46 FERC ¶62,229, City of Holyoke, Massachusetts, Project No. 2386-001, (Feb. 28, 1989)

City of Holyoke, Massachusetts, Project No. 2386-001

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City of Holyoke, Massachusetts, Project No. 2386-001

Order Issuing License (Minor Project)

(Issued February 28, 1989)

Fred E. Springer, Director, Office of Hydropower Licensing.

City of Holyoke, Massachusetts filed a license application under Part I of the Federal Power Act (Act) to operate and maintain the Holyoke Number 1 Hydro Project located on the canal system fed by the Connecticut River in the City of Holyoke, in Hampden County, Massachusetts. The Connecticut River is a navigable waterway of the United States. [1]

Notice of the application has been published. No protests or motions to intervene were filed in this proceeding, and no agency objected to issuance of this license. Comments received from interested agencies and individuals have been fully considered in determining whether to issue this license.

Section 10(a)(2)-Comprehensive Plans

Section 10(a)(2) of the Act requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans (where they exist) for improving, developing, or conserving a waterway or waterways affected by the project. The staff reviewed 3 plans that address various aspects of waterway management in relation to the proposed project. [2] No conflicts were found.

Based upon a review of the agency and public comments filed in this proceeding, and on the staff's independent analysis, the Holyoke Number 1 Hydro Project is best adapted to a comprehensive plan for the Connecticut River.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Act requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection, mitigation, and enhancement of fish and wildlife. The environmental assessment for the Holyoke Number 1 Hydro Project addresses the concerns of the federal and state fish and wildlife agencies; however, recommendations are not needed for continued operation of the project.

Summary of Findings

An EA was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA attached to this order. 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. Analysis of related issues is provided in the Safety and Design Assessment attached to this order.

The Director, Office of Hydropower Licensing, concludes that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Director orders:

(A) This license is issued to City of Holyoke, Massachusetts (licensee), for a period of 30 years, effective the first day of the month in which this order is issued, to operate and maintain the Holyoke Number 1 Hydro Project. This license is subject to the terms and conditions of the Act, which is incorporated by reference

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as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, enclosed by the project boundary shown by exhibit G:

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Exhibit G- FERC No. 2386-   Showing

 sheet 1         16       Project Maps
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(2) Project works consisting of: (a) a brick powerhouse 38 feet wide and 50 feet long containing two 240-kW and two 288-kW turbine-generators with a total capacity of 1,056 kW; (b) two steel penstocks 10 feet in diameter and 36.5 feet long; (c) two tailraces 328.5 feet long and 20 feet wide; and (d) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(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.

(C) The exhibit G described above and those sections of exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

(D) The following sections of the Act are waived and excluded from the license for this minor project: 4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-9 [reported at 54 FPC 1852] (October 1975), entitled "Terms and Conditions of License for Constructed Minor 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 the first day of the month in which this license is issued:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 1,480 horsepower.

Article 401. (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, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are

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maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

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

(d) The licensee may convey fee 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 from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the licensee must 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 covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure 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.

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(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.

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

(G) This order is issued under authority delegated to the Director and is final unless appealed to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

Environmental Assessment [1]

Federal Energy Regulatory Commission

Office of Hydropower Licensing

Division of Project Review

Date: January 12, 1989

Project Name: Number 1 Hydro Unit

FERC Project No. 2386

A. Application

1. Application type: This is an application for a new minor license filed with the Commission on February 19, 1988, by the City of Holyoke, Massachusetts, Gas and Electric Department (Holyoke).

2. Location: The project is located on the Holyoke Canal, in the Connecticut River basin; Holyoke, Hampden County, Massachusetts (*see* Figure 1).

B. Purpose and Need for Power

1. Purpose: The project provides an estimated average annual generation of 3.3 gigawatthours of electricity which is sold to Holyoke's customers.

2. Need for power: The power from the project is useful in meeting a small part of the need for power projected for the New England Power Pool area of the Northeast Power Coordinating Council (NPCC) region. Power generated at the project displaces fossil-fueled power generation in the NPCC region, thus conserving nonrenewable fossil fuels and reducing the emission of noxious byproducts caused by the combustion of fossil fuels.

C. Existing Project and Alternatives

1. Description of the existing project: The existing operating project facilities were constructed in 1893, to generate electricity using available flows and a 19.5-foot differential between two levels of the Holyoke Canal System. The Holyoke Water Power Company (HWPC) controls flows from the Connecticut River into the canal system under a FERC major license granted to Project No. 2004. Unit 1's project works consist of the following existing elements.

The brick powerhouse measures 38 feet by 50 feet in plan, and contains two 330 horsepower (hp) turbines connected to two 240 kilowatt (kW) vertical hydro generators, and two 400 hp turbines connected to two 288 kW vertical hydro generators. The plant's total capacity is 1,056 kW.

Water is delivered to and from the turbines by two 32 foot-long, 10 foot-diameter steel penstocks, and two 320 foot long brick tailraces, respectively.

2. Proposed mitigation: Since Holyoke only proposes to continue operating the project as in the past, with no new construction, Holyoke proposes no mitigative measures.

3. There are no federal lands to be affected.

4. Alternatives to the existing project:

a. The Commission could issue an annual license. Section 15(a) of the Federal Power Act, 16 U.S.C. §808 (a), provides for the issuance of annual licenses to the prior licensee if the license expires pending the relicensing determination.

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Under this alternative, an annual license would continue to be issued to Holyoke. The annual license contains the same terms as the expired license, thereby maintaining the status quo.

b. The federal government could take over the project. An alternative to issuing a new license for continued operation of the project would be takeover of the project by the federal government. Such action can be recommended to Congress by the Commission on its own motion or upon recommendation of a federal department or agency, under the provisions of Section 14 of the Act. If the Commission determined, after notice and opportunity for hearing, that the United States should exercise its right to take over the project, the Commission would submit its recommendation to Congress with such information as it considers appropriate.

If the federal government were to take over the project, the project would be operated in coordination with the other hydro projects in the region just as it has in the past. The only difference would be that the federal government would market the power rather than the applicant.

c. The Commission could issue a non-power license. Section 15(b) of the Act, §808(b), authorizes the Commission to issue a license for nonpower use when the Commission "finds that in conformity with a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses all or part of any licensed project should no longer be used or adapted for use for power purposes." A license that is granted by the Commission for nonpower use is temporary. When the Commission finds that a state, municipality, interstate agency, or another federal agency is authorized and willing to assume regulatory supervision of the lands and facilities included under the nonpower license and does so, the Commission shall thereupon terminate the nonpower license.

d. The Commission could deny the license application. Denial of the license application could lead to removal of the power facilities and removal of all project works.

D. Consultation and Compliance

1. Fish and wildlife agency consultation (Fish & Wildlife Coordination Act):

U.S. Fish & Wildlife Service: Yes

Massachusetts Department of Fisheries, Wildlife, and Recreational Vehicles: Yes

National Marine Fisheries Service: Yes

2. Section 7 consultation (Endangered Species Act):

a. Listed species: The endangered shortnose sturgeon has been observed in the mainstream Connecticut River in the project vicinity, but not in the canal system (letter from Gordon Beckett, Supervisor, U.S. Fish and Wildlife Service, Concord, New Hampshire, March 18, 1987).

b. Section 7 consultation is not required.

c. The existing trashracks with 1-inch-bar spacing would protect any sturgeon entering the canal from turbine-induced injury or mortality.

3. Section 401 certification (Clean Water Act): Holyoke petitioned the Commonwealth of Massachusetts, Executive Office of Environmental Affairs, Department of Environmental Quality Engineering, Division of Water Pollution Control for Water Quality Certification for this project on June 3, 1987. The Commonwealth granted the certification on August 24, 1987.

4. Cultural resource consultation (National Historic Preservation Act):

Massachusetts Historical Commission/State Historic Preservation Officer (SHPO): Yes.

National Park Service: Yes

The project is adjacent to the Holyoke Canal System, a property listed in the *National Register of Historic Places.* Since there would be no redevelopment, new construction, or changes to the exterior of the property, the project would not affect *National Register* or eligible properties, even though such properties are known to exist in or adjacent to the project area. The SHPO has concluded similarly, and has so indicated in its November 3, 1987 letter. Section 106 of the National Historic Preservation Act requires the Commission to consult with the Advisory Council on Historic Preservation in projects where there would be an effect. Therefore, further consultation--with either the Advisory Council or with any other agency or entity--is not required.

5. Recreational consultation (Federal Power Act): There are no U.S. owners to be consulted for this project.

National Park Service: Yes

Massachusetts Department of Fisheries, Wildlife, and Recreational Vehicles: Yes

6. Wild and scenic rivers (Wild and Scenic Rivers Act): No wild and scenic rivers would be affected by this project.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act): There are no Land and Water Conservation Fund lands and facilities in the project area; no such lands or facilities would be affected by this project.

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E. Comments

1. Public Notice Comments and Interventions: The following agencies commented on Holyoke's application in response to the public notice dated September 30, 1988. No one filed any motions to intervene.

Commenting agenciesDate of letter

Department of the

Interior November 23, 1988

Department of the Army, Corps of

Engineers, New England Division November 28, 1988

2. Holyoke's Response: Holyoke did not respond to the comments.

F. Affected Environment

1. The Connecticut River Basin (CRB):

a. Description of the CRB (See figure 3). The CRB, with a drainage area of 11,765 square miles, is the largest river basin in New England. Extending from the northernmost part of New Hampshire to Long Island Sound, the CRB has a maximum length in a north-south direction of about 280 miles and a maximum width of about 62 miles. The total drainage area of the basin is 11,765 square miles. The principal tributaries to the mainstem Connecticut River, by state, are: the Passumpsic, White, West, Ottauquechee, and Black Rivers in Vermont; the Ammonoosuc, Mascoma, Ashuelot, and Sugar Rivers in New Hampshire; the Millers, Deerfield, Chicopee, and Westfield Rivers in Massachusetts; and the Farmington River in Connecticut. This complex of rivers and tributaries constitutes one of the most extensively developed hydropower systems in the U.S. There is now a major effort by federal, state, and private sectors to restore Atlantic salmon to the CRB.

b. Licensed and exempted projects. There are 62 existing licensed projects and 38 exempted projects in the CRB, as of August 1, 1988.

c. Pending applications. There are 7 pending license applications in the CRB, as of August 1, 1988.

d. Target resources. A target resource is an important resource that may be cumulatively affected by multiple development within a basin. The staff based its selection of target resources on the regional significance and geographic distribution of the resource within the river basin. The only target resource in the CRB is anadromous fish. The anadromous fishery resource is described below in section F(3d). Impacts to anadromous fish are discussed in section G.

2. Description of the Project Locale: The project is located in a heavily industrialized setting between the first and second levels of the Holyoke Canal system. The climate is typical of inland Connecticut and Massachusetts with an average temperature of 49.8 degrees Fahrenheit and an average annual precipitation of 44.39 inches.

3. Descriptions of the resources in the project impact area (Source: City of Holyoke, Gas and Electric Department, application, exhibit E, unless otherwise indicated):

a. Geology and soils. The following bedrock and soils discussion is based on information provided by the applicant in response to staff requests (City of Holyoke Gas and Electric Department, 1988). Bedrock in the project area is interbedded sandstone, shale, conglomerate, and basaltic lava. The glacial till deposits that lie on the glaciated surface of the bedrock are in-turn overlain by varied glacial lake deposits. The original dry, sandy, surface soils in the project area have been highly altered by construction of the project and by fill and construction activities associated with urban development of the area.

b. Streamflow. Water flow in the first level canal is controlled at the canal gatehouse in order to supply necessary water to various hydropower and industrial facilities along the canal. The amount of flow entering the canal system ranges from no flow, when the gatehouse is shut down, to 5,155 cubic feet per second which is the maximum hydraulic capacity of the canal.

c. Water quality. The Connecticut River upstream of Holyoke dam is classified as Class B water by the Massachusetts Division of Water Pollution. Class B water is suitable for primary and secondary contact recreation and fish and wildlife resources. Class B water must have dissolved oxygen (DO) levels greater than 5.0 milligrams per liter (mg/l) and a pH between 6.5 and 8.0. The first level canal is classified as Class C. Class C water is suitable for secondary contact recreation and fish and wildlife resources and must have a DO level greater than 5.0 mg/l and a pH between 6.5 and 9.0 standard units. Water in the project area conforms to the state water quality standards.

d. Fisheries.

(1) Anadromous fish. Anadromous fish species found in the Connecticut River in the vicinity of the project include American shad, Atlantic salmon, blueback herring, sea lamprey, striped bass, shortnose sturgeon, and American eel (catadromous).

(2) Resident fish. Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner,

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white perch, bluegill, rainbow trout, and brown trout.

e. Vegetation.

(1) Upland hardwood forest. Dominant species of this type found in the vicinity of the project include oak, maple, white pine, pitch pine.

(2) Industrial area. Dominant species of this type found in the vicinity of the project include grasses and ornamental shrubs.

f. Wildlife. Undeveloped land in the project area provides habitat for the gray squirrel, eastern cottontail rabbit, raccoon, muskrat, beaver, weasel, pheasant, and small field mammals (mice and voles). The industrial area is inhabited by English sparrows, starlings, robins, mockingbirds, Norway rats, raccoons, and eastern cottontail rabbits.

g. Cultural. There is a property listed on the *National Register of Historic Places* in the area of the project's potential environmental impact: it is the Holyoke Canal System, a contributing element in the Holyoke Canal Historic District. The portion of the canal in the project area was constructed between 1854 and 1857.

h. Visual quality. The project is in an industrial area. Its appearance is consistent with that of the surrounding buildings and structures.

i. Recreation. The immediate project area receives no significant recreational use because of its location in a highly industrialized area. No recreational facilities are located at the project. Recreational facilities including playgrounds, swimming pools, and a skating rink are available for use within walking distance of the project. The Connecticut River in the project vicinity is used for boating and fishing.

j. Land use. The project is entirely within the city. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canal system is used for generating hydroelectric power at several locations.

k. Socioeconomics. The socioeconomic well-being of the area is influenced by industrial and urban development.

G. Environmental Issues and Proposed Resolutions

Cumulative impacts on migrating fish resulting from developing several hydropower projects in the CRB. In 1980, the U.S. Fish and Wildlife Service completed the plan for a major federal, state, and private sector effort to restore Atlantic salmon to the CRB, that addresses restoration efforts through the year 2005. Its goal is to establish and maintain, in the basin, a sport fishery, and, in selected tributaries, a spawning population. Its primary targets are Atlantic salmon and American shad. This effort has enhanced and would continue to enhance efforts to restore other anadromous fish such as blueback herring and striped bass.

Seaward migrating salmon smolts and juvenile and adult shad in the CRB pass numerous hydropower developments where they may become entrained and impinged. The more hydropower facilities outmigrating fish have to pass, the greater the fish losses. Among these hydropower facilities are the Holyoke dam and the canal system.

When river discharges are high and water is flowing over the Holyoke dam, migrating fish pass downstream with little or no delay (Northeast Utilities Service Company, 1984). On the other hand, outmigrating fish would be entrained into the canal system by high flows entering the canal if they arrive at the Holyoke dam when flashboards, permitting little or no spillage, are in place. Once in the canal, escape is very difficult. Fish can then be killed in the turbines of hydropower plants along the canal.

On February 26, 1988, the Commission ordered the HWPC to spill water over Holyoke dam when salmon smolts and juvenile and adult shad are migrating downstream (FERC, 1988). [HWPC is the licensee for the Hadley Falls Project (FERC Project No. 2004) and the entity that controls the water going into the canal.] Spilling water over the Holyoke dam allows migrating salmon smolts and juvenile and adult shad to pass safely downstream in the spill, instead of entering the canal system.

Holyoke and the HWPC have since implemented an economic dispatch agreement, in which the HWPC passes all flow downstream at the Holyoke dam and sells electricity, instead of water, to users along the canal when salmon smolts and juvenile and adult shad are migrating downstream. This arrangement prevents flow from entering the canal and attracting outmigrating anadromous fish, and minimizes the

number of outmigrating anadromous fish trapped in the canal, and the number of project-related impacts to fish in the CRB.

Continuing to operate the Number 1 Hydro Unit would not contribute to cumulative adverse impacts on migrating fish.

H. Environmental Impacts

1. Assessment of impacts expected from the existing project (P), with Holyoke's proposed mitigation and any conditions set by a federal land management agency; the existing project with any additional mitigation recommended by the staff (Ps); and any action alternative considered (A): The following symbols are used to generate three-character expressions to explain the degree (none, minor, moderate, or

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major), type (adverse or beneficial), and duration (long-or short-term) of impacts (for example, the expression 1BL indicates a minor, beneficial, long-term impact).

```
O  = None;                          1  = Minor;

2  = Moderate;                      3  = Major;

A  = Adverse;                       B  = Beneficial;

L  = Long-term;                     S  = Short term.
```

Resource	Impact P	Ps	A
a. Geology-Soils	0		
b. Streamflow	0		
c. Water quality:			
Temperature	0		
Dissolved oxygen	0		
Turbidity and sedimentation	0		
d. Fisheries:			
Anadromous	0		
Resident	0		
e. Vegetation	0		
f. Wildlife	0		
g. Cultural:			

Archeological 0

Historical 0

h. Visual quality 0

i. Recreation 0

j. Land use 0

k. Socioeconomics 0

2. Recommended alternative (including proposed, required, and recommended mitigative measures) and reason for selecting the preferred alternative: Existing project. The power generated at this project is produced without any known adverse environmental impacts.

I. Unavoidable Adverse Impacts of the Recommended Alternative

There are no known adverse impacts.

J. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [H(2)] would not constitute a major federal action significantly affecting the quality of the human environment; therefore, an environmental impact statement (EIS) will not be prepared.

K. Literature Cited

City of Holyoke, Gas and Electric Department. 1988. Application for minor license. Number 1 Hydro Unit, FERC Project No. 2386-001 , Massachusetts.

City of Holyoke, Gas and Electric Department. 1988. Additional information for the application for license for the Number 1 Hydro Unit, FERC Project No. 2386, Massachusetts. June 27, 1988.

Northeast Utilities Service Company. 1984. Review of cancelled Atlantic salmon smolt (Salmo salar), radiotelemetry study at the Holyoke dam, Massachusetts. Hartford, Connecticut. September 1984.

Federal Energy Regulatory Commission. 1988. Order amending license to require downstream fish passage facilities. Project No. 2004-012 . February 26, 1988 [42 FERC ¶62,166].

L. Preparer

James T. Griffin--Coordinator (B.A., Anthropology; Master of Public Administration)

Safety and Design Assessment

Number 1 Hydro Unit

FERC Project No. 2386-001

Dam Safety

The existing project does not include dams or other impounding structures. Hydraulic head is provided by the elevation difference between two canal levels in the city of Holyoke, Massachusetts. The canals are part of Project No. 2004, licensed to the Holyoke Water Power Company.

Project Design

The project consists of: (1) two intake openings in the Holyoke Second Level Canal; (2) two steel penstocks, each 10 feet in diameter and 36.5 feet long; (3) a brick powerhouse 38 feet wide and 50 feet long containing two 240-kilowatt (kW) and two 288-kW turbine-generator sets, adding up to a total capacity of 1,056 kW; (4) two tailrace tunnels 20 feet wide and 328.5 feet long; (5) 4.8-kilovolt (kV) generator leads that connect directly to the 4.8-kV City of Holyoke Gas and Electric Department's distribution system; and (6) appurtenant facilities.

Economic Evaluation

The staff has identified long-term levelized alternative energy costs in the region to be about 80 mills per kilowatthour (kWh). Since no new capital development costs have been proposed for the new license term, the cost of producing project energy is limited to operation, maintenance, interim replacements, insurance and other similar periodic production costs. These are estimated to total about $21,700 per year, levelized, over a 30 to 50 year license period, equivalent to 6.6 mills/kWh.

With average annual energy generation of 3,292,000 kWh, the Number 1 Hydro plant produces the equivalent of $263,000 per year in levelized energy values. The project remains a valuable resource for the licensee for the foreseeable future.

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Water Resource Planning

The Number 1 Hydro Unit was put into service in 1902, was licensed on March 23, 1965, and the owner (City of Holyoke) filed for relicense on February 19, 1988. The original license terminates on February 28, 1991.

The project operates from water supplied by the Holyoke Water Power Company's Project No. 2004, originating at Hadley Falls Dam on the Connecticut River, and transmitted by way of the Holyoke canal system. The canal system also conveys the water back to the Connecticut River, making Number 1 Hydro an off-stream development. The diverted water is shared by several industrial and utility users located along the canals, and is allocated according to a system of water rights and exchanges.

Historically the project has produced about 3,292,000 kWh annually, giving it a plant factor of about 36 percent. Its maximum water use of 622 cfs is about 4.4 percent of the 14,100 cfs mean flow of the Connecticut River.

Because of its character as an off-stream development, surrounded by an urban industrial environment, the project does not affect other hydro power or storage sites upstream or downstream on the Connecticut River. Neither FERC's *Planning Status Report* for the Connecticut River Basin nor Massachusetts' *Water Quality Management Plan* (1982) mention the off-stream hydro plants in Holyoke as problem sources.

No federal or state agency has commented on the project as to its effect on navigation, flood control, irrigation or water supply.

The staff finds that installation of additional hydro power capacity would not be economically beneficial based upon a comparison with long-run rates of the least costly alternative source of energy.

The staff concludes that the relicensed Number 1 Hydro Unit will adequately utilize the available head and flow at the site and would not conflict with any other planned development.

Exhibits

The following portion of Exhibit A, and the following Exhibit F drawings are included as part of the license.

Exhibit A

One page titled "FERC No. 2386-Number 1 Hydro Exhibit A", filed on June 27, 1988, describing the project's mechanical, electrical and transmission equipment.

Exhibit F

Sheet No.	FERC No.	Description
F-1	2386-1	Building Layout
F-2	2386-2	Powerhouse Cross Section
F-6	2386-6	Tailrace Plans Profiles & Cross Sections

F-7 2386-7 Turbine-Generator Plan & Cross Section

F-5 2386-5 Intake Plan, Elevation & Cross Section

-- Footnotes --

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Footnotes

1 *See* 10 FPC 1255 at 1257.

2 Connecticut River 1982 Water Quality Management Plan, June 1983, Massachusetts Division of Water Pollution Control; The Outdoor Heritage of Massachusetts, SCORP 1983-1988, December 1983, Massachusetts Department of Environmental Management; A Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin, 1982, U.S. Fish and Wildlife Service.

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1 Due to reproduction requirements, referenced figures are not included.