Part I of the FPA: (1) minimum instream flow of 840 cfs to the bypassed reach, (2) seasonal zone-of-passage flow of 1,300 cfs to the bypassed reach, (3) a plan for channel modifications, (4) the release of 840 cfs, in specified increments, in the South Hadley, Middle, and Holyoke channels, (5) a third entrance at the tailrace fishlift, (6) a new salmon-trapping facility, (7) redistribution of flows through the project during spring passage season, (8) monitoring of resident upstream fish passage, (9) operation of upstream fishlifts from April 1-November 15, (10) gaging of streamflows in the three bypass channels, (11) permanent minimum flows in the canals, (12) monitoring of mussels in the canals, (13) improvement and expansion of the existing fishlifts, (14) new spillway fishlift, (15) upstream passage for the American eel, (16) protection of Log Pond Cove, Bachelor Brook, and Cove Island, (17) implementation of Scheme A with 840 cfs spillway flows, and (18) provision of recommended interim passage measures, if Unit 3 construction is deferred. 59/

As detailed in the Draft EIS, staff concluded that these would not provide environmental benefits commensurate with their costs, and that the alternative measures staff recommended would adequately satisfy the needs of fishery resources without placing an undue economic burden on the licensee. 60/ Staff recommended,

58/

59/ Items 14, 17, and 18 were applicable only to the Municipalities' proposal to expand the project's capacity, and are thus moot in view of our award of the license to Holyoke Power.

60/ Zone of Passage flows and minimum flows in the project bypassed reach, and reasons for rejecting recommended flows of FWS and other agencies, pp. 4-148 through 4-157 and 4-204 through 4-206, and pp. 5-64 through 5-66 of the Draft EIS. Reasons for not immediately requiring modifications of various channels in the bypassed reach, p. 5-65. See pp. 4-23 and 4-24, 4-85, 4-151, 4-156 and 4-157 for additional staff analysis of the proposed channel modifications. Recommendations for improving the existing upstream fishlift facilities, pp. 5-66 and 5-67. Analysis in support of those recommendations, pp. 4-42 through 4-53 and 4-109 through 4-113, 4-166 through 4-171, and 4-216 through 4-219. Discussion of FWS' gaging recommendations, (continued...)

among other things, a run-of-river project operating mode; minimum flows of 800 cfs in the bypassed reach from April 1 through July 15, and 420 cfs from August 1 through March 31; the development of upstream and downstream fish passage plans; an American eel passage and protection plan; a fish and aquatic habitat monitoring plan for the bypassed reach; a water quality monitoring plan; a plan for monitoring project operations; and a canal operating plan, including minimum flows of 810 cfs from April 1 through November 15, and 400 cfs from November 16 through March 31.

On April 19, 1999, following publication of the Draft EIS, staff sent letters to the resource agencies, summarizing its preliminary determinations regarding their recommendations. With respect to the recommendations that staff concluded were inconsistent with Part I of the FPA, staff asked the agencies whether they could accept staff's alternate recommendations, had any other recommendations to proffer, and wanted to provide additional support for their recommendations.

Commission staff scheduled a meeting for May 26, 1999, in Holyoke, to meet with representatives of the state and federal fish and wildlife agencies in order to discuss staff's preliminary determinations and pursue resolution of the apparent inconsistencies between the agencies' recommendations and the requirements of Part I of the FPA. The fish and wildlife agencies did not attend the meeting. Instead, they filed letters asserting that, because staff had not supplied them with detailed information they had requested, they were unprepared to discuss Section 10(j) issues.

A. Recommendations Outside the Scope of Section 10(j)

In their comments on the Draft EIS, the agencies do not argue that the recommendations staff found to be outside of Section 10(j) do in fact fall within the scope of that section. Rather, as noted above, they contend generally that staff has not

60/ (...continued)

and reasons for staff's recommendations, pp. 4-138, 4-139, and 4-196. FWS' recommendation for requiring monitoring of mussel populations, pp. 4-158 and 4-159, and 4-206. Recommendations for a new salmon trapping facility at existing fish trap/counting station, pp. 4-110 and 4-169. Recommendation of only one eel ladder, pp. 4-55 through 4-57, 4-115, 4-116, 4-173, 4-221, pp. 5-68, and 5-69. Modifying and expanding the capacity of the existing tailrace and fishlift passage facility pp. 4-49 through 4-52, and 4-108 through 4-112, pp. 4-166 through 4-170 and 4-216 through 4-218.

provided them enough information with respect to its Section 10(j) determinations for them to respond.

We agree with staff's determination regarding the recommendations that staff concluded are outside the scope of Section 10(j). Section 10(j) recommendations are to be specific measures, not general recommendations that there should be beneficial measures on behalf of fish and wildlife. ^{61/} The recommendations in question here call for general plans (e.g., the four recommendations calling for upstream and downstream fish passage plans, the evaluation of bypass and louver facilities, ^{62/} and the unspecified entrainment measures), or are not fish and wildlife measures at all (e.g., the channel-marking program, the cultural resource management plan, the flow fluctuation warning system, and the service of documents on the resource agencies). And we have previously held that recommendations for trust funds are not Section 10(j) recommendations. ^{63/}

As to the agencies' contention that they lacked enough information to provide substantive comments on these matters, the fact that staff did not specify in detail in the Draft EIS why it preliminarily determined that particular conditions were outside of Section 10(j) did not preclude the agencies from explaining why they believe that the contrary is true. The Commission's rulings on the scope of Section 10(j) are numerous and public, and one or both federal agencies have participated in over 200 hydroelectric licensing proceedings since the 1986 enactment of Section 10(j). ^{64/} Moreover, the agencies' decision not to attend the May 26, 1999 meeting precluded their opportunity to obtain any necessary clarification of staff's position. Finally, as to the seven recommendations that staff proposed be accepted under Section 10(a), our adoption of these recommendations in the license renders irrelevant the question of under which section of the FPA they were considered.

^{61/} See, e.g., Southern California Edison Co., 77 FERC ¶ 61,313 at p. 62,430 (1997).

^{62/} This recommendation also runs afoul of our Section 10(j) regulations, which state that such recommendations do not include studies that could have been performed pre-licensing. 18 C.F.R. § 4.30(b)(9)(ii). See Upper Peninsula Power Co., 83 FERC ¶ 61,366 at pp. 61,366-67 (1998).

^{63/} See, e.g., City of Augusta, Kentucky, 72 FERC ¶ 61,114 at p. 61,601 (1995).

^{64/} Section 10(j) was added by the Electric Consumers Protection Act, P.L. 99-495 (October 16, 1986).

B. Recommendations Within the Scope of Section 10(j)

The Commission received substantive comments regarding staff's recommendations on Section 10(j) issues from only Interior and Massachusetts DFW. 65/ We discuss these comments below. 66/

1. Minimum flows

Massachusetts DFW argues that the record shows that staff relied on incorrect information that showed that current spring flows in the bypassed reach are 350 cfs. According to Massachusetts DFW, those flows are actually a minimum of 550 cfs (and more likely 830 cfs). This being the case, the 420 cfs recommended by staff will be a reduction in flow, rather than an increase, as staff assumed. Massachusetts DFW disagrees with staff's conclusion that the increase in fish habitat that would occur at an 840 cfs minimum would not be the most efficient use of flow releases. 67/

The discrepancy in characterizing existing spring flows hinges on the amount of flow in the Alden weir, which is installed in the Bascule gate during the passage seasons. These flows are discussed in detail in Appendix C of the Final EIS. 68/ There, the staff concurs with the resource agencies that bypass flows may at times be higher than 350 cfs, but states that it

65/ FWS' comments on the Draft EIS consist solely of its fishway prescription; it does not discuss staff's determinations with regard to its recommendations. Similarly, NMFS, which also filed a fishway prescription, addresses its Section 10(j) recommendations only to the extent of arguing generally that the Draft EIS is not supported by substantial evidence.

66/ The June 7, 1999 comments of Interior, NMFS, and Massachusetts DFW clarified their original Section 10(j) recommendations on monitoring flows in the bypassed reach, which resolved the apparent conflict. The Final EIS (at p. 5-42, n. 189) adopted the agencies' recommendations on this issue, as do we. Also, Interior's and Massachusetts DFW's clarifications of their comments on the staff's recommended regime for monitoring mussels in the canal system (Final EIS at p. 5-43 n. 190) resolve the apparent conflicts on that matter.

67/ Interior's arguments on its Section 10(j) recommendations are also raised by Massachusetts DFW and are not separately addressed here.

68/ Final EIS at pp. C-12 to C-14.

focused on 350 cfs in the Draft EIS to conservatively represent existing conditions.

We concur with the resource agencies' conclusions that the determination of the actual existing bypass flow does not alter conclusions about the biological habitat implications of various flow discharges, since the Instream Flow Incremental Methodology (IFIM) ^{69/} results are still valid. However, the agencies' suggestion that bypass flows are on the order of 800 to 900 cfs is flawed, because they are predicated on flows through the Alden weir (600 to 750 cfs) that are not possible at normal full pond. Therefore, using 350 cfs as the existing flow condition in the bypass during the fish passage seasons is appropriate for evaluating the balancing of power and non-power uses, costs, and implications of flow discharges, and for comparing existing and recommended flows.

2. Specific flows and modifications for the bypassed channels

Massachusetts DFW contends further that staff erred in rejecting its proposal to require specific minimum flows in the three bypass channels, and to modify the channel to make this possible. The agency states that this scheme would maximize the habitat benefits of the flows, and that its channel flow proposals mimic the natural flow into the channels. It disagrees with staff's conclusions that the results of channel modification are uncertain, and that the procedure would require additional regulatory approval. ^{70/}

We agree that channel modifications are a reasonable and prudent measure that may be used to more effectively achieve various fish habitat and fish passage objectives for the bypassed reach. In the Final EIS, section 4.2.1.3., the staff provides an in-depth discussion of the potential and rationale for channel modifications, and agrees with the agency recommendations for some sort of channel modifications and the potential benefit to passage and resident fish habitat.

However, we also believe the record is incomplete for recommending specific and immediate channel modifications, and

^{69/} This methodology, developed by FWS, evaluates the impacts on fish and invertebrate habitat resulting from incremental modifications in streamflow.

^{70/} In addition, Massachusetts DFW maintains that staff inappropriately applied white sucker spawning curves to assess macroinvertebrate habitat at various flows. These concerns are addressed in the Final EIS, Appendix C at pp. C-17 to C-19.

that the most prudent approach is to establish an interim flow with the requirement for post-licensing monitoring of flows, habitat, and fish passage to obtain the needed information. There is a lack of critical information to assess certain aspects of flow distribution, fish passage routines and behavior, etc. The agencies generally concur on this point, and agree that implementation of the channel modifications would need to proceed in a step-wise manner and be responsive to the results of flow and fish monitoring studies.

We believe that the need for, and design of, channel modifications or alternative flows should emerge from further monitoring and assessment whereby resource management decisions are made as part of an ongoing science-based process. In that way, other important factors and alternative techniques and the results of monitoring fish passage success can be considered in the design of the modifications.

However, Condition No. 14 of the water quality certification requires the licensee to prepare a plan to redistribute specified flows to the three channels in the bypassed reach within one year of license issuance. Nevertheless we are including Article 410, which requires the licensee to monitor fish habitat, fish passage, and flows to determine the effectiveness of the required minimum flow regime, and the need to implement any additional enhancement measures, such as channel modifications.

3. Zone-of-passage-flows

Massachusetts DFW disagrees with staff's conclusion that a zone-of-passage flow of 800 cfs is adequate, contending that, during some periods of the year, 1,300 cfs is necessary to provide adequate salmon habitat. Similarly, Massachusetts DFW asserts that minimum flows in the canal of 810 cfs year-round (as opposed to staff's recommendation for a flow of 400 cfs from November 16 through March 31) are necessary to provide quality habitat for mussels, to minimize sedimentation, and to maintain water quality.

The staff's recommendation for an interim 800-cfs zone-of-passage flow during the spring period was based on several considerations. ^{71/} First, the spring period is when most Atlantic salmon, American shad, and river herring pass upstream. Second, 800 cfs provides for the widest single area with functional passage conditions at the critical upstream passage cross-section (no. 3) in the South Hadley channel. This is consistent with the agencies' recommendations that a zone of passage is best when provided as a single contiguous area. Third, whereas flows above 800 cfs provide slightly (up to 2

^{71/} See Final EIS, pp. 4-16 to 4-30 and 4-152 to 4-161.

percent) greater total functional passage areas along cross-section 3, the size of the contiguous functional passage areas declines as these areas become spread out and velocities increase.

The staff's analysis and recommendations did not reject or contradict the agencies' recommendations for higher bypass flows for passage (i.e., up to 1,300 cfs). Nor did they reject, out of hand, the possibility that higher flow, channel modifications, or other measures may be required to ensure fish passage in the bypassed reach. The staff concluded that the most prudent approach would be to implement an interim 800-cfs bypass flow during the spring, combined with measures to evaluate the passage effectiveness of the recommended flow. This would allow the decision to implement higher flows or other measures (e.g., channel modifications, pulsed flows) to be based on monitoring of passage effectiveness and the result of other pending studies (e.g., shortnose sturgeon studies). This approach, which we adopt, avoids the implementation of overly conservative measures, and will improve decisions on the final flows and measures needed to ensure safe and adequate passage of anadromous fish through the bypassed reach.

Regarding the recommended fall passage flows, the staff recommended a lower zone-of-passage flow, because at this time there is less justification for a higher fall flow. The fall passage period supports far fewer upstream migrants (a small number of Atlantic salmon), and the staff's recommendation provides for a minor improvement in passage conditions, commensurate with the fish runs. ^{72/} However, a resource management approach where decisions are made as part of an ongoing science-based process could also be implemented for the issue of fall passage flows; accordingly, we agree with staff's recommendations that the licensee be required to perform flow and fish passage monitoring in the spring and fall migratory periods. Should the number of upstream migrants increase substantially in the future, or should monitoring studies indicate that the 420-cfs passage flow results in inadequate passage conditions, then additional measures (e.g., higher zone-of-passage flows, pulsed flows, channel modifications) may be necessary to provide adequate passage conditions.

However, Condition Nos. 12 and 13 of the water quality certification require the immediate release of 840 cfs in the bypassed reach from July 15-September 15 and November 15-April 1, and minimum flows of 1,300 cfs from April 1 through July 15 and September 15 through November 15.

^{72/} We recognize that our conclusions and provisions for fall fish passage flows could change as the result of our consultation with NMFS for the shortnose sturgeon.

We are not adopting Massachusetts DFW's recommendation that minimum flows of 810 cfs should be maintained year-round in the canal system. Given the stated priorities, the staff's recommended flow of 810 cfs, when available, would improve conditions in the canal system during the productive growing season between April and November. The needs of aquatic organisms to maintain their life functions are very much reduced during the cold, winter months, when their metabolism is much slower, and growth nearly ceases. Also, maintaining water quality standards during the winter months would likely not be an issue. Dissolved oxygen is generally much higher with colder water. Hence, we do not see the need to increase flows above 400 cfs from November 16 through March 31.

Nevertheless, our required measures to monitor and re-evaluate flow needs at the project will allow for some reprioritization of flows, if the existing regime does not provide adequate protection and enhancement of the mussels in the canal system.

4. Fish hopper capacity

Massachusetts DFW disagrees with the staff's conclusion that increased fishlift hopper capacity is not warranted because mortality in the fishlift exit channel does not exceed two percent, even though acknowledging that the maximum design capacities are routinely exceeded during the peak of the upstream migration. Massachusetts DFW argues that a complete physiological analysis of the fish released from the facility when overcrowded is necessary to make this determination.

In section 4.1.1.3. of the Final EIS, the staff recognized that the fishlift system's capacity at Holyoke is exceeded, and that a minimal level of mortality occurs. Over-crowding was cited as one factor causing the mortality, however, water temperature appeared to be more significant than over-crowding in leading to mortality of shad in the fishlifts. Assuming water temperature is the primary factor leading to shad mortality, an expansion of the hopper capacities would not necessarily reduce shad mortality. The frequency at which the fishlifts are operated would seem to be of more importance than the hopper capacities.

A complete physiological analysis under appropriate, comparative conditions might yield useful information on the factors leading to shad mortality in the Holyoke fishlift system. However, we do not believe that such a study would alter our

conclusions concerning the need for the agency-recommended hopper capacities. 73/ Thus, we are not requiring such a study.

5. Second fish-trapping device

Massachusetts DFW also urges that a second trapping device should be part of a larger renovation of the existing fish passage facility to widen the exit flume and gated spillway entrance, and that the second trapping device be built as part of a new counting station opposite the existing station.

In the Final EIS, the staff recommends that the licensee expand the capacity of the spillway fishlift and excavate the entrance to the fishlifts as necessary to provide bottom level access. The staff also recommends installation of a second fish trap and counting area, as proposed by Holyoke Power, and a new trap and haul facility, as proposed by Municipalities, or evaluation of other trapping and hauling mechanisms. The extensive expansion recommended by Massachusetts DFW was not supported by the evidence in the record, whereas the record and staff's analysis in the Final EIS fully supports the staff's recommendations. 74/ Accordingly, we would adopt staff's recommendations, except that the specifications for expanding fishlift capacity and the design of the second salmon trapping device are prescribed under Condition Nos. 22 and 23 of the water quality certification.

6. Multiple eel ladders

Massachusetts DFW disagrees with the staff's conclusion that only one eel ladder, on the South Hadley side of the dam is needed. Massachusetts DFW urges that two additional ladders be constructed on the Holyoke side, one in the tailrace, and another in the vicinity of the spillway fishlift.

The staff evaluated the installation of multiple eel ladders at the project, but did not recommend adopting the Massachusetts DFW's recommendation for three individual eel ladders at the

73/ One to two percent mortality of shad, a species noted for its sensitivity to handling stress, is quite low. The significant expansion in the hopper capacities recommended by the resource agencies is unlikely to significantly improve this level of mortality, such that, based on an incremental analysis, we could justify the additional expense as being in the public interest.

74/ Final EIS at pp. 4-43 to 4-52, 4-112 to 4-116, 4-169 to 4-174, and 4-224 to 4-228.

project. ^{75/} The staff concluded that, while potentially providing an incremental benefit for upstream eel passage, the additional cost of such facilities did not warrant their construction at this time. However, since both FWS and NMFS prescribed multiple eel ladders under Section 18, such conditions are imposed.

We conclude that the conditions imposed in this license adequately protect, mitigate damages to, and enhance the fish and wildlife (and their habitat) affected by the project.

THREATENED AND ENDANGERED SPECIES

On April 19, 1999, the Commission staff issued letters to NMFS and FWS, concluding, on the basis of the staff's findings and analysis in the Draft EIS, that expanding, operating, and maintaining the project, with the staff's recommended measures, is not likely to adversely affect the shortnose sturgeon (in the letter to NMFS), nor the American bald eagle or Puritan tiger beetle (in the letter to FWS). The staff asked NMFS and FWS to concur in the staff's conclusion that formal consultations under Section 7 of the Endangered Species Act are not required. ^{76/} In letters filed June 1 and June 7, 1999, NMFS advised that it did not concur in the staff's conclusion, and requested the initiation of formal consultation to assess the impact of the project's operation on endangered shortnose sturgeon and the incidental and unauthorized taking of shortnose sturgeon as a result of such operation. ^{77/} FWS has not yet responded to staff's request for concurrence.

On June 4, 1999, the Commission staff initiated formal consultation with NMFS on the shortnose sturgeon, provided NMFS with citations to the sections of the Draft EIS that constituted the staff's biological assessment of sturgeon, and requested that NMFS submit its biological opinion by July 15, 1999. Should FWS not concur with staff's "no adverse effect" conclusion, there may need to be formal consultation with FWS, as well.

^{75/} Final EIS at pp. 4-54 to 4-57, 4-118 to 4-120, 4-179 to 4-181, and 4-231 to 4-233.

^{76/} 16 U.S.C. §§ 1531-43.

^{77/} Section 9 of the ESA makes it unlawful for any person to "take" any endangered species. 16 U.S.C. § 1538. The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." See ESA Section 3(19), 16 U.S.C. § 1532(19).

NMFS has up to 135 days from the date formal consultations were initiated to complete the formal consultations and file its biological opinion with the Commission. ^{78/} Because consultation with NMFS and FWS has not yet been completed, we are reserving our authority to revise the terms and conditions of this license to incorporate any measures necessary to comply with the Endangered Species Act in light of any biological opinion. Compliance with license provisions will potentially enhance, and not adversely alter, the environmental status quo, or make irreversible or irretrievable commitments of resources which could have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures. ^{79/}

In the Final EIS, the staff recommended that the new licensee for the Holyoke Project be required to prepare and implement an endangered, threatened and sensitive species protection and enhancement plan that includes the federally listed endangered shortnose sturgeon and the threatened American bald eagle and Puritan tiger beetle. Moreover, the plan would include certain state-listed endangered, threatened, and sensitive species, including, but not limited to, the state endangered yellow lampmussel and dwarf wedgemussel. ^{80/} We concur in that recommendation, and Article 416 requires the preparation and implementation of the plan, subject to modification upon completion of consultation with NMFS. ^{81/}

The plan must include, but not be limited to, measures to enhance eagle nesting sites (i.e., by erecting eagle nest platforms), and measures to protect and enhance eagle perching and feeding activities. The new licensee should cooperate with FWS, Massachusetts DFW, and Massachusetts DEM to educate the public and police recreational activities at Rainbow Beach, for the purpose of protecting the Puritan tiger beetle on the beach. The plan must include provisions to protect and enhance shortnose sturgeon habitat in the project area and allow safe passage at the project. Measures to protect and enhance shortnose sturgeon, must at a minimum be based on the results of the ongoing shortnose sturgeon studies, and any measures developed upon

^{78/} See 16 U.S.C. § 1536(b) and 50 C.F.R. § 402.14(e).

^{79/} See Section 7(d) of the ESA, 16 U.S.C. § 1536(d).

^{80/} Final EIS at p. 5-77.

^{81/} That article and Article 410 also require that the plans for monitoring the bypassed reach and for shortnosed sturgeon protection consider pulsed flows as an alternative flow measure for enhancing passage efficiency through the bypassed reach.

completion of those studies and after consultation with NMFS. Finally, the plan must include protection and enhancement measures for the yellow lampmussel and dwarf wedgemussel, as identified in the canal operations plan.

The cost of developing a threatened and endangered species plan would be nominal. Implementation of protection and enhancement measures would require greater expenditures (e.g., the construction of eagle nesting platforms is estimated at \$2,000). Nevertheless, reasonable expenditures to protect and enhance these important fish and wildlife species are warranted.

COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the FPA requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving waterways affected by the project. ^{82/} Under Section 10(a)(2), federal and state agencies filed 10 comprehensive plans that address various resources in Massachusetts. Of these, we identified and reviewed eight plans relevant to the Holyoke Project. ^{83/}

In addition to the plans filed pursuant to Section 10(a)(2)(A), we also reviewed a state plan for

^{82/} The definition of "comprehensive plan" in this context is set forth at 18 C.F.R. § 2.19 (1999).

^{83/} (1) A strategic plan for the restoration of Atlantic salmon to the Connecticut River basin, Policy Committee for Fisheries Management of the Connecticut River, September 1982; (2) Massachusetts Outdoors for our Common Good: Open Space and Outdoor Recreation in Massachusetts, Massachusetts Department of Environmental Management, Division of Planning and Development, December 1988; (3) Connecticut River Basin Water Quality Management Plan, Massachusetts Department of Environmental Quality Engineering, Division of Water Pollution Control, June 1983; (4) Silvio O. Conte National Fish and Wildlife Refuge, Final Action Plan and Environmental Impact Statement, Department of the Interior, October 1995; (5) Final Environmental Impact Statement - Restoration of Atlantic salmon to New England Rivers, Department of the Interior, May 1989; (6) North American Waterfowl Management Plan, U.S. Fish and Wildlife Service, May 1986; (7) Fisheries USA - the recreational fisheries policy of the U.S. Fish and Wildlife Service, U. S. Fish and Wildlife Service, undated; and (8) the Nationwide Rivers Inventory, National Park Service, January 1982.

restoration of anadromous fish on the Connecticut River; ^{84/} the revised Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River, Connecticut River Atlantic Salmon Commission, July 1998; the Connecticut River Greenway State Park Management Plan, Massachusetts Department of Environmental Management, November 1997; a Management Plan for American Shad in the Connecticut River, Connecticut River Atlantic Salmon Commission, February 1992; Recovery plan for the Shortnose sturgeon, National Marine Fisheries Service, December 1998; and the Fisheries Management Plan for the American Eel, Atlantic States Marine Fisheries Commission, April 1999. No inconsistencies were found.

ADDITIONAL INTERVENOR ISSUES

A. Recreational Resources

1. Town of South Hadley

The Town of South Hadley commented on the Draft EIS's recommendations for meeting recreational needs at the project, arguing that there is a need to provide for quiet, non-motorized activities like walking, hiking, picnicking, and bird watching, which those recommendations fail to address. Holyoke Power had proposed to transfer to South Hadley, or grant conservation restrictions to a state agency to, approximately 700 feet of undeveloped river frontage below the Holyoke dam in South Hadley, which could then be developed for the recreational use South Hadley is advocating. Holyoke Power did not, however, propose to provide funds to develop and maintain the property for public recreation. South Hadley also proposed that the licensee provide funds to facilitate the private redevelopment of the Texon buildings, an abandoned mill complex, also owned by Holyoke Power and along the riverfront below the dam, and for restoration of strategic portions of the remains of the historic navigation canal along the South Hadley shore of the impoundment above the dam. South Hadley also objected to the recommendation that the licensee be required to construct a \$200,000 boat ramp on the South Hadley side of the river below the dam, on the ground that a nearby boat ramp downstream rendered it unnecessary.

In the Final EIS, the staff recommends, and we are adopting, revisions to the proposed recreation plan, to require Holyoke Power to provide for constructing and maintaining a trail, and appropriate recreation amenities, along the South Hadley Canal, and through the 700-foot riverfront parcel below the dam, as

^{84/} Connecticut River basin fish passage, flow, and habitat alteration considerations in relation to anadromous fish restoration; Technical Committee for Fisheries Management of the Connecticut River, October 1981.

South Hadley proposes. The recreation plan will not include the proposed boat launch. The estimated cost to construct the required trails and amenities is about \$150,000. Furthermore, the plan requires Holyoke Power to propose some disposition or use of the Texon mill complex. Even though most of these facilities are located on property below the dam and outside of the current project boundary, we accept South Hadley's position that they are in such proximity to the dam and impoundment that they would provide for more dispersed recreational opportunities at the project, and are therefore appropriate recreational enhancements for the project.

2. Conservation and recreation parcels on impoundment

Under the Draft EIS's recommended Comprehensive Recreation and Land Management Plan, the licensee was to provide for conservation easements on, or restricted use of, several parcels of land owned by Holyoke Power along the shore of the project impoundment, including, as proposed by Holyoke Power, the Bachelor Brook and Stony Brook parcels, and to revise the project boundary to include those parcels. In its comments on the Draft EIS, Holyoke Power states that most of these parcels are not necessary for operation of the project, and significant portions of them are neither wetlands, floodplain, nor otherwise sensitive resources, and cannot be taken for public use without compensation. Holyoke Power proposes to include within the project boundary the environmentally sensitive areas of those parcels, and a 200- to 300-foot buffer along the impoundment shoreline. Moreover, Holyoke Power proposes to grant Massachusetts DFW conservation restrictions on portions of the Bachelor Brook parcel.

In its comments on the Draft EIS, Massachusetts DEM identifies four other parcels along the impoundment shoreline that it believes should be acquired by the licensee and managed for their environmental resource or recreation value. The total area of the parcels is approximately 300 acres, and Massachusetts DEM estimates they could be acquired for \$400,000 to \$450,000. Massachusetts DEM originally proposed that such funds be provided by a recreation trust fund that the licensee would have to contribute to annually, but states that it is open to other alternatives, if the Commission is unwilling to require the licensee to establish such a trust fund. 85/

We are adopting the staff's recommendation in the Final EIS that Holyoke Power be permitted to include in the required recreation and land management plan specific proposals for which

85/ Massachusetts DEM, comments filed June 1, 1999, supplemented by June 10, 1999 filing.

portions of its Bachelor Brook and Stony Brook parcels should be included within the project boundary, subject to appropriate restrictions. We are also adopting the staff's recommendation that Holyoke Power consider means for acquiring interests in the specific shoreline properties that Massachusetts DEM suggests.

B. Environmental and Recreational Trust Funds

In addition to the development trust proposed by Municipalities, described above, there were a variety of other recommendations for requiring the establishment of trust funds as a condition of the project license. The Holyoke Dam Planning Group and the Pioneer Valley Planning Commission recommended establishing a Recreation and Cultural Resources Enhancement Fund and a River Restoration and Enhancement Fund, with an initial contribution of \$300,000, or 6 percent of the gross project revenue, whichever is greater, excluding the base amount of \$5.5 million. Interior recommended the establishment of an Environmental and Recreational Trust Fund, where annual contributions are a fixed amount based on changes in the Consumers Price Index.

The City of Holyoke recommended that Holyoke Power establish an Environmental and Recreational Trust (equivalent to the trust proposed by HG&E), should Holyoke Power receive the new license. The City also recommended that Holyoke Power establish a Holyoke Dam Development Bank to assist Holyoke and South Hadley in mitigating project-related socioeconomic impacts in the project area, as well as implementing the City's master plan for rebuilding the Canal District. The Holyoke Dam Committee recommended that Holyoke Power contribute to the socioeconomic rehabilitation of the Holyoke Canal District, and establish and fund an Environmental Trust Fund.

Massachusetts DEM recommends that the licensee provide funding for a Conservation Trust Fund to acquire lands or easements along the Connecticut River within the project vicinity. Moreover, Massachusetts DEM endorses the concept of the development trust proposed by Municipalities.

Section 10(a)(1) of the FPA requires the Commission to take into consideration all beneficial public purposes when balancing developmental and environmental values in the licensing of a hydropower project. Taking into account the record in this proceeding, we conclude that the proposed funds are not required to fulfill the project's purposes, and we will not place them in the license. ^{86/} Nothing in the FPA requires a licensee to make

^{86/} A licensee is free to enter into agreements, separate from its FERC license, to provide various services and funds, so
(continued...)

whole every affected interest, or undertake or fund what may be worthwhile proposals for the general civic and economic improvement of the neighborhood. ^{87/} Moreover, a continuing safeguard of the public interest is the Commission's general reserved authority to respond to evolving conditions at the project. ^{88/}

COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA, 16 U.S.C. §§ 797(e) and 803(a)(1), require the Commission, in acting on applications for license, to give equal consideration to a project's power development purposes and to the purposes of energy conservation, the development of the waterway for the use or benefit of interstate commerce, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing the waterway or waterways for all beneficial public uses, including irrigation, flood control, and water supply. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

Under our approach to evaluating the economics of hydropower projects, as articulated in Mead Corp., ^{89/} we employ an analysis that uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of our economic analysis is to provide a general estimate of the potential power benefits and the 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.

^{86/} (...continued)
long as the agreements entail no conflict with the license or the FPA.

^{87/} Thus, the FPA does not require a project's construction, operation, and maintenance to entail "no net loss" of affected resources and values, including the tax revenues of the jurisdictional municipal entity. See, e.g., Ohio Power Co., 71 FERC ¶ 61,092 at p. 61,314 & n. 43 (1995).

^{88/} Id.

^{89/} 72 FERC ¶ 61,027 (1995).

The Holyoke Project, under the terms and conditions imposed by this license, would generate an estimated annual average of 194,000 MWh, a loss of generation of about 29,500 MWh annually from current conditions. Based on current economic conditions, without future escalation for inflation, the project would produce this power at a cost of \$9.1 million, or \$46.88 per MWh, but be able to sell the power, or purchase the power from an alternative power source for only \$40.50 per MWh, and thus produce negative net benefits of \$1.24 million per year. This compares to the positive net benefits under current license conditions of \$993,000. 90/ In any event, Holyoke Power must make the business decision whether to accept this license under these terms and conditions. As we said in Mead, project economics is only one of the many public interest factors the Commission considers in determining whether or not, and under what conditions, to issue a license. 91/

Based on our review and evaluation of the project as proposed by Holyoke Power, with the additional enhancement measures we are adopting, we conclude that operating the project in the manner required by the license will adequately protect and enhance fish and wildlife resources, water quality, recreational resources, and cultural resources. The electricity generated from renewable water power resources will be beneficial because it will continue to offset the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable resources and reducing atmospheric pollution. We therefore find that Holyoke Hydroelectric Project, with the required environmental enhancement measures, is best adapted to a comprehensive plan for the use, conservation, and development of the waterway for beneficial public purposes.

LICENSE TERM

Section 15(e) of the FPA 92/ provides that any new license issued shall be for a term of not less than 30 years nor more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigative and

90/ See Appendix B to this order, staff analysis of project economics incorporating mandatory conditions.

91/ In analyzing public interest factors, the Commission takes into consideration the fact that hydroelectric projects offer unique electric utility system operational benefits, and may provide substantial benefits not directly related to utility operations. See City of Augusta, 72 FERC ¶ 61,114 at p. 61,599 n. 57 (1995).

92/ 16 U.S.C. § 808(e).

enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects which propose extensive measures of these kinds. Accordingly, because this new license requires a moderate amount of environmental mitigative and enhancement measures, the license will have a term of 40 years.

SUMMARY

The Final EIS issued for this project contains background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license.

We conclude that the Holyoke Project does not conflict with any planned or authorized development, and is best adapted to the comprehensive development of the Connecticut River for all beneficial public uses.

The Commission orders:

(A) The City of Holyoke, Massachusetts' motion to intervene in the Project No. 2004 docket is granted.

(B) The Connecticut River Watershed Council's March 17, 1998 motion to strike Municipalities' February 27, 1998 comments on environmental scoping is denied.

(C) This license is issued to Holyoke Water Power Company for a period of 40 years, effective September 1, 1999, to operate and maintain the Holyoke Hydroelectric Project. 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 that the Commission issues under the provisions of the FPA.

(D) The application for a license for the Holyoke Hydroelectric Project No. 11607, filed August 29, 1997, by Ashburnham Municipal Light Plant and the Massachusetts Municipal Wholesale Electric Company, amended on January 30, 1998, to include Holyoke Gas & Electric Department of the City of Holyoke as co-applicant, is denied.

(E) 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, Sheets 1-27 (FERC No. 2004-1001 to No. 2004-1027.

<u>Exhibit G-</u>	<u>FERC No. 2004-</u>	<u>Showing</u>
1 to 27	1001 to 1027	Project Boundary and Vicinity

(2) Project works consisting of:

Holyoke Dam

The project dam is a granite block gravity overflow structure with a total length of 985 feet and a maximum height of about 30 feet. The dam's crest elevation is 97.47 feet and wooden flashboards currently increase the maximum normal pond elevation to 100.60 feet. ^{93/} Looking upstream, a Bascule gate is located at the west end of the dam for the passage of ice and debris, and for downstream fish passage. The Bascule gate is 25 feet wide and 8.5 feet high.

Reservoir

The project reservoir has a normal maximum surface area of 2,290 acres. The elevation of the water surface at the dam at normal maximum is 100.60 feet. The useable storage capacity is about 7,025 acre-feet (AF) based on a maximum drawdown of 3 feet.

Holyoke Canal System

The Holyoke Canal system consists of three levels, referred to as First, Second, and Third Level canals. The typical water surface elevation of each of the levels is 97.5 feet, 77.5 feet and 65.0 feet, respectively. Each level of the canal system provides water for industrial use and hydropower generation.

The canal system begins with the canal gatehouse structure, located at the west end of the Hadley Falls Station which is at the west end of the dam. The gatehouse is a concrete and stone masonry substructure with a steel superstructure, and measures about 170 feet long and 65 feet wide. It houses eleven lift gates that measure 16.0 by 8.25 feet, and one lift gate that measures 11.0 by 11.0 feet.

^{93/} Feet, or elevations, are in National Geodetic Vertical Datum (NGVD).

The gatehouse discharges water into the First Level canal, a subsystem about 6,500 feet long, running through Holyoke, and including the Overflow No. 1 structure located immediately downstream of the gatehouse. This overflow structure is a 290-foot-long masonry spillway with a central gate structure about 40 feet long and 20 feet high. The masonry spillway has flashboards 4 feet high with a top elevation of 100.0 feet. The central gate structure has four wooden lift gates 7.0 feet by 5.75 feet, with a top elevation of 100.5 feet. Besides its spill function, this structure currently is being used to provide attraction water for the fishlifts at the Hadley Falls station.

The First Level canal discharges water into the Second Level canal at several user facilities and hydro stations along its length. This canal subsystem is about 12,000 feet long and is also located in Holyoke. The Second Level canal includes the Overflow No. 2 structure that discharges into the Hadley Falls Station tailrace, and the Overflow No. 3 and Overflow No. 5 structures that discharge to the Third Level canal.

Overflow No. 2, located at the north end of the Second Level canal, is a masonry spillway 105 feet long and about 30 feet high, with a raised steel-supported wooden walkway supporting the gate operators. There are a total of four steel butterfly gates, two of which are 5 feet by 4 feet and two of which are 4 feet by 3 feet. The fixed crest of the structure is surmounted with wooden flashboards about 3 feet high. Overflow No. 3 is located at the south end of the Second Level canal, and is a masonry spillway with a raised wooden superstructure to house the gate operators. The structure is 106 feet long and about 20 feet high. There are a total of four steel lift gates, two of which measure 5 by 4 feet, and two of which measure 4 by 4 feet. The fixed crest of the structure is surmounted with flashboards about 3 feet high. Overflow No. 5 is located near the north end of the Third Level canal, and consists of a masonry spillway 85 feet long and about 22 feet high. The structure includes two steel butterfly gates, each measuring 4 feet by 4 feet. The fixed crest of the structure is surmounted by wooden flashboards about 2 feet high.

The Third Level canal is supplied at several discharge points and overflows from the Second Level canal. It is about 4,000 feet in length, and is located largely at the low-lying southern end of the canal system in the city of Holyoke, mostly parallel to the bank of the Connecticut River. The Third Level canal includes the Overflow No. 4 structure located between the canal and the Connecticut River. The structure is a masonry spillway with a raised wooden superstructure housing the gate operators, and measures 85 feet in length by about 25 feet in height. There are two 4-foot by 4-foot steel lift gates and two 16.25-foot by 3-foot wooden lift gates. The fixed crest of the structure is mounted with wooden flashboards about 3 feet high.

Hydro Generating Stations

There are a total of six hydroelectric generating stations included in the project. The largest is the Hadley Falls station located at the south abutment of the Holyoke dam. The powerhouse structure is a concrete-based, steel-framed brick- and metal-sided complex. The older part was constructed in 1950 and houses Unit 1, a vertical axis Kaplan-type turbine-generator set rated at 15,800 kilowatts (kW). The dimensions in plan are 52 feet by 84 feet, and about 55 feet in height. The newer part was constructed in 1983, and houses Unit 2, a vertical-axis fixed-blade propeller set rated at 15,000 kW.

The Boatlock station is located between the First and Second Level canals. The powerhouse structure is an L-shaped building with a concrete substructure and a brick superstructure with a length of 120 feet and widths of 42 feet and 60 feet. The power station dates from the early 1920's and houses one 500-kW unit and two 1,200-kW units. All are vertical-axis Francis units.

The Beebe-Holbrook station is also located between the First and Second Level canals, about 2,000 feet south of the Boatlock Station. The powerhouse is a concrete and brick structure with a length of 126 feet, a width of 42 feet and a height of 29 feet. The power station dates from the late 1940's and houses two units of 250 kW and 266 kW. Both units are vertical-axis Francis sets.

The Skinner station is located between the First and Second Level canals, about 1,600 feet south of the Beebe-Holbrook Station. The installation dates from 1924, and is housed in a non-project building. Water is delivered through a 150-foot long, 9-foot diameter steel penstock. There is one 300-kW vertical-axis, Francis unit.

The Riverside station is located between the Second Level canal and the Connecticut River about 3,500 feet north of the Boston & Maine Railroad bridge. The station has two distinct powerhouses of concrete and brick. Units 4, 5, 6, and 7 are housed in a structure 105 feet long, 58 feet wide and 24 feet high. Unit 4 is a 880-kW set and Unit 5 is a 600-kW set. Both are horizontal-axis Francis units. Unit 6 is also a horizontal-axis Francis unit, but it has been partially dismantled and placed in deactivated reserve status. It is rated 600-kW when active. Unit 7 is a 1,560-kW vertical-axis Francis set. Unit 8 is housed in a separate powerhouse of concrete and brick, with a length of 47 feet, a width of 35 feet, and a height of 31 feet. Unit 8 is vertical-axis propeller set, rated at 4,000 kW.

The Chemical station is located between the Third Level canal and the Connecticut River about 3,400 feet south of the railroad bridge. The installation is housed in a non-project industrial building. Water is delivered through a masonry flume

about 260 feet long and 22 feet wide. The building housing the generating units is constructed of concrete and brick. The two units were installed in 1935. Unit 1 is a vertical-axis Kaplan set rated at 800 kW. Unit 2 is a vertical-axis fixed-blade set, also rated 800 kW. The tailwater is carried to the river by two covered masonry flumes, each about 125 feet long, 15 feet wide and 9.5 feet high.

Fish Passage Facilities

The upstream fish passage facilities at the Hadley Falls station consist of two fishlifts; one fishlift serves the project tailrace and a second spillway fishlift serves the project's bypassed reach (HWP, 1997). Each fishlift consists of (1) an entrance, (2) a crowding bay, (3) a lift bucket, and (4) a lift elevator. An attraction water system draws water from the First Level canal and serves both fishlifts. The two fishlifts dump into a common exit flume. A fish counting station is located midway between the fishlifts and the flume exit, which is located adjacent to the Holyoke Canal Gatehouse.

Downstream fish passage facilities at the project consist of facilities at the Holyoke dam, in the First Level canal, and at Boatlock Station (HWP, 1997). At the Holyoke dam, anadromous fish currently are passed through a Bascule gate, which is located adjacent to the intakes for the Hadley Falls Station. The Bascule gate discharges to the bypassed reach, at a point next to the entrance for the spillway fishlift.

In 1993, HWP installed a permanent louver array in the First Level canal to guide downstream migrants entering the canal system to a bypass structure, which is located adjacent to the canal wall. From the canal, fish are transported through a 3-foot steel pipe to a sampling facility located adjacent to the Hadley Falls tailrace. Fish are then discharged to the tailrace.

Prior to installing the louver array, downstream passage facilities were provided at Boatlock station. These facilities consisted of an electro-shocking system installed next to the intake for Unit 3. Once shocked, fish are transported through a 2-foot steel pipe to a raceway (i.e., tailrace for Overflow No. 2), which connects to the Hadley Falls tailrace.

In 1997, HWP constructed the Robert E. Barrett Fish Viewing Facility at the Hadley Falls station (HWP, 1997). The facility includes educational displays, an observation platform where the lifting operation can be observed and fish viewing windows where migrating fish can be observed passing through the exit flume.

Transmission Facilities

HWP does not include any transmission or distribution facilities in the project.

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

Exhibit A: The following Exhibit A sections, filed on September 2, 1997:

Appendix A-1 entitled Specifications of Mechanical, Electrical and Transmission Equipment Appurtenant to the Project, describing existing and proposed mechanical, electrical, and transmission equipment.

Exhibit F: The following Exhibit F drawings, filed on September 2, 1997:

<u>Exhibit F-</u>	<u>FERC No. 2004-</u>	<u>Showing</u>
1	10028	General Plan of Project
2	10029	General Plan Holyoke Dam
3	10030	Plans and Sections-West End
4	10031	Sections, Masonry Dam, and Wood Dam
5	10032	Plans and Sections-East End
6	10033	Plan of Boatlock Station
7	10034	Sections of Boatlock Sta.
8	10035	Plans and Details of No. 1 Overflow
9	10036	Details of No. 2 and 3 Overflows
10	10037	Details of No. 4 and 5 Overflows
11	10038	Canal Sections
12	10039	General Plan of Riverside
13	10040	Plan of Riverside Units No. 4, 5, 6, and 7
14	10041	Section at Riverside Units No. 4, 5, 6, and 7
15	10042	Plan of Riverside Unit No. 8
16	10043	Riverside Unit No. 8 Section Centerline
17	10044	Beebe-Holbrook No. 1
18	10045	Beebe-Holbrook No. 2
19	10046	Details of Skinner Unit
20	10047	Hadley Falls Station-Plan and Section of Unit No. 1

21	10048	Hadley Falls Station-Plan and Section of Unit No. 2
22	10049	Hadley Falls No. 2-Plan at El. 56, 68 and 80.5
23	10050	Hadley Falls No. 2-Cross Section
24	10051	Hadley Falls No. 2- Elevations
25	10052	Hadley Falls Station-East Elevation
26	10053	Details of Chemical Units
27	10054	U.S.G.S. Gaging Station No. 01172003
28	10055	Fish Passage Facilities- General Plan
29	10056	Fish Passage Facilities- Details 1 and 2
30	10057	Fish Passage Facilities- Sections A-A and B-B
31	10058	Fish Passage Facilities- Sections C-C and D-D
32	10059	Fish Passage Facilities- Details 3 and 4
33	10060	Fish Passage Facilities- Sections F-F, G-G, H-H, J-J and K-K
34	10061	Fish Passage Facilities- Functional Design of Bypass General Arrangement
35	10062	Fish Passage Facilities- Functional Design of Louvers and Bypass Sections and Details
36	10063	Fish Passage Facilities- Functional Design of Bypass Pipe-Plan and Longitudinal Profile

(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 located within or outside the project boundary, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(F) The exhibits A, F, and G described above are approved and made part of the license.

(G) This license is subject to the articles set forth in Form L-3 (October 1975) (54 FPC 1817), entitled "Terms and

Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective as of the date of commencement of project construction or relicensing.

For the purpose of reimbursing the United States for the cost of administration of Part I of the FPA, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 42,891 kW.

Article 202. Within 45 days of the date of issuance of the license, the licensee shall file an original set and two duplicate sets of aperture cards of the approved exhibit drawings. The set of originals shall be reproduced on silver or gelatin 35mm microfilm. The duplicate sets shall be copies of the originals made on diazo-type 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 (11214-1 through 11214-7) 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.

The original and one duplicate set of aperture cards shall be filed with the Secretary of the Commission, ATTN DLC/ECRB. The remaining duplicate set of aperture cards shall be filed with the Commission's New York Regional Office.

Article 203. Pursuant to Section 10(d) of the FPA, after the first 20 years of operation of the project under license, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. One-half of the project surplus earnings, if any, accumulated after the first 20 years of operations under the license, in excess of the specified rate of return per annum on the net investment, shall be set aside in a project amortization reserve account at the end of each fiscal year. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. One-half of the remaining surplus earnings, if any, cumulatively computed, shall be set aside in the project amortization reserve account. The amounts established in the

project amortization reserve account shall be maintained until further order of the Commission.

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

Article 204. Authority is reserved to the Commission to require the licensee, in a proceeding specific to this license, to conduct studies, modify minimum flow releases, or otherwise make reasonable provisions for modifying project facilities or operations as necessary to comply with the Endangered Species Act, where it concerns the federally listed endangered shortnose sturgeon, threatened bald eagle, and Puritan tiger beetle.

Article 301. The licensee shall commence construction of the project works within two years from the issuance date of the license and shall complete construction of the project within 5 years from the issuance date of the license.

Article 302. The licensee shall, at least 60 days prior to the start of construction, submit one copy to the Commission's Regional Director 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 final contract drawings and specifications for pertinent features of the project, such as water retention structures, powerhouse or equivalent, and water conveyance structures. The licensee shall include, in the plans and specifications submitted, a soil erosion control plan. The Commission may require changes in the plans and specifications to assure a safe and adequate project. If the licensee plans substantial changes to location, size, type, or purpose of the water retention structures, powerhouse or equivalent, or water conveyance structures, the plans and specifications must be accompanied by revised Exhibit F and G drawings, as necessary.

Article 303. Within 90 days after finishing construction, the licensee shall file, for Commission approval, eight copies of the revised exhibits A, F, and G describing the project as built.

The licensee shall submit six copies to the Commission, one copy to the Commission's Regional Director, and one to the Director, Division of Licensing and Compliance.

Article 304. Within 30 days after any changes in project lands resulting from Article 418, the licensee shall file, for Commission approval, a revised Exhibit G showing the changes in project lands.

Article 305. If the Licensee's project was directly benefitted 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 306. Before starting construction, the licensee shall review and approve the design of contractor-designed cofferdams and deep excavations, and shall make sure construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of the cofferdam, the licensee shall submit one copy to the Commission's Regional Director and two copies to the Commission (one of these copies shall be a courtesy copy to the Commission's Director, Division of Dam Safety and Inspections), of the approved cofferdam construction drawings and specifications, and the letters of approval.

Article 401. The licensee shall, within 2 years of license issuance, install an inflatable rubber dam at the Holyoke dam and provide for the operation and maintenance of the rubber dam once constructed.

Within 180 days from the date of issuance of this license, the licensee shall file, for Commission approval, a plan to replace the existing wooden flashboards along the crest of the Holyoke dam with an inflatable rubber dam. The plan shall specify how the licensee will minimize construction-related effects on water quality, fisheries and aquatic resources, and recreational activities during construction and installation, and ensure that the rubber dam is properly operated and maintained for the period of the license.

The plan shall include, but not be limited to: (1) functional design drawings; (2) an installation and implementation schedule; (3) procedures for installing the rubber dam, including measures to maintain impoundment elevations as

specified by Article 405, and minimizing effects on impoundment boaters during the period of installation as stipulated in Article 419; (4) appropriate sediment and erosion control measures as required by Article 402; and (5) a provision to release the minimum flow and zone-of-passage flow required by this license during installation of the rubber dam, unless it can be demonstrated to the Commission that maintaining such flows is not feasible or is inconsistent with the safe and prudent operation of the project.

The licensee shall prepare the plan after consultation with the aforementioned agencies. 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 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 project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. Any flow release mechanism(s) or structure(s) constructed by the licensee shall be shown on the as-built drawings filed pursuant to Article 303 of this license.

Article 402. At least 90 days before the start of any construction-related activities, including but not limited to land-disturbing, land-clearing, and spoil-producing activities, the licensee shall file, with the Commission for approval, and with the Massachusetts Department of Environmental Protection (MDEP), a final construction control plan for the purpose of controlling erosion, bank stability, sedimentation, turbidity, and water pollutant effects.

Relevant plans shall be developed for all construction-related activities, including but not limited to, construction of the rubber dam, Overflow No. 2 weir, Bascule gate fly-over, eel ladder, canal sandbag weirs, and excavation activities in the tailrace. The plan shall be based on: (1) actual-site geological, soil, slope, and groundwater conditions; and (2) the final project designs for all associated temporary and permanent features.

The plan shall contain, at a minimum, the following six items:

- (1) a description of the actual site conditions;

- (2) measures proposed to control erosion, to prevent slope instability, and to minimize the quantity of sediment resulting from construction activities;
- (3) detailed descriptions, final drawings and specifications, and specific topographic locations of all control measures;
- (4) specific details of site preparation and restoration including grading, revegetation, and fuel storage;
- (5) pre-construction sediment sampling in areas with potential contaminated sediments with a requirement for removing any contaminated sediments found prior to construction; and
- (6) a specific implementation schedule and details for monitoring and maintenance programs during construction activities and site restoration.

The licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the MDEP and the Massachusetts Division of Fisheries and Wildlife. The licensee shall include with the plan documentation of consultation with the agencies and copies of agency comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the plan accommodates all agency comments and recommendations. The licensee shall allow a minimum of 30 days for the agencies to comment and make recommendations prior to filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on geological, soil, and groundwater conditions at the site.

The Commission reserves the right to require changes to the plan. No construction-related activities shall begin 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 403. Within 180 days after the date of issuance of this license, the licensee shall file, for Commission approval, a plan for inventorying, evaluating, stabilizing and monitoring shoreline erosion sites in the project area. Inventorying and evaluating components of the plan shall apply to all shoreline erosion sites that have been identified in either of the license applications filed for the project, but not limited to these sites. Stabilization of erosion sites shall only apply to those sites that are shown to have been caused by past and present project operations as determined from the results of site evaluations.

The plan shall include, at a minimum, the following items:

- (1) a report, with supporting information, that identifies the characteristics of each site, such as the length, height, adjacent land use, identifiable effects (e.g., natural vegetation loss, farmland loss, infrastructure damage--roads, pipelines), and the cause of erosion for each site;
- (2) a general map of the project area that identifies and shows the location of each of the erosion sites and adjacent land use;
- (3) detailed descriptions, functional design drawings, and specific topographic locations for all remediation measures proposed for each of the sites identified for remediation;
- (4) a specific implementation schedule and detailed cost estimates for the remediation treatments described in item (c) above, specific provisions for obtaining necessary permits and property owner agreements for plan implementation, and specific provisions for the ongoing monitoring and maintenance of the specified treatment measures, after their implementation, to ensure their long-term effectiveness.

The licensee shall prepare the plan after consultation with the National Resources Conservation Service, the Massachusetts Department of Environmental Management, the Massachusetts Department of Environmental Protection, and regional and local agencies as appropriate. 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 consulted entities' recommendations are accommodated by the plan. The licensee shall allow a minimum of 30 days for the consulted entities to comment on the plan 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 actual site conditions.

The Commission reserves the right to require changes to the plan. No erosion site remediation work shall begin 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. The licensee shall solicit and coordinate the cooperation of other parties in implementing the approved plan.

Article 404. Within 180 days from the date of issuance of this license, the licensee shall file, for Commission approval, a

water quality monitoring plan. The plan shall ensure, to the degree possible through the operation of the Holyoke Project, that state and federal water quality standards are met.

The objectives of the water quality monitoring plan shall be to: (1) monitor the effects of project operation on project waters and the Connecticut River downstream of the Holyoke Project; (2) determine if bypassed reach minimum flows required by this license are adequate to ensure that water temperature and dissolved oxygen meet state standards; and (3) monitor the effects of construction-related activity on water quality. The water quality monitoring plan shall include periodic or continuous water quality sampling at sites within the project impoundment and Hadley Falls tailrace, Holyoke canal system, bypassed reach, and appropriate areas downstream from the project, and for periods and seasons sufficient to determine compliance with water quality standards, including dissolved oxygen, dissolved nitrogen, water temperature, and fecal coliform. At a minimum, the sites shall include the Hadley Falls station intake and Cove Island, below the Bascule gate, and in the Hadley Falls tailrace, the project bypassed reach and the Holyoke canals.

The plan shall include, but not be limited to: (1) a description of sampling locations and frequencies, parameters to be measured, and the analytical methods; (2) descriptions of all mechanisms and structures used to monitor water quality; (3) the methods for recording and maintaining data, and providing relevant data to the Commission and resource agencies for review; and (4) an evaluation of monitoring results and appropriate recommendations for further actions, if needed.

The plan also shall include a schedule for: (1) implementation of the monitoring plan; (2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and (3) filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the monitoring plan after consultation with the U.S. Fish and Wildlife Service, the Massachusetts Division of Fisheries and Wildlife, and the Massachusetts Department of Environmental Protection. The licensee shall include with the monitoring plan documentation of consultation and 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 monitoring plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the monitoring plan with the Commission. 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 require changes to the monitoring plan. Upon Commission approval, the licensee shall implement the monitoring plan, including any changes required by the Commission. If the results of monitoring indicate that changes in project structures or operations are necessary to ensure compliance with state water quality standards, the Commission may direct the licensee to modify project structures or operations.

Article 405. The licensee shall operate the project in a run-of-river mode and maintain a minimum impoundment elevation of 100.6 feet National Geodetic Vertical Datum with an allowable fluctuation of ± 0.2 foot for the protection of water quality, aquatic and fisheries, and recreational resources of the Holyoke Project and Connecticut River.

The licensee shall at all times act to minimize the fluctuation of the impoundment surface elevation by maintaining a discharge from the project so that, at any point in time, flows, as measured immediately downstream of the project tailrace, approximate the sum of the inflows to the project impoundment.

The run-of-river mode operation and minimum impoundment surface elevation may be temporarily modified if required by operating emergencies beyond the control of the licensee (e.g., extreme runoff events, droughts, ice conditions, equipment failure, or flood storage requirements), and for short periods upon mutual agreement between the licensee, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the Massachusetts Department of Environmental Protection, and the Massachusetts Division of Fisheries and Wildlife. If project operations are so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each incident.

Article 406. The licensee shall release seasonally-adjusted minimum flows into the bypassed reach and canal system for the protection and enhancement of water quality and aquatic and fisheries resources.

The licensee shall release continuous instantaneous minimum flows to the bypassed reach as follows:

<u>Period</u>	<u>Flow</u>
July 16 through March 31	at least 420 cfs, or impoundment inflow, whichever is less

April 1 through July 15	at least 800 cfs, or impoundment inflow, whichever is less
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The licensee shall release continuous instantaneous minimum flows to the canal system as follows:

<u>Period</u>	<u>Flow</u>
April 1 through November 15	at least 810 cfs, or impoundment inflow minus fish passage and bypassed reach minimum flows, whichever is less
November 16 through March 31	at least 400 cfs, or impoundment inflow minus fish passage and bypassed reach minimum flows, whichever is less

The licensee shall operate the Holyoke Project according to the following flow prioritization scheme: (1) fish passage flows (Articles 411, 412, and 413); (2) bypassed reach flows; (3) minimum canal flows; and (4) hydroelectric generation, to the extent that such priorities do not conflict with Condition 16 of the Section 401 water quality certification attached as part of this license.

The licensee shall specify the methods for operating and releasing bypassed reach and canal system minimum flows as required by Article 407 of this license, and shall monitor compliance with the minimum flows as required by Article 408.

Releases from the Holyoke Project may be temporarily modified if required by operating emergencies beyond the control of the licensee (e.g., extreme runoff events, droughts, ice conditions, equipment failure, or flood storage requirements), or for short periods upon mutual agreement between the licensee, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the Massachusetts Department of Environmental Protection, and the Massachusetts Division of Fisheries and Wildlife. If the flows are so modified, the licensee shall notify the Commission in advance if known or as soon as possible otherwise, but no later than 10 days after each such incident, and shall provide the reason for the modified flow.

Changes to this article's minimum flow requirements may be made through the provisions outlined in the monitoring plans required by Articles 404, 409, and 410. If the information reported pursuant to these articles indicates that a different

flow regime is needed to protect and enhance water quality or aquatic and fisheries resources in the project vicinity of the Connecticut River, the Commission may require such changes.

Article 407. Within 180 days from the date of issuance of this license, the licensee shall file, for Commission approval, a plan describing the methods for operating the Holyoke Project and releasing flows at the project, in accordance with the operational and flow requirements of this license, including run-of-river operation, bypass flows, and fish passage operational flows.

The plan shall also include, but not be limited to, a description of: (1) the mechanism(s) and structure(s) that the licensee proposes to use; (2) the level of manned and automatic operation of the flow release structure(s); (3) the project modifications needed to fully implement run-of-river operations; and (4) how the operational and flow requirements of this license (including the flows required by Articles 411, 412, and 413) will be maintained during low-flow and normal operating conditions, as well as before, during or after any improvements (e.g., installation of the rubber dam and fish passage facilities), maintenance and/or repairs to the project. Particular attention shall be directed to the rubber dam and its operation and role in minimum flow releases to the bypassed reach.

The plan also shall include a schedule for: (1) implementation of the plan; (2) consultation with the appropriate federal and state agencies concerning the proposed method(s) of releasing the required flows; and (3) filing the 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, the National Marine Fisheries Service, the Massachusetts Division of Fisheries and Wildlife, and the Massachusetts Department of Environmental Protection. 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 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 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 project-specific information.

The Commission reserves the right to require changes to the plan. Construction of any flow release mechanism(s) or structure(s) shall not begin until the licensee is notified by the Commission that the filing is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission according to the approved

schedule. Any flow release mechanism(s) or structure(s) constructed by the licensee shall be shown on the as-built drawings filed pursuant to Article 303 of this license.

If the information reported pursuant to Articles 404, 408, and 410 indicates that a different flow regime or method of achieving the flow regime is necessary to provide adequate protection and enhancement of water quality or aquatic and fisheries resources in the project vicinity of the Connecticut River, the Commission may require such changes.

Article 408. Within 180 days from the date of issuance of this license, the licensee shall file, for Commission approval, a plan to monitor run-of-river operation, as well as the minimum flows and fish passage flows required by this license.

The plan shall provide a means to: (1) independently verify compliance with run-of-river operation and the minimum flow requirements of this license, before and after installation of the rubber dam; and (2) allow agencies to consult regarding the methods to be used. The plan shall identify the flow and operations monitoring methods and locations necessary to ensure that flows are released in a manner consistent with Articles 409 and 410, including canal flow circulation and distribution of flows in the bypassed reach (including channel-specific and total bypass flows, as necessary).

The plan shall include, but not be limited to: (1) planned locations of the flow measuring devices; (2) specific measures that would ensure that the monitoring system would operate under all conditions; (3) the design of the devices, including any pertinent hydraulic calculations and technical specifications of proposed instrumentation; (4) descriptions of the relative extent of manned versus automatic operation of the monitoring equipment; (5) descriptions of the methods and schedule for calibration of the monitoring equipment; (6) the method of flow data collection and provisions for providing data to the regulatory agencies to verify compliance; and (7) measures to verify accuracy of flow measurements or releases following any substantial modification of flow release structures.

The plan also shall include a schedule for (1) installing all operational measuring devices; (2) implementing the plan; (3) consulting with the appropriate federal and state agencies concerning the data from the monitoring; and (4) filing the data, agency comments, and licensee's response to agency comments with the Commission.

The monitoring plan shall include provisions consistent with the emergency notification requirements for run-of-river operation and the minimum flows required by this license. In addition, should impoundment elevations or minimum flows, as

measured by the approved monitoring plan, fall below the levels required by this license, the plan shall include a provision whereby the licensee files with the Commission a report of the incident within 30 days of the incident. The licensee shall prepare the report in consultation with the U.S. Fish and Wildlife Service (FWS)

The report shall, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report also shall include: (1) operational data necessary to determine compliance with this article; (2) a description of any corrective measures implemented at the time of the occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and (3) comments or correspondence, if any, received from FWS, NMFS, MDFW, and MDEP regarding the incident. Based on the report and the Commission's evaluation of the incident, the Commission reserves the right to require modifications to project facilities and operations to ensure future compliance.

The licensee shall prepare the plan after consultation with the FWS, the U.S. Geological Survey, NMFS, MDFW, and MDEP. 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. No ground-disturbing or land-clearing activities for installation and use of monitoring devices shall begin until the licensee is notified that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 409. Within 180 days from the date of issuance of this license, the licensee shall file, for Commission approval, a comprehensive canal operations plan. The plan shall describe the operational and maintenance measures that will be used to protect and enhance water quality and mussel populations in the canal system.

The plan shall include, but not be limited to: (1) a description of how the minimum flows required by the license will be circulated through the three-level canal system to improve and maintain water quality and aesthetic conditions; (2) specific

procedures for installing a sandbag weir, or other appropriate measures, to maintain watered conditions in areas of the canal necessary to maintain mussel habitat; (3) description of any modification of structures necessary to achieve minimum canal flow requirements and conditions protective of mussels during maintenance drawdowns; (4) a description of how the minimum canal flows required by this license will be maintained during canal maintenance drawdowns; and (5) a method and schedule for monitoring the effectiveness of minimum canal flow requirements in protecting and enhancing mussel populations per Article 410.

The plan also shall include a schedule for: (1) implementation of the monitoring plan; (2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and (3) 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, Massachusetts Division of Fisheries and Wildlife, and Massachusetts 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. No ground-disturbing or land-clearing activities for installation and use of monitoring devices shall begin until the licensee is notified the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. If the results of monitoring indicate that changes in project structures or operations are necessary to protect and enhance water quality and mussel populations in the canal system (e.g., canal operations and/or structures), the Commission may direct the licensee to modify project structures or operations.

Article 410. Within 180 days after the date of issuance of this license, the licensee shall file, for Commission approval, a plan to monitor fish and aquatic habitat and fish populations within the bypassed reach and the Holyoke canals. The plan shall provide for monitoring the effectiveness of the bypassed reach and canal flows and other measures in protecting and enhancing fish and mussel habitat conditions and populations, and to determine the need for additional enhancement measures.

The plan shall include methods to monitor and assess: (1) the adequacy of bypassed reach flows to provide a safe zone of passage for anadromous fish through the bypassed reach; (2) the occurrence of fish stranding in the bypassed reach; (3) fish populations in the bypassed reach; and (4) changes in canal mussel populations and the adequacy of the sandbag weir, minimum flows, and drawdown procedures for protecting mussel populations in the canal system.

As part of the monitoring plan, the licensee shall determine the need for additional measures to ensure or enhance the safe passage of shortnose sturgeon through the bypassed reach as required by Articles 412 and 416. Such measures may include, but not be limited to: (1) changes in zone-of-passage flows and/or timing (pulsed flows); (2) changes in bypass aquatic habitat flows; and/or (3) bypass reach channel modifications. The plan shall include working in conjunction with the Connecticut River Shortnose Sturgeon Working Group and/or its findings to determine the most beneficial project modifications that would meet plan requirements and protection measures for the shortnose sturgeon.

The plan shall include a schedule for: (1) implementing the plan; (2) consulting with the appropriate federal and state agencies concerning the results of the study and any additional measures needed to protect aquatic and fisheries resources and mussel populations; (3) reporting on a biannual, or other appropriate interval, on anadromous fish and mussel populations, with a final report and recommendations at the end of the agreed-to monitoring period; and (4) filing the results, agency comments, and the licensee's response to agency comments with the Commission. The final report shall: (1) identify the changes in populations over time; (2) outline the proposals for changes in operations or structures, if any, to protect and enhance fish or mussel populations; and (3) discuss the basis and need for continued monitoring.

The licensee shall prepare the monitoring plan after consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, the Massachusetts Division of Fisheries and Wildlife, Massachusetts Department of Environmental Protection, and Connecticut River Atlantic Salmon Commission (CRASC). The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the proposed methodology, and an implementation schedule after the plan has been provided to the agencies listed above. The licensee shall allow a minimum of 30 days for the agencies listed 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 project-specific information.

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

If the results of the monitoring plan indicate that changes in project structures or operations (including any measures identified by the licensee, the aforementioned agencies, or CRASC resulting from consultation required by this article) are necessary to protect aquatic and fisheries resources, the Commission may direct the licensee to modify project structures or operations accordingly.

Article 411. The licensee shall install, operate, and maintain downstream fish passage facilities at the Holyoke Project to provide efficient downstream fish passage for a variety of anadromous fish species past the project.

Within 180 days after the date of issuance of this license, the licensee shall file, for Commission approval, a plan to install, operate, maintain, and, as appropriate, evaluate downstream fish passage facilities at the Holyoke Project that includes, but is not limited to:

- (1) provisions for the continued operation of the canal louver bypass facility and the Boatlock station downstream fish passage facility (as necessary), as well as the operation of the proposed Bascule gate downstream fish passage facility once installed;
- (2) a provision to operate the downstream fish passage facilities, as identified below, during the designated migration period whenever the Hadley Falls station is operating or generation flows are provided in the First Level canal --

<u>Species</u>	<u>Downstream</u>
Atlantic salmon	4/1 - 6/15 (juv.) Fall/Winter (adult)
American shad & Blueback herring	6/1 - 7/31 (adult) 9/1 - 11/15 (juv.)
Shortnose sturgeon	4/1 - 11/15 (adult)
American eel	8/15 - 11/15 Undetermined spring run

- (3) a schedule for implementing the provisions of this plan, including the installation of all facilities and structures, except as specifically noted, within two years of license issuance;

- (4) provisions to notify the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), Massachusetts Division of Fisheries and Wildlife (MDFW), and Connecticut River Atlantic Salmon Commission (CRASC) of any extensions of time to comply with the provisions of this plan;
- (5) provisions for: (a) maintaining the fish passage facilities in proper order and keeping such facilities clear of trash, logs, and material that would hinder passage; (b) performing maintenance such that the fish passage facilities would operate effectively prior to and during the migratory periods; and (c) developing a fish passage maintenance plan describing the anticipated maintenance, a maintenance schedule, and contingencies;
- (6) a provision to allow agency personnel access to the project site and to pertinent project records, for the purpose of inspecting the fish passage facilities;
- (7) a provision to construct the downstream fish passage facility at the spillway Bascule gate (i.e., fly-over), with a surface intake, conforming to the design depicted in hydraulic model studies undertaken by Holyoke Power, including measures to manage flows that are shed through the structure to eliminate interference with the spillway fishlift attraction flows;
- (8) specification of the operational flows for the Bascule gate [i.e., 600 cubic feet per second (cfs)], louver bypass, and Boatlock station downstream fish passage facilities;
- (9) a provision to design, model, and install an angled ($\approx 45^\circ$) bar rack in the Hadley Falls station forebay, with 1-inch clear bar spacing, leading to a downstream fish bypass entrance/conveyance structure located at the existing Bascule gate, or at the rubber dam;
- (10) an evaluation of the existing surface bypass and partial-depth louver structure in the First Level canal, as well as other reasonable measures, for providing downstream passage of shortnose sturgeon and American eel;
- (11) a provision to continue operating the existing Boatlock station downstream migrant facility, and an evaluation of the facility to determine whether the facility should cease operation;

- (12) the estimated capital cost of installing the facilities, the estimated annual costs of operating and maintaining the facilities, and the cost, in lost generation, of operating the facilities; and
- (10) provisions for providing any proposals to modify existing facilities and/or install new facilities, relative to the evaluations of Items 9, 10, and 11 above, as well as the monitoring required by Article 414, to the aforementioned agencies and the Commission.

The licensee shall prepare the aforementioned plan for downstream fish passage (including all functional and final designs, construction schedules, and hydraulic modeling or other studies) after consultation with FWS, the NMFS, MDFW, the Massachusetts Department of Environmental Protection, and CRASC. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the plan after it has been prepared and provided to the agencies and CRASC, and specific descriptions of how the agencies' and CRASC's comments are accommodated by the licensee's plan. The licensee shall allow a minimum of 30 days for the agencies and CRASC 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 project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of any provision outlined in the plan shall not commence until the licensee is notified by the Commission that the filing is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. Any structure built in accordance with this plan shall be shown on the as-built drawings filed pursuant to Article 303 of this license.

Article 412. The licensee shall install, operate, and maintain upstream fish passage facilities at the Holyoke Project to provide efficient upstream fish passage for a variety of anadromous fish species past the project.

Within 180 days after the date of issuance of this license, the licensee shall file with the Commission, for approval, a plan to install, operate, maintain, and, as appropriate, evaluate upstream fish passage facilities at the Holyoke Project that includes, but is not limited to:

- (1) provisions for the continued operation of the tailrace and spillway fishlifts;
- (2) specification of the design population for each target species (i.e., 1,000,000 each for American shad and

blueback herring; 6,000 for Atlantic salmon; unquantified for American eels, and an estimated 500 shortnose sturgeon);

- (3) a provision to operate the upstream fishlifts during the designated migration seasons, as identified below, at flows up to 40,000 cubic feet per second (cfs), as measured at USGS Gage No. 01172003 --

<u>Species</u>	<u>Upstream</u>
Atlantic salmon	4/1 - 7/15 9/15 - 11/15
American shad & Blueback herring	4/1 - 7/15
Shortnose sturgeon	6/1 - 11/15
American eel	4/1 - 11/15

- (4) a schedule for implementing the provisions of this plan, including the installation of all facilities and structures, except as specifically noted, within two years of license issuance;
- (5) provisions to notify the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), Massachusetts Division of Fisheries and Wildlife (MDFW), and Connecticut River Atlantic Salmon Commission (CRASC) of any extensions of time to comply with the provisions of this plan;
- (6) provisions for: (a) maintaining the fish passage facilities in proper order and keeping such facilities clear of trash, logs, and material that would hinder passage; (b) performing maintenance such that the fish passage facilities would operate effectively prior to and during the migratory periods; and (c) developing a fish passage maintenance plan describing the anticipated maintenance, a maintenance schedule, and contingencies;
- (7) a provision to allow agency personnel access to the project site and to pertinent project records, for the purpose of inspecting the fish passage facilities;
- (8) a provision to make necessary physical modifications to the upstream fishlift system to ensure operation up to 40,000 cfs, and to provide at least 12 inches of freeboard from operating water levels in the fishlifts to the top of the fishlift walls and fish crowders;
- (9) a provision to expand the spillway and tailrace fishlifts by (a) increasing width of the spillway entrance and the spillway entrance channel to 8 feet,

- (b) providing attraction flows of 200 cfs at the spillway fishlift entrance and 120 cfs at each of the tailrace fishlift's entrance, (c) increasing the tailrace fishlift hopper capacity to 330 cubic feet, (d) increasing the spillway fishlift hopper capacity to 460 cubic feet, (e) increasing the width of the fishlift exit channel to 14 feet from the fishlift hoppers to the counting station and 10 feet beyond, and (f) providing an adjustable back lighted panel at all fish counting station windows;
- (10) a provision to install a second fish trapping and counting station in the fishlift exit channel;
- (11) a provision to (a) install a new fish trapping and hauling system, as proposed by HG&E (see response to additional information request, Item 6.C.3, filed December 23, 1998), or, (b) if such a facility is determined not to be feasible, evaluate other mechanisms and/or procedures to enhance trapping and hauling operations at the Holyoke Project, and provide any relevant proposals in this regard;
- (12) provisions to remove the rock-outcropping at the entrance of the tailrace fishlift below Unit #2 to allow efficient operation of this entrance, and provide bottom-level access to the tailrace and spillway fishlifts, as necessary;
- (13) a provision to construct a barrier at the confluence of the Hadley Falls tailrace and the Overflow No. 2 channel; and
- (14) the estimated capital cost of installing the facilities, the estimated annual costs of operating and maintaining the facilities, and the cost, in lost generation, of operating the facilities.
- (15) provisions for providing any proposals to modify existing facilities and/or install new facilities, relative to the monitoring required by Article 414, to the aforementioned agencies and the Commission.

The licensee shall prepare the aforementioned plan for upstream fish passage (including all functional and final designs, construction schedules, and hydraulic modelling or other studies) after consultation with FWS, NMFS MDFW, Massachusetts Department of Environmental Protection, and CRASC. The licensee shall include with the plan, documentation of consultation, copies of comments and recommendations on the plan after it has been prepared and provided to the agencies and CRASC, and specific descriptions of how the agencies' and CRASC's comments

are accommodated by the licensee's plan. The licensee shall allow a minimum of 30 days for the agencies and CRASC 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 project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of any provision outlined in the plan shall not commence until the licensee is notified by the Commission that the filing is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. Any structure built in accordance with this plan shall be shown on the as-built drawings filed pursuant to Article 303 of this license.

Article 413. The licensee shall install, operate, and maintain appropriate upstream and downstream fish passage facilities at the Holyoke Project to provide efficient fish passage for American eel past the project.

Within 180 days after the date of issuance of this license, the licensee shall file with the Commission, for approval, a plan to install, operate, maintain, and, as appropriate, evaluate upstream and downstream fish passage facilities at the Holyoke Project that includes, but is not limited to:

- (1) a provision to operate the upstream and downstream fish passage facilities for American eel, once constructed, in accordance with the schedules identified in Articles 411 and 412;
- (2) a schedule for implementing the provisions of this plan, including the installation of all facilities and structures, except as specifically noted, within two years of license issuance;
- (3) provisions to notify the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), Massachusetts Division of Fisheries and Wildlife (MDFW), and Connecticut River Atlantic Salmon Commission (CRASC) of any extensions of time to comply with the provisions of this plan;
- (4) provisions for: (a) maintaining the fish passage facilities in proper order and keeping such facilities clear of trash, logs, and material that would hinder passage; (b) performing maintenance such that the fish passage facilities would operate effectively prior to and during the migratory periods; and (c) developing a fish passage maintenance plan describing the

anticipated maintenance, a maintenance schedule, and contingencies;

- (5) a provision to allow agency personnel access to the project site and to pertinent project records, for the purpose of inspecting the fish passage facilities;
- (6) a provision to construct three upstream fish ladders for American eels, including final functional design drawings for: (a) one ladder on the South Hadley side of the Holyoke dam [see Holyoke Power's response to Item 6 in HWP (1998c)], and (b) one eel ladder at each of the spillway and tailrace fishlifts [see Figures 6(A)-1 and 6(A)-2 of HG&E (1998b)];
- (7) specification of the operational flows for the upstream and downstream fish passage facilities, including the upstream eel ladders installed in accordance with Item (6) above;
- (8) provisions to: (a) install an angled bar rack as stipulated in Article 411; (b) study out-migrating, silver-phase, American eels at the Holyoke Project; and (c) evaluate the canal louver facility and other reasonable measures to provide downstream passage of American eel, as stipulated in Article 411;
- (9) the estimated capital cost of installing the facilities, the estimated annual costs of operating and maintaining the facilities, and the cost, in lost generation, of operating the facilities; and
- (10) provisions for providing any proposals to modify existing facilities and/or install new facilities, relative to the evaluations of Items 8(b) and 8(c) above, and the monitoring required by Article 414, to the aforementioned agencies and the Commission.

The licensee shall prepare the aforementioned plan for American eel passage and protection (including all functional and final designs, construction schedules, and hydraulic modelling or other studies) after consultation with FWS, NMFS, MDFW, the Massachusetts Department of Environmental Protection, and CRASC. The licensee shall include with the plan documentation of consultation; copies of comments and recommendations on the plan after it has been prepared and provided to the agencies and CRASC; and specific descriptions of how the agencies' and CRASC's comments are accommodated by the licensee's plan. The licensee shall allow a minimum of 30 days for the agencies and CRASC 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 project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of any provision outlined in the plan shall not commence until the licensee is notified by the Commission that the filing is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. Any structure built in accordance with this plan shall be shown on the as-built drawings filed pursuant to Article 303 of this license.

Article 414. Upon completing construction of new, or modifications to existing, upstream and downstream fish passage facilities required by Articles 411, 412, and 413, the licensee shall monitor the use and effectiveness of the upstream and downstream fish passage facilities.

Within 180 days after the date of issuance of this license, the licensee shall file, for Commission approval, a plan for post-construction studies to monitor the effectiveness of the new or modified upstream and downstream fish passage facilities, and the associated operational and attraction flows, to efficiently pass upstream and downstream migrating anadromous fish. The plan shall include a provision to modify the upstream and downstream fish passage facilities at the project, project facilities and/or operation, or the bypass channel configuration, as needed, to ensure effective fish passage.

The monitoring plan shall include the specific provisions for monitoring the effectiveness of the new or modified upstream and downstream fish passage facilities, as well as a schedule for: (1) implementation of the plan; (2) consultation with the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), Massachusetts Division of Fisheries & Wildlife (MDFW), and Connecticut River Atlantic Salmon Commission (CRASC) concerning the results of the monitoring; and (3) filing the results, the agencies', and CRASC's comments, and the licensee's response to the agency and CRASC comments, with the Commission.

The licensee shall prepare the aforementioned fish passage monitoring plan after consultation with FWS, NMFS, MDFW, Massachusetts Department of Environmental Protection, and CRASC. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the plan after it has been prepared and provided to the agencies and CRASC, and specific descriptions of how the agencies' and CRASC's comments are accommodated by the licensee's plan. The licensee shall allow a minimum of 30 days for the agencies and CRASC 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 project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of any provision outlined in the plan shall not commence until the licensee is notified by the Commission that the filing is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

If the results of the monitoring indicate that changes in project structures or operations, including alternative flow requirements, are necessary to facilitate fish passage, the Commission may direct the licensee to make such reasonable changes in the design of the facilities and/or operations, as necessary.

Article 415. Authority is reserved to the Commission to require the Licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of, such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate, pursuant to Section 18 of the Federal Power Act.

Article 416. Within one year after the date of issuance of this license, the licensee shall, after consultation with the U.S. Fish and Wildlife Service (FWS), Silvio O. Conte National Fish and Wildlife Refuge (Refuge), National Marine Fisheries Service (NMFS), Massachusetts Division of Fisheries and Wildlife (MDFW), and Massachusetts Department of Environmental Protection (MDEP), as appropriate, file for Commission approval a Threatened and Endangered Species Protection Plan (T&E Plan) for the Holyoke Project. The T&E Plan shall include the federally listed endangered shortnose sturgeon (*Acipenser brevirostrum*), and threatened bald eagle (*Haliaeetus leucocephalus*) and Puritan tiger beetle (*Cicindela puritana*), and shall include, but not necessarily limited to, the state listed endangered yellow lampmussel (*Lampsilis cariosa*) and dwarf wedge mussel (*Alismidonta heterodon*).

The T&E Plan shall include, but not be limited to, the following:

- (1) measures to enhance bald eagle nesting sites (i.e., by erecting eagle nest platforms) and to protect and enhance eagle perching and feeding activities; a commitment to cooperate with the FWS, MDFW, and MDEM to continue educating the public and policing recreational activities at Puritan tiger beetle habitat sites (particularly at Rainbow Beach), and develop other protective measures, such as no-wake zones; measures to protect and enhance shortnose sturgeon habitat

consistent with the measures developed as the result of the on-going shortnose sturgeon studies and the provisions of Articles 405, 406, 411, and 412; and measures to protect and enhance the yellow lampmussel and dwarf wedgemussel, as identified in the canal operations plan (Article 409);

- (2) a schedule for implementing the measures;
- (3) a description of the method for monitoring the results of the implemented measures;
- (4) a monitoring schedule; and
- (5) a schedule for providing the monitoring results to FWS, the Refuge, NMFS, MDFW, and the Commission.

The licensee shall include in the T&E Plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to FWS, the Refuge, NMFS, MDFW, and MDEP, and descriptions of how the agencies' comments and recommendations are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment 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 project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the T&E Plan, including any changes required by the Commission.

Article 417. Within 180 days of the issuance date of this license, the licensee, after consultation with the U.S. Fish and Wildlife Service (FWS, Massachusetts Division of Fisheries and Wildlife (MDFW), and Massachusetts Department of Environmental Protection (MDEP), file for Commission approval a plan to monitor purple loosestrife (*Lythrum salicaria*), water chestnut (*Trapa natans*), and zebra mussel (*Dreissena polymorpha*) in project waters.

The plan shall include, but not be limited to:

- (1) a description of the monitoring method;
- (2) a monitoring schedule;
- (3) a schedule for providing the monitoring results to FWS and MDFW;

- (4) documentation of agency consultation, including copies of comments and recommendations on the completed plan; and
- (5) 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 on the plan and to make recommendations prior to filing the plan with the Commission. 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 require changes to the plan.

If at any time during the term of the license, the FWS and/or the MDFW demonstrate that purple loosestrife, water chestnut, or zebra mussels are significantly affecting fish and wildlife populations at the project and control measures are needed, and the Commission agrees with those determinations, the Commission may require the licensee to cooperate with the FWS and the MDFW to undertake reasonable measures to control or eliminate these species in project waters.

Article 418. Within 180 days after the date of issuance of this license, the licensee shall, after consultation with the agencies and non-governmental organizations specified herein, develop and file, for Commission approval, a Comprehensive Recreation and Land Management Plan (CRLMP) for the Holyoke Project. The CRLMP shall include a Recreation Plan, Land Management Plan, and Buffer Zone Management Plan.

The licensee shall include in the CRLMP documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the City of Holyoke, Connecticut River Channel Marking Committee, Massachusetts Division of Fisheries and Wildlife, Massachusetts Department of Environmental Management, Massachusetts Department of Environmental Protection, Connecticut River Greenway State Park, Trustees of Reservation, U.S. National Park Service, Pioneer Valley Planning Council, Town of South Hadley, Department of the Interior, National Marine Fisheries Service, local marinas, Connecticut River Watershed Council, and Trout Unlimited; and specific descriptions of how the consulted parties' comments and recommendations are accommodated by the plan. The licensee shall allow a minimum of 30 days for the consulted parties to comment 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 project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing activities shall begin at the Holyoke

Project until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the CRLMP, including any changes required by the Commission.

Recreation Plan

The licensee shall prepare the Recreation Plan after consulting with the parties specified above. The Recreation Plan shall include, but not be limited to, the following:

The recreation component of the plan should address, at a minimum: (1) future recreation needs at the project for the term of the license; (2) alternative uses for Cove Island; (3) administering recreational use, including strategies for minimizing conflicts among users; (4) facility development, including improving the Robert E. Barrett Fishway, three composting toilets, a trail along the South Hadley Canal, and a trail in South Hadley at the riverside park site (according to design by Berkshire Design Group, letter by Ronald A. Kreisman, Counsel for the Town of South Hadley, Hallowell, Maine, January 2, 1999); (5) operation and maintenance of the recreational facilities; (6) site plans; (7) participating in the channel marking program by funding, at a minimum, \$5,000 per year, adjusted annually for inflation; (8) recreational carrying capacity of the impoundment; (9) improved boat facilities at existing public facilities; (10) adequate provisions to ensure facilities and programs, including improved access for bank anglers, are accessible for people with disabilities; (11) disposition and use of the Texon Mill complex; (12) hiking and walking trails; (13) camping facilities; (14) coordinating management of the Dinosaur Footprints Reservation with adjacent Holyoke Power-owned property; (15) information facilities (e.g. signage, brochures) for resource interpretation and education; (16) portage access around the dam; (17) continue sponsoring the annual shad derby and consider substituting or adding a recreational striped bass derby; (18) providing adequate advance warning to the public regarding major water level fluctuations and significant releases downstream from the project dam; (19) resource protection; (20) a plan and schedule for periodically assessing recreational use and needs and its effects on sensitive wildlife habitat areas in the Holyoke impoundment and project area, including a provision to revise the plan if needed; and (21) include estimated cost and the staff necessary to develop and implement the monitoring program.

The license shall include with the recreation plan a construction schedule, the entity responsible for operation and maintenance of the facilities, costs for the construction and yearly maintenance of each facility, and a discussion of how the recreational facilities are visually compatible with the project

area. The plan shall be prepared in conjunction with the Land Management Plan, and the Buffer Zone Management Plan.

Land Management Plan

The licensee shall prepare the Land Management Plan after consulting with the parties specified above. The Land Management Plan shall include, but not be limited to, the following: (1) conservation easements on, or restricted use of, the Bachelor Brook/Stony Brook natural area, Log Pond Cove, Rainbow Beach, Cove Island, Connecticut River Water Trail sites in Sunderland, Red Rock complex, Hadley Cove and Sandy Beach area, and Hockonum Flats; (2) strategies for maintaining open space, public access, preserving wildlife habitat on lands currently around the Holyoke impoundment, and as appropriate, implementing best management practices on private land around the impoundment.

The licensee shall include with the land management plan an implementation schedule and the cost of implementing the plan. The plan shall be prepared in conjunction with the Recreation Plan, and the Buffer Zone Management Plan.

Buffer Zone Management Plan

The licensee shall prepare the Buffer Zone Management Plan after consulting with the parties specified above. The Buffer Zone Management Plan shall include, but not be limited to, the following: (1) provisions that specify allowable uses within the buffer zone and standards and guidelines for the allowable uses; (2) maps delineating the shore land protective buffer zone area; (3) the criteria used for selecting the buffer zone widths, and provisions to: (a) maintain a prescribed minimum-width for a no tree-cutting zone around the project impoundments, and (b) carefully plan any vegetation clearing activities adjacent to the buffer zone, including any special consideration to the scale and pattern of any areas where cutting is performed; (4) measures to ensure that maintenance of project transmission lines rights-of-ways near the shoreline areas is performed in a way that minimizes adverse aesthetic effects caused by the maintenance of vegetation; (5) measures to screen or soften by supplemental landscape plantings in areas where facilities, and other negative visual features are visible from the shoreline, impoundment, or other adjacent critical viewpoints. This screening work should be implemented as needed. Further, the licensee should conduct a periodic inspection of project lands to identify any features in need of screening or general clean-up, and subsequently take remedial action, and monitor the shorelines for unauthorized activity. In addition, the plan shall: (1) address measures for long term conservation of the riparian areas; (2) specify allowable uses within the riparian areas and how conflicts among uses are to be minimized; (3) specify where access to project

waters will be provided for recreational purposes; and (4) propose specifically how the plan is to be implemented.

The licensee shall include with the buffer zone management plan an implementation schedule and the cost of implementing the plan. The plan shall be prepared in conjunction with the Recreation Plan and the Land Management Plan, and address the items listed in Condition Number 28 (Riparian Management Plan) of the Section 401 water quality certification attached as part of this license.

Article 419. At least 90 days prior to installation of the inflatable rubber dam required by Article 401, the licensee shall file, for Commission approval, a plan that outlines measures to minimize the effects on recreational boaters caused by installing the rubber dam. The plan shall, at a minimum, specify measures such as minimizing the amount of drawdown, signing, increased use of buoys, and erosion control methods to implement, if necessary, during the installation period. The filing shall include a schedule to install the inflatable rubber dam.

The licensee shall prepare the plan and schedule after consultation with the Connecticut River Channel Marking Committee, Massachusetts Division of Fisheries and Wildlife, Massachusetts Department of Environmental Management, Connecticut River Greenway State Park, and local marinas. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the plan and schedule after they have been prepared and provided to the consulted parties, and specific descriptions of how the parties' comments are accommodated by the licensee's facilities. The licensee shall allow a minimum of 30 days for the consulted parties to comment and to make recommendations before filing the plan and schedule with the Commission. 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 require changes to the proposed plan and schedule. Installation of the inflatable rubber dam shall not begin until the licensee is notified by the Commission that the filing is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 420. The licensee shall implement the "Programmatic Agreement Among The Federal Energy Regulatory Commission, the Advisory Council on Historic Preservation, and the State of Massachusetts, State Historic Preservation Officer, for Managing Historic Properties that may be Affected by a License Issuing to Either Holyoke Waterpower Company, or to the Consortium Consisting of the City of Holyoke Gas & Electric Department, Massachusetts Municipal Wholesale Electric Company,

and Ashburnham Municipal Light Plant for the Continued Operation And Maintenance of the Holyoke Hydroelectric Project in Massachusetts", executed on July 27, 1999. In the event that the Programmatic Agreement is terminated, the licensee shall implement the provisions of its approved Cultural Resources Management Plan. The Commission reserves the authority to require changes to the Cultural Resources Management Plan at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the Cultural Resources Management Plan, the licensee shall obtain Commission 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 421. (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 of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, 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 waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time 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 its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where 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. If no conveyance was made during the prior calendar year, the licensee shall so inform the Commission and the Regional Director in writing no later than January 31 of each year.

(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 marinas 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 Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under 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 changed 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 from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised Exhibit 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.

(H) 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 relating to that filing. Proof of service on these entities must accompany the filing with the Commission.

(I) 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 FPA. 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 order.

By the Commission. Commissioner Bailey dissented in part with a separate statement attached.

(S E A L)


Linwood A. Watson, Jr.,
Acting Secretary.

APPENDIX A -- Water Quality Certification Conditions

COMPLIANCE

1. The project shall be operated in accordance with the conditions contained in this certification and the provisions included in the FERC applications (#11607-000) and (#2004-073) and any modifications made thereto, to the extent such application provisions and modifications are consistent with this water quality certification. The operation of the hydrofacility shall be operated to maintain the designated uses of the Connecticut River as outlined in the Massachusetts Surface Water Quality Standards (314 CMR 4.00) and the maintenance of an integrated and diverse biological community in the Connecticut River.
2. All activities shall be conducted in compliance with the Massachusetts Wetlands Protection Act (including the Rivers Protection Act) (MGL Chapter 131, Section 40). An application for a Water Quality Certification shall be submitted and approved by the MADEP prior to any activity that will cause a discharge subject to Section 404. The licensee will be expected to develop and implement a plan to monitor and control erosion as needed to keep waters free from turbidity in concentrations that are aesthetically objectionable or would impair any use assigned to these waters.
3. The applicant shall comply with Massachusetts General Laws Chapter 91.
4. All maintenance and repair activities, including disposal of debris and removal of sediments in impounded areas, shall be conducted in a manner so as not to impair water quality.
5. Any change to the project that would have a significant or material effect on the findings, conclusions, or conditions of this certification, including project operation, must be submitted to the MADEP for prior review and written approval where appropriate and authorized by law and only as related to the change proposed.
6. The MADEP may request, at any time during which this certification is in effect, that the FERC reopen the license to make modifications necessary to maintain compliance with the Massachusetts Surface Water Quality Standards or other appropriate requirements of state law.
7. The MADEP 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 responsibilities during the life of the project with respect to water quality.

8. A copy of this certification shall be prominently posted within the project powerhouse.

RUN-OF-RIVER

9. Upon license issuance, the project shall be operated in an instantaneous run-of-river mode, which will result in the stabilization of the impoundment to within 0.2 feet of the normal pond elevation. This operation regime may be modified due to operating emergencies beyond the control of the Project Owner (e.g. extreme runoff events, droughts, ice conditions, equipment failure or flood storage requirements) that may result in conditions making the operational restrictions and requirements contained herein impossible to achieve or are inconsistent with the prudent and safe operation of the project. Under such extreme conditions operation at variance with the commitments contained in this Water Quality Certification shall not be deemed to violate this Water Quality Certification. This condition shall not be interpreted as providing the Project Owner broader authorization to operate at variance with the requirements provided herein than is provided for in the FERC license. The Project Owner shall notify the MADEP, the Massachusetts Division of Fisheries and Wildlife (MADFW) and the US Fish and Wildlife Service (USFWS) within 5 working days of such an emergency event and shall prepare and provide a report of each incident, identifying the variances from normal operations that occurred, and identifying ways of avoiding future occurrences, if applicable. The report shall be submitted no later than 45 days after the emergency condition ends.

10. Within one year of license issuance, the licensee shall consult with the MADFW and the USFWS and present to the MADEP for approval a run-of-river operation and monitoring plan and implementation schedule. The plan shall describe the methods used to monitor headpond and river flows to adjust project operations to maintain run-of-river conditions both before and after rubber dam installation. The plan shall also describe how project operation records would be maintained and made available to the FERC and resource agencies to verify compliance with run-of-river operations.

RUBBER DAM

11. Within one year of license issuance, the licensee shall submit to the MADEP for approval a plan to replace the existing wooden flashboards along the crest of the dam with an inflatable rubber fabric dam system based upon consultation with the MADFW, the USFWS, the MADEM and the MADEP. The plan should include at a minimum (1) the designs and installation schedule, (2) procedures for installing the rubber dam, including measures to minimize effects on impoundment boaters during the period of installation, and (3) appropriate erosion and sedimentation controls. The

minimum bypass reach flow shall remain 840 cfs and zone of passage flow shall remain 1300 cfs during construction unless it can be demonstrated to the MADFW, the USFWS and the MADEP this action is impossible to achieve or is inconsistent with the safe and prudent operation of the project. The licensee shall implement the plan as approved by the MADEP.

BYPASS REACH FLOWS

12. Upon license issuance, from July 15 through September 15, and between November 15 and April 1, and for any other periods of time when fish passage facilities are not in operation and flows provided for establishing a zone-of-passage are not needed, maintain a continuous minimum flow of 840 cfs in the bypass reach. If, in the future, fish passage operations are modified to include these specified times, these habitat-based flows shall be superseded by zone-of-passage flows. This operation regime may be modified due to operating emergencies beyond the control of the Project Owner (e.g. extreme runoff events, droughts, ice conditions, equipment failure or flood storage requirements) that may result in conditions making the operational restrictions and requirements contained herein impossible to achieve or are inconsistent with the prudent and safe operation of the project. Under such extreme conditions operation at variance with the commitments contained in this Water Quality Certification shall not be deemed to violate this Water Quality Certification. This condition shall not be interpreted as providing the Project Owner broader authorization to operate at variance with the requirements provided herein than is provided for in the FERC license. The Project Owner shall notify the MADEP, MADFW, and the USFWS within 5 working days of such an emergency event and shall prepare and provide a report of each incident, identifying the variances from normal operations that occurred, and identifying ways of avoiding future occurrences, if applicable. The report shall be submitted no later than 45 days after the emergency condition ends. This operating regime may also be modified during any construction activities that, as demonstrated to the satisfaction of the MADEP, make it impossible to achieve the restrictions and requirements contained herein or are inconsistent with the prudent and safe operation of the project.

13. Upon license issuance, the licensee shall release 1,300 cfs into the bypass reach from April 1 through July 15 and September 15 through November 15, as zone of passage flows for salmon and shad.

14. Within one year of license issuance, the licensee shall consult with the MADFW, the USFWS, the MADEP and the National Marine Fisheries Service (NMFS) and submit to the MADEP a plan to redistribute flow to the three channels in the bypass reach. The licensee shall implement the plan during the construction season following installation of the rubber dam as approved by the

MADEP. Upon completion of channel modifications, the licensee shall provide a continuous minimum flow of 600 cfs to the East Channel, 100 cfs to the Center Channel and 140 cfs to the West Channel. This operation regime may be modified due to operating emergencies beyond the control of the Project Owner (e.g. extreme runoff events, droughts, ice conditions, equipment failure or flood storage requirements) that may result in conditions making the operational restrictions and requirements contained herein impossible to achieve or are inconsistent with the prudent and safe operation of the project. Under such extreme conditions operation at variance with the commitments contained in this Water Quality Certification shall not be deemed to violate this Water Quality Certification. This condition shall not be interpreted as providing the Project Owner broader authorization to operate at variance with the requirements provided herein than is provided for in the FERC license. The Project Owner shall notify the MADEP, MADFW, and the USFWS within 5 working days of such an emergency event and shall prepare and provide a report of each incident, identifying the variances from normal operations that occurred, and identifying ways of avoiding future occurrences, if applicable. The report shall be submitted within 45 days after the emergency condition ends.

15. Within eighteen months of license issuance, the licensee shall consult with the MADFW and the USFWS and submit to the MADEP a plan for gauging bypass reach flows. The plan should address gauging channel specific flows once in order to calibrate flow distribution, and total flow after both rubber dam installation and channel modifications are completed. The licensee shall implement the plan as approved by the MADEP within one year after rubber dam installation and channel modifications are complete.

PROJECT FLOWS

16. Upon license issuance, the licensee shall operate the project using the following flow distribution regime during the Atlantic salmon smolt downstream migratory period (April 1 ~~to~~ July 15). Periodic review of this regime will be conducted with the license holder and the MADFW, the USFWS and the NMFS to determine effectiveness.

- 1) Flows sufficient to operate fish passage facilities
- 2) Zone of passage flows (1,300 cfs)
- 3) Canal minimum flow (810 cfs)
- 4) Hadley Falls Station to Unit One capacity (4,200 cfs)
- 5) Canal operations to canal capacity
- 6) Hadley Falls Station to capacity (if after a new full-depth screen is in place, and an evaluation shows that the new bypass there is efficient, Hadley Falls Unit 2 could be operated to capacity before the canal).

17. Within six months of license issuance, the licensee shall consult with the MADFW and the USFWS and submit to the MADEP a low flow contingency plan for allocating available flow throughout the project outside of the fish passage season. The licensee shall implement the plan as approved by the MADEP. See condition #16.

CANAL OPERATIONS

18. Upon license issuance, the licensee shall implement an interim canal-operating regime whereby flows up to 810 cfs from April 1 through November 15 and 400 cfs from November 16 through March 31 are discharged through various canal segments in accordance with the flow distribution regime described in condition #16.

19. Within three months of license issuance, the licensee shall consult with the MADFW and the USFWS and submit to the MADEP a plan to provide permanent continuous flows through the canal system. The licensee shall implement the plan as approved by the MADEP.

20. Within three months of license issuance, the licensee shall consult with the MADFW and the USFWS and submit to the MADEP a plan for protecting aquatic resources during canal drawdowns. The licensee shall implement the plan as approved by the MADEP.

21. Within one year of license issuance, the licensee shall consult with the MADFW and the USFWS and submit to the MADEP a 5-year plan for monitoring mussel populations in the canal system. The licensee shall implement the plan as approved by the MADEP. Results of the monitoring shall be submitted to the resource agencies for review. The five-year report shall identify the changes in the mussel populations over time, proposals for changes in canal operations or structures, if any, to protect mussel populations and/or the need for continued monitoring.

FISHWAYS

22. Upon license issuance, the licensee shall:

(a) Consult with the MADFW, the USFWS, the Connecticut River Atlantic Salmon Commission (CRASC) and the NMFS regarding how to improve the fishlift facilities and submit to the MADEP an implementation schedule. The licensee shall implement the improvements as approved by the MADEP. The implementation schedule shall include one year for submission to the MADEP of final design drawings and an additional year to begin construction. The licensee shall ensure lifting operations are possible up to the stated design capacity of 40,000 cfs river flow. Improvements shall include widening the existing exit flume from 7 feet to 14 feet to the counting station and to 10 feet

from the counting station to the exit, increasing the capacity of the spillway lift hopper to 460 cubic feet and the tailrace hopper to 330 cubic feet, widening the gated spillway entrance and channel to 8 feet and providing fishway entrance attraction flows of 200 cfs at the spillway entrance and 120 cfs at each of the tailrace collection gallery entrances. Within one year after completion of installation, the licensee shall submit to the MADEP a study of the facility effectiveness. The licensee shall implement any changes as approved by the MADEP.

As an alternative to improving the existing fishlift, the licensee may, within one year of license issuance notify the MADEP that the licensee would prefer to construct a new fishlift, compatible with but separate from any new generation (such as the new third turbine proposed by HGE), with capabilities at least as effective as the improved fishlift and with the same implementation schedule, consultation and approval process.

(b) operate upstream passage facilities whenever feasible beginning on or about March 15 to accommodate white sucker passage. The facilities should operate April 1 through July 15 to accommodate herring, shad and salmon as well as white sucker passage. The upstream facilities should operate September 15 through November 15 to accommodate fall salmon passage. Hours of operation will be set by the resource agencies, not by the license holder.

23. Within six months of license issuance, the licensee shall:

(a) submit to the MADEP a design for a second salmon trapping device in the fishway exit flume that has operating capabilities at least as effective as the device depicted in HGE's Application for New License, Volume 1, Section 3.1.7.2.3 after consultation with the MADFW, the USFWS and the CRASC. The licensee shall implement the design as approved by the MADEP. The design shall include an implementation schedule for installation and be incorporated into the improvements of the existing fishlift or into the new fishlift.

(b) submit to the MADEP a scope of work and implementation schedule for a feasibility study to determine the best design for a new entrance to the tailrace lift downstream and outside the influence of the boil from the turbine discharge after consultation with the MADFW, the USFWS, the Connecticut River Atlantic Salmon Commission and the NMFS. The licensee shall implement the design as approved by the MADEP. The design shall provide unimpeded, full depth access to the new entrance and an implementation schedule for installation.

In addition, ledge excavation is required on the west wall of the tailrace in the area immediately downstream of the existing (but non-functional) tailrace entrance to allow operation of this existing entrance. This construction need shall be addressed in

the scope of work and implementation schedule mentioned above. The licensee shall implement the construction as approved by the MADEP. Within one year after installation, a study of the effectiveness of both entrances will be conducted.

(c) consult with the MADFW and submit to the MADEP a scope of work and implementation schedule to conduct all fishway operations. The licensee shall implement the scope of work as approved by the MADEP. The scope of work shall specify that all operations necessary for safe, timely and efficient fish passage (including but not limited to counting, trapping, monitoring and collection of biological data) will be under the direction of the MADFW and paid for by the licensee. The licensee can conduct operations using their own resources or subcontract. The licensee shall not bear the cost to transport fish to a watershed other than the Connecticut River.

(d) consult with the MADFW and submit to the MADEP a plan and schedule for implementation to monitor upstream resident fish passage through the project. The licensee shall implement the plan as approved by the MADEP. The licensee shall prepare a report and a schedule for implementation that identifies any changes to fishway operations or structures necessary to protect and enhance the passage of resident fish within six months after submitting the monitoring results to MADFW.

24. Within one year of license issuance, the licensee shall:

(a) consult with the MADFW, the USFWS and the CRASC and submit to the MADEP final designs for a new fish trapping and hauling system that has operating capabilities at least as effective as the device depicted in Figure 6-4 of HGE's December 23, 1998 filing. The licensee shall implement the design as approved by the MADEP. The design shall include an implementation schedule for installation and be incorporated into the improvements of the existing fishlift or into the new fishlift. Within one year after installation, the licensee shall conduct and submit to the MADEP a study of the effectiveness of the facility.

(b) consult with the MADEP, the MADFW, the USFWS and the NMFS and submit to the MADEP a final design to construct a conveyance, which will intercept downstream migrating anadromous fish at the bascule gate on the Holyoke Dam and transport them to the Hadley Falls Station tailrace. The licensee shall implement the construction as approved by the MADEP. The final design shall have operating capabilities at least as effective as presented in HWP's Response to Additional Information Requests, July 1998, Figure 5.B. Within one year after installation, a study of the effectiveness of the facility will be conducted. If the licensee decides to build a new fishlift rather than improve the existing fishlift, the conveyance will be constructed within two years of license issuance, in order for schedules to be compatible.

(c) consult with the MADFW, the USFWS and the NMFS submit to the MADEP a final design and implementation schedule to construct a barrier to migrating fish across the Number 2 overflow raceway with operating capabilities at least as effective as depicted in HGE's Schedule B, Additional Information, Volume II, July 1998, section B-2, figure 11-B-1. The licensee shall implement the design as approved by the MADEP. Within one year after installation, the licensee shall conduct and submit to the MADEP a study of the effectiveness of the facility.

(d) consult with MADFW, the USFWS and the NMFS and submit to the MADEP a final plan for American eel ladders on both spillway and tailrace sides of the dam at least as effective as depicted in HGE's Response to Additional Information Requests, Schedule B, Item 6, figures 6-A-1, 6-A-2, July 1998 and a schedule for their installation. The licensee shall implement the plan as approved by the MADEP. Within one year after installation, the licensee shall conduct and submit to the MADEP a study of the effectiveness of the facility.

25. Consult with MADFW, the USFWS, the CRASC and the NMFS and submit to the MADEP an American eel downstream passage plan and a schedule for its implementation. The licensee shall implement the plan as approved by the MADEP. Within one year after installation, the licensee shall conduct and submit to the MADEP a study of the effectiveness of the measures taken.

26. Within one year after the NMFS (in accordance with the Endangered Species Act) develops its final recommendations, submit to the MADEP a plan to meet sturgeon upstream and downstream passage need, timing and measures and a schedule for implementation in consultation with MADFW, the USFWS and the NMFS. The licensee shall implement the plan as approved by the MADEP. Within one year after installation, the licensee shall conduct and submit to the MADEP a study of the effectiveness of the measures taken. Potential effects from the NMFS recommendations could include but not be limited to: (a) changes in zone of passage timing, (b) changes in zone of passage minimum flows, (c) changes in minimum flows in the bypass reach, and (d) additional downstream facilities.

27. Unless and until otherwise ordered by the MADEP, the licensee shall continue to operate the Boatlock Station downstream bypass facility.

RIPARIAN MANAGEMENT PLAN

28. Within one year of license issuance, the licensee shall submit to the MADEP a riparian management plan to protect water quality and designated uses including fishery and wildlife habitat, and primary and secondary contact recreation, from adverse impacts and degradation resulting from development and

use as a result of the Project. The plan shall encompass all riparian land at a minimum within 200 feet of the Connecticut River around and above the Holyoke Dam (extending horizontally from 0.2 feet above the normal pond elevation) on property owned by HWP as of July 28, 1999. The plan shall (a) specify how a riparian zone adequate to protect water quality and designated uses will be established around the perimeter of the Project pond, specifically addressing how long term conservation of important riparian areas can be assured as needed to achieve this objective, (b) specify allowable uses within the proposed riparian zone, and how conflicts among uses are to be minimized to protect water quality, fisheries, wildlife, and recreational values of the river and its riparian land, (c) specify how and where the licensee will appropriately provide access to project waters for swimming, boating and fishing in a way that is compatible with other designated uses and values, and (d) propose specifically how the plan is to be implemented. The plan shall be developed in consultation with the MADFW, the MADEM, the USFWS, the City of Holyoke, the Town of South Hadley, the Connecticut River Watershed Council and other interested organizations. The licensee shall implement the plan as approved by the MADEP on the project property owned by HWP as of July 28, 1999.

The riparian zone shall be sufficient to:

- (1) serve as a vegetative filter to substantially reduce nonpoint source discharges of oil and grease, sediment, nutrients and fertilizers, pesticides, and other contaminants that may be transported to project waters in overland runoff from existing or potential adjacent residential, commercial or agricultural uses or roads;
- (2) protect near shore fish, aquatic life and wildlife habitat from degradation resulting from adjacent uses and disturbances and from alterations to the shoreline including docks, riprap, and other structural modifications;
- (3) include significant wildlife habitats and buffers adequate to avoid disturbance from adjacent uses, for species utilizing project waters and associated wetlands, including but not limited to rare, threatened, or endangered wildlife species, or other state or federally listed species of concern; and
- (4) protect riparian habitat areas and buffers for species which use the riparian area in conjunction with project waters, e.g. turtle nesting areas, and bald eagle perch trees used for feeding;
- (5) include riparian areas of significant recreational value as points of public access to project waters for primary and secondary contact recreation.

Within 30 days of the MADEP approval, the final plan shall be recorded for each parcel owned by HWP within the riparian zone, as of July 28, 1999, at the applicable registry of deeds by the licensee.

ADDITIONAL PLANS

29. Within one year of license issuance, the licensee shall:

(a) submit to the MADEP a plan to monitor and help control and eliminate invasive species (including but not limited to zebra mussel and water chestnut) within the project boundary in consultation with the MADEP, the MADFW, the USFWS, the MADEM and the Silvio O. Conte National Fish and Wildlife Refuge; the licensee shall implement the plan as approved by the MADEP. The plan should include identifying appropriate remedial measures to control such species.

(b) submit to the MADEP a management plan and a schedule for implementation to protect, enhance and manage animals and plants that are listed as protected under the MA Endangered Species Act within the project boundary in consultation with the MADFW, the USFWS, the MADEM, the Silvio O. Conte National Fish and Wildlife Refuge and the MADEP. The licensee shall implement the management plan as approved by the MADEP. The plan shall incorporate safeguards to avoid conflicts between recreational users and protection of populations of rare and endangered species and specify how lands within the project boundary will be managed to protect natural resources.

30. Within eighteen months of license issuance, the licensee shall submit to the MADEP a water quality monitoring plan in consultation with the MADEP and the MADFW. The licensee shall implement the plan as approved by the MADEP. The plan shall include testing at the intake, below the Bascule gate (until turbine construction), the tailrace, the bypass reach, Cove Island and in the Holyoke canals for parameters such as dissolved oxygen, dissolved nitrogen, temperature and fecal coliform bacteria. If violations of 314 CMR 4.00 are noted, operational changes that may include but not be limited to increased flow in the bypass reach may be necessary.

THIRD TURBINE CONSTRUCTION

If the licensee builds a new generation unit (such as the third turbine as proposed by HGE) the following conditions shall apply. The licensee shall:

31. Consult with the MADFW and the USFWS to provide safe and effective fish passage upstream and downstream during construction of the new generating unit. The licensee shall implement as approved by the MADEP. The existing spillway should

be used with operating capabilities at least as effective as presented in HGE's Schedule B, Additional Information, Section 6(B), Scheme A (Figure 6-1), December 23, 1998. The minimum bypass reach flow shall remain 840 cfs and zone of passage flow shall remain 1300 cfs during construction unless it can be demonstrated to the MADFW, the USFWS and the MADEP this action is impossible to achieve or is inconsistent with the safe and prudent operation of the project. See condition #12.

32. Consult with the MADFW, the USFWS, the CRASC and the NMFS during third unit construction and submit to the MADEP a final plan for a new tailrace fish lift with operating capabilities at least as effective as depicted in HGE's Application For New License, Volume 1, Section 3.1.7.2.1 and a schedule for its installation. The licensee shall implement the plan as approved by the MADEP. Within one year after installation, the licensee shall conduct a study of the effectiveness of the facility.

33. Consult with the MADFW, the USFWS, the CRASC and the NMFS during third unit construction and submit to the MADEP a final plan for a new spillway lift with operating capabilities at least as effective as depicted in HGE's Application For New License, Volume 1, Section 3.1.7.2.2 and a schedule for its installation. The licensee shall implement the plan as approved by the MADEP. Within one year after installation, the licensee shall conduct a study of the effectiveness of the facility.

34. Consult with the MADFW, the USFWS, the CRASC and the NMFS during third unit construction and submit to the MADEP a final plan for a new trash rack/fish screen, fish bypass, and fish sampling facility in the Hadley Falls Station forebay with operating capabilities at least as effective as depicted in HGE's Application For New License, Volume 1, Exhibit A, Section 3.1.7.1 and a schedule for its installation. The licensee shall implement the plan as approved by the MADEP. Within one year after installation, the licensee shall conduct a study of the effectiveness of the facility.

35. Construction of a new generating unit such as the third generating wheel proposed by HGE shall not begin in the river any year before July 15.

36. Procure a construction dewatering permit from the MADEP and the United States Environmental Protection Agency prior to cofferdam dewatering.

37. Within one year prior to construction, consult with the MADEP to determine if an approved plan is needed to detect and control any contaminants that could violate water quality standards from the Holyoke Gas Works hazardous waste site.

SIGNED:

____\s_____
Arleen O'Donnell
Assistant Commissioner
Bureau of Resource Protection
Department of Environmental Protection

7/28/99_____
Date

APPENDIX B

SUMMARY OF HOLYOKE ECONOMICS (SOURCE: COMMISSION STAFF)

Description	HWP No Action	HWP Proposed Action	HWP Proposed Action with Staff Additional Measures 94/	HWP License Order 95/
Total Annual Gross Benefits	\$8,816,000	\$8,557,000	\$7,798,000	\$7,855,000
Annual Generation	223,500 MWH	211,300 MWH	198,325 MWH	193,956 MWH
Unit Gross (\$/MWH)	39.46	40.5	39.32	40.5
Total Annual Generation Costs	\$7,823,000	\$8,607,000	\$8,752,000	\$9,092,000
Unit Cost (\$/MWH)	35.02	40.72	44.13	46.88
Net Annual Benefits	Positive \$993,000	Negative \$50,000	Negative \$954,000	Negative \$1,237,000
Unit Net (\$/MWH)	4.45	-0.24	-4.81	-6.38

94/ Does not include mandatory conditions, unless recommended by Commission staff. See Table 5-2 of Final EIS.

95/ These costs are inclusive of mandatory conditions (i.e., FPA Section 18 and CWA Section 401 conditions) and staff recommended conditions.

Holyoke Water Power Company)	Docket No. 2004-073
Holyoke Gas & Electric)	Docket No. 11607-000
Department, Ashburnham)	
Municipal Light Plant, and)	
Massachusetts Municipal)	
Wholesale Electric Company)	

(Issued August 20, 1999)

BAILEY, Commissioner, dissenting in part

I write separately to express my concern with the aggregate impact of the license terms and conditions adopted in today's order. I am uncomfortable with an order that, on the one hand, awards Holyoke Power the right to continue operating the Holyoke Project over the objection and competing application of Municipalities, while loading the license up with terms and conditions that, collectively, may make the Project uneconomic to operate and may motivate Holyoke Power to repudiate its hard-fought victory. Moreover, I am uncomfortable with the order's recognition that had Municipalities proved successful in their contest with Holyoke Power to win the license to operate the Project, they would have been saddled with license terms and conditions that would have made their success an even more costly one.

I start with Part I of the Federal Power Act. The Commission has the statutory mandate, when establishing license conditions, to balance power and other developmental interests together with consideration of non-power values, such as the protection of fish and wildlife resources and the provision of recreation and flood control. On several recent occasions, I have expressed my concern that the Commission places little value on the market aspects of this balancing mandate. See City of Tacoma, Washington, 84 FERC ¶ 61,107 at 61,602-03 (1998), order on reh'g, 86 FERC ¶ 61,311 at 62,106-11 (1999) (dissents); Edwards Manufacturing Company, 81 FERC ¶ 61,255 at 62,211-12 (1997) (dissent).

My concern is that environmental mitigation and enhancement measures increasingly are being adopted with little regard for evidence that such conditions might seriously impair the economic operation of the hydroelectric project. While such decisions may have been acceptable prior to the introduction of competition, when hydroelectric utilities may have been able to pass these costs through to ratepayers, that is no longer a prudent operating assumption. These utilities cannot afford to increase their exposure to stranded costs as a result of high-cost generation resources, and thus cannot cavalierly accept licenses to continue operating projects that will raise the cost of

producing power sometimes several million dollars per year above competitive market rates. The same agency that has done so much to unleash the competitive forces shaping the electric industry today cannot ignore this reality.

Today's order implicates this same concern. The order candidly acknowledges the economic implications to Holyoke Power of the Commission's decision to award it -- rather than Municipalities -- the license to continue operation of the Project. Under the new license's terms and conditions (both mandatory and permissive), Holyoke Power will generate less power (a reduction of 29,500 MWh annually) than under current conditions. Without adjusting for inflation, the price of power generated by the Project will increase to \$46.88 per MWh, as compared to a unit cost of \$35.02 per MWh under current conditions. And the net annual benefits to Holyoke Power from continued operation of the Project will decline precipitously from positive \$993,000 annually under current conditions to negative \$1.24 million annually (because the unit cost of Project-generated hydropower will exceed the price that Holyoke Power will be able to sell the same power, or purchase an equivalent amount from an alternative source, by over \$6 per MWh). 1/

I recognize that many of the terms and conditions imposed on the license awarded to Holyoke Power, and the economic implications of those terms and conditions, are the product of recommendations of federal and state resource agencies that the Commission lacks authority to reject. Indeed, the order notes in several places that the Commission is reluctantly adopting certain mandatory license terms and conditions that it believes are not justified in light of the minimal benefits produced and the substantial costs incurred. And in certain other places, where the Commission does have the authority, the Commission affirmatively intercedes to reject proposed license conditions that are not justified in light of the cost of compliance.

I am gratified that the Commission recognizes the balancing of economic and non-economic interests required under Part I of

1/ As proposed by Holyoke Power in its relicensing application, annual generation would decline by only 12,200 MWh, and the unit cost of hydropower generated by the Project would rise to only \$40.72 per MWh. In addition, Holyoke Power had contemplated negative net benefits of only \$50,000 per year. All of these numbers are subject to correction, as today's order indicates that additional or revised terms and conditions may be necessary to reflect ongoing consultations with federal agencies on the subject of threatened and endangered species.

the FPA, and has acted to ensure that the license awarded to Holyoke Power is not even more of a monetary sinkhole. At this time, however, I remain unconvinced that the Commission has been aggressive in slashing costs and in adopting only those license terms and conditions that are truly justified when their presumed benefits are balanced against the cost of compliance. Lacking the ability myself to quantify the economic impact of each of the license's terms and conditions and to balance that impact against the value of compliance, I invite the licensee to undertake this task on rehearing if so motivated.

In the present circumstances, Holyoke Power justifiably may lack the motivation to embrace its victory and to accept a new license that may strain the ability of its parent company, Northeast Utilities, to provide reliable and competitively-priced electric service. Today's order, while recognizing the economic implications of the license terms and conditions it adopts, affords Holyoke Power essentially a take-it-or-leave-it option: "Holyoke Power must make the business decision whether to accept this license under these terms and conditions."

If Holyoke Power makes the business decision to disavow the license, will there be anyone else to accept it? I have my doubts, in light of the order's recognition of the terms and conditions the Commission would have imposed on Municipalities if they had proved victorious in wresting the license away from Holyoke Power. While the negative net benefits to be assumed by Holyoke Power are estimated to be negative \$1.24 million per year, the negative net benefits that would have been assumed by Municipalities, with license measures recommended by Commission staff, would have been much worse -- negative \$2.8 million per year! (The order attributes much of the difference to the expansion of the Project proposed by Municipalities.)

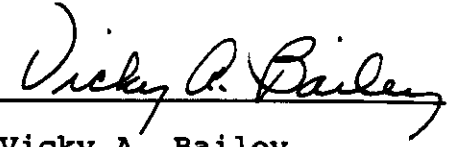
In light of the economic implications of the terms and conditions that would have been imposed on either of the applicants in this proceeding, the Commission, in deciding upon which application to choose, is left to choose from among two applications that are deemed not to be "cost effective." As there is no significant distinction between the two applications in all other respects, the Commission today chooses Holyoke Power's application because the net annual economic benefit of Holyoke Power's proposal is deemed to be "less negative" (by almost 200 percent) than that of Municipalities. 2/

2/ While I do not share the majority's assessment of the "cost effectiveness" of the respective licensing plans, I have no objection to the decision to award the license to Holyoke Power. As the order suggests, a tie would have been broken

(continued...)

A negative net benefit of several million dollars per year, or any negative net benefit at all for that matter, is certainly not what Municipalities had in mind when they filed to compete against Holyoke Power for the right to operate the Holyoke Project. The intention underlying Municipalities' application was to use surplus project revenues to lower electricity rates, revitalize local communities, and fund various recreational and enhancement measures. In the absence of any project surpluses, Municipalities may no longer have the incentive to operate the Project even if it were presented with the opportunity to do so.

As a result, today's order may leave no licensee for the Holyoke Project, and may thus deprive the region of the benefits that the order recognizes flow from continued operation of the Project. Other utilities may now be hesitant to seek to relicense other existing hydroelectric projects or to assume their operation. My preference would be for the Commission to encourage more competition of the type leading to today's order - - what I understand is the first time the Commission has been presented with competing applications at the relicensing stage -- rather than less.


Vicky A. Bailey
Commissioner

2/ (...continued)
in favor of the incumbent licensee in light of the language of section 15(a)(2) of the FPA ("insignificant differences . . . shall not result in the transfer of a project") and Holyoke Power's "excellent" 50-year record of compliance with respect to the Holyoke Project.