HG&E
Empowering your world.
gas | electric | steam | telecom

Commissioners:
Francis J. Hoey, III
Robert H. Griffin
Raymond H. Feyre

Manager:
James M. Lavelle

October 30, 2009

Luly E. Massaro
Commission Clerk
Public Utilities Commission
89 Jefferson Blvd.
Warwick, RI 02888

Dear Ms. Massaro:

SUBJECT: Application for Rhode Island Existing Renewable Energy Resources Eligibility Holyoke Gas & Electric Department Existing Small Hydroelectric Facilities – HG&E Hydro/Cabot 1-4

Please find attached The City of Holyoke Gas and Electric Department (HG&E) application for Eligibility of HG&E Hydro/Cabot 1-4, a small hydroelectric facility located in Holyoke, Massachusetts, as an Existing Renewable Energy Resource consistent with the Rhode Island Public Utilities Commission Renewable Portfolio Standard Program.

HG&E's hydroelectric system is based on the Hadley Falls Dam, which diverts flow from the mainstream of the Connecticut River and creates an impoundment for potential head and power. Flow and head at the dam are used immediately at the capstone Hadley Station (not included in this application). The diversion dam also feeds an elaborate network of canals, providing cascading head and flow to a series of smaller hydroelectric facilities and units.

HG&E Hydro/Cabot 1-4 consists of four separate Run-of-River project facilities totaling 3.056 MW. Each project has a separate FERC License and is physically and electrically separate. Each contains its own intake, penstock, powerhouse and tailrace facilities (as documented in the respective FERC License orders.) These Facilities are represented as a single NEPOOL asset for simplicity in data communications only. One totalizer reports combined totals of four separate metered generation and station service points.

HGED requests that the RI PUC issue a separate RI RPS Registration Number for each of the four Projects. Below is a brief description of each facility:

Holyoke No. 1 -- FERC Project No. 2386
Holyoke No. 1 facility is located on the First Level Canal and became operational in 1923. The project includes a brick powerhouse that measures 38 feet by 50 feet and contains two generators. 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. The Holyoke No. 1 total installed capacity is 1.056 MW.

Holyoke No. 2 -- FERC Project No. 2387
Holyoke No. 2 facility is located on the First Level Canal and became operational in 1923. The project includes two parallel 240-foot long, 9 foot diameter steel penstocks, and a 17 foot high and 10 foot diameter surge tank. The powerhouse measures 60 feet long and 40 feet wind and contains one generator with an installed capacity of 0.800 MW. Two parallel brick-lined arched tailrace tunnels, each 9-foot wide by 10 foot-high and 250 feet long discharge into the Second Level Canal.

Holyoke No. 3 -- FERC Project No. 2388
Holyoke No. 3 facility is located on the Second Level Canal and became operational in 1923. This project includes a 47 foot long trashrack, two headgates about 11 feet square, two low pressure brick

penstocks about 85 feet long, a concrete powerhouse containing one generator unit rated with an installed capacity of .0450 MW. The open tailrace of 118 feet long and 29.7 feet wide discharges into the Third Level Canal.

Holyoke No. 4 -- FERC Project No. 7758

Holyoke No. 4 facility is located on the First Level Canal and became operational in 1923. The project includes two 76-foot long, 7 foot diameter steel penstocks. The powerhouse contains two generator units with a total rated installed capacity of 0.760 MW on the first floor of the three story building. Two 13 foot wide and 300 foot long tailraces discharge into the Second Level Canal.

As requested, this submittal includes FERC Operating Licenses and Connecticut DPUC Decisions as supporting eligibility documentation.

Please contact me if you have any questions or require additional information concerning this submission.

Sincerely,

Jeanette A. Sypek

Holyoke Gas & Electric Department
Sr. Energy Resources Coordinator
99 Suffolk Street
Holyoke, MA 01040
(413) 536-9373
jsypek@hged.com

RIPUC Use Only	
Date Application Received:	__ __/__ __/__ __
Date Review Completed:	__ __/__ __/__ __
Date Commission Action:	__ __/__ __/__ __
Date Commission Approved:	__ __/__ __/__

GIS Certification #:

_____

RENEWABLE ENERGY RESOURCES ELIGIBILITY FORM

The Standard Application Form
Required of all Applicants for Certification of Eligibility of Renewable Energy Resource
(Version 6 – January 21, 2008)

STATE OF RHODE ISLAND PUBLIC UTILITIES COMMISSION
Pursuant to the Renewable Energy Act
Section 39-26-1 et. seq. of the General Laws of Rhode Island

NOTICE:
When completing this Renewable Energy Resources Eligibility Form and any applicable Appendices, please refer to the State of Rhode Island and Providence Plantations Public Utilities Commission Rules and Regulations Governing the Implementation of a Renewable Energy Standard (RES Regulations, Effective Date: January 1, 2006), and the associated RES Certification Filing Methodology Guide. All applicable regulations, procedures and guidelines are available on the Commission's web site: www.ripuc.org/utilityinfo/res.html. Also, all filings must be in conformance with the Commission's Rules of Practice and Procedure, in particular, Rule 1.5, or its successor regulation, entitled "Formal Requirements as to Filings."

• Please complete the Renewable Energy Resources Eligibility Form and Appendices using a typewriter or black ink.

• Please submit one original and three copies of the completed Application Form, applicable Appendices and all supporting documentation to the Commission at the following address:

Rhode Island Public Utilities Commission
89 Jefferson Blvd
Warwick, RI 02888
Attn: Renewable Energy Resources Eligibility

In addition to the paper copies, electronic/email submittals are required under Commission regulations. Such electronic submittals should be sent to: Luly E. Massaro, Commission Clerk at lmassaro@puc.state.ri.us

• In addition to filing with the Commission, Applicants are required to send, electronically or electronically and in paper format, a copy of the completed Application including all attachments and supporting documentation, to the Division of Public Utilities and Carriers and to all interested parties. A list of interested parties can be obtained from the Commission's website at www.ripuc.org/utilityinfo/res.html.

• Keep a copy of the completed Application for your records.

• The Commission will notify the Authorized Representative if the Application is incomplete.

• Pursuant to Section 6.0 of the RES Regulations, the Commission shall provide a thirty (30) day period for public comment following posting of any administratively complete Application.

• Please note that all information submitted on or attached to the Application is considered to be a public record unless the Commission agrees to deem some portion of the application confidential after consideration under section 1.2(g) of the Commission's Rules of Practice and Procedure.

• In accordance with Section 6.2 of the RES Regulations, the Commission will provide prospective reviews for Applicants seeking a preliminary determination as to whether a facility would be eligible prior to the formal certification process described in Section 6.1 of the RES Regulations. Please note that space is provided on the Form for applicant to designate the type of review being requested.

• Questions related to this Renewable Energy Resources Eligibility Form should be submitted in writing, preferably via email and directed to: Luly E. Massaro, Commission Clerk at RES@puc.state.ri.us

SECTION I: Identification Information

1.1 Name of Generation Unit (sufficient for full and unique identification):
HG&E Hydro/Cabot 1-4

1.2 Type of Certification being requested (check one):

X Standard Certification ❑ Prospective Certification (Declaratory Judgment)

1.3 This Application includes: (Check all that apply)[1]

- ❑ APPENDIX A: Authorized Representative Certification for Individual Owner or Operator
- ❑ APPENDIX B: Authorized Representative Certification for Non-Corporate Entities Other Than Individuals
- X APPENDIX C: Existing Renewable Energy Resources
- ❑ APPENDIX D: Special Provisions for Aggregators of Customer-sited or Off-grid Generation Facilities
- ❑ APPENDIX E: Special Provisions for a Generation Unit Located in a Control Area Adjacent to NEPOOL
- ❑ APPENDIX F: Fuel Source Plan for Eligible Biomass Fuels

1.4 Primary Contact Person name and title: Brian C. Beauregard, Superintendent –Electric Division

1.5 Primary Contact Person address and contact information:

Address: Holyoke Gas & Electric Department
99 Suffolk Street
Holyoke, MA 01040
Phone: (413) 536-9352 Fax: (413) 536-9353
Email: bbeauregard@hged.com

1.6 Backup Contact Person name and title: Jeanette A. Sypek
Senior Energy Resources Coordinator

1.7 Backup Contact Person address and contact information:

Address: Holyoke Gas & Electric Department
99 Suffolk Street
Holyoke, MA 01040
Phone: (413) 536-9373 Fax: (413) 536-9353
Email: jsypek@hged.com

[1] Please note that all Applicants are required to complete the Renewable Energy Resources Eligibility Standard Application Form and all of the Appendices that apply to the Generation Unit or Owner or Operator that is the subject of this Form. Please omit Appendices that do not apply.

1.8 Name and Title of Authorized Representative (*i.e.*, the individual responsible for certifying the accuracy of all information contained in this form and associated appendices, and whose signature will appear on the application):

James M. Lavelle, Manager

Appendix A or B (as appropriate) completed and attached? ❑ Yes ❑ No X N/A

1.9 Authorized Representative address and contact information:

Address: Holyoke Gas & Electric Department
99 Suffolk Street
Holyoke, MA 01040
Phone: (413) 536-9352 Fax: (413) 536-9353
Email: bbeauregard@hged.com

1.10 Owner name and title: Holyoke Gas & Electric Department, James M. Lavelle, Manager

1.11 Owner address and contact information:

Address: Holyoke Gas & Electric Department
99 Suffolk Street
Holyoke, MA 01040
Phone: (413) 536-9311 Fax: (413) 536-9315
Email: jlavelle@hged.com

1.12 Owner business organization type (check one):

❑ Individual
❑ Partnership
X Corporation
❑ Other:

1.13 Operator name and title: Holyoke Gas & Electric Dept., Paul Ducheney, Superintendent – Hydro Division

1.14 Operator address and contact information:

Address: Holyoke Gas & Electric Department
99 Suffolk Street
Holyoke, MA 01040
Phone: (413) 536-9340 Fax: (413) 536-9353
Email: ducheney@hged.com

1.15 Operator business organization type (check one):

❑ Individual
❑ Partnership
X Corporation
❑ Other:

SECTION II: Generation Unit Information, Fuels, Energy Resources and Technologies

2.1 ISO-NE Generation Unit Asset Identification Number or NEPOOL GIS Identification Number (either or both as applicable): ISO-NE Asset ID# 957, GIS ID# MSS957

2.2 Generation Unit Nameplate Capacity: 3.056 MW

2.3 Maximum Demonstrated Capacity: 3.147 MW

2.4 Please indicate which of the following Eligible Renewable Energy Resources are used by the Generation Unit: (Check ALL that apply) – *per RES Regulations Section 5.0*

- ❑ Direct solar radiation
- ❑ The wind
- ❑ Movement of or the latent heat of the ocean
- ❑ The heat of the earth
- X Small hydro facilities
- ❑ Biomass facilities using Eligible Biomass Fuels and maintaining compliance with all aspects of current air permits; Eligible Biomass Fuels may be co-fired with fossil fuels, provided that only the renewable energy fraction of production from multi-fuel facilities shall be considered eligible.
- ❑ Biomass facilities using unlisted biomass fuel
- ❑ Biomass facilities, multi-fueled or using fossil fuel co-firing
- ❑ Fuel cells using a renewable resource referenced in this section

2.5 If the box checked in Section 2.4 above is "Small hydro facilities", please certify that the facility's aggregate capacity does not exceed 30 MW. – *per RES Regulations Section 3.31*

X ← check this box to certify that the above statement is true

❑ N/A or other (please explain) _____

_____

2.6 If the box checked in Section 2.4 above is "Small hydro facilities", please certify that the facility does not involve any new impoundment or diversion of water with an average salinity of twenty (20) parts per thousand or less. – *per RES Regulations Section 3.31*

X ← check this box to certify that the above statement is true

❑ N/A or other (please explain) _____

_____

2.7 If you checked one of the Biomass facilities boxes in Section 2.1 above, please respond to the following:

A. Please specify the fuel or fuels used or to be used in the Unit: _____

_____

B. Please complete and attach Appendix F, Eligible Biomass Fuel Source Plan.

Appendix F completed and attached? ❑ Yes ❑ No ❑ N/A

2.8 Has the Generation Unit been certified as a Renewable Energy Resource for eligibility in another state's renewable portfolio standard?

X Yes ❑ No If yes, please attach a copy of that state's certifying order.

Copy of State's certifying order attached? X Yes ❑ No ❑ N/A

SECTION III: Commercial Operation Date

Please provide documentation to support all claims and responses to the following questions:

3.1 Date Generation Unit first entered Commercial Operation: 0 1 / 0 1 / 19 23 at the site.

3.2 Is there an Existing Renewable Energy Resource located at the site of Generation Unit?

X Yes
❑ No

3.3 If the date entered in response to question 3.1 is earlier than December 31, 1997 or if you checked "Yes" in response to question 3.2 above, please complete Appendix C.

Appendix C completed and attached? X Yes ❑ No ❑ N/A

3.4 Was all or any part of the Generation Unit used on or before December 31, 1997 to generate electricity at any other site?

❑ Yes
X No

3.5 If you checked "Yes" to question 3.4 above, please specify the power production equipment used and the address where such power production equipment produced electricity (attach more detail if the space provided is not sufficient):

_____

_____

_____

SECTION IV: Metering

4.1 Please indicate how the Generation Unit's electrical energy output is verified (check all that apply):

X ISO-NE Market Settlement System
❑ Self-reported to the NEPOOL GIS Administrator
❑ Other (please specify below and see Appendix D: Eligibility for Aggregations):

_____

Appendix D completed and attached? ❑ Yes ❑ No X N/A

SECTION V: Location

5.1 Please check one of the following that apply to the Generation Unit:

- X Grid Connected Generation
- ❑ Off-Grid Generation (not connected to a utility transmission or distribution system)
- ❑ Customer Sited Generation (interconnected on the end-use customer side of the retail electricity meter in such a manner that it displaces all or part of the metered consumption of the end-use customer)

5.2 Generation Unit address: 104 Cabot Street
Holyoke, MA 01040

5.3 Please provide the Generation Unit's geographic location information:

A. Universal Transverse Mercator Coordinates: 42.199947, -72.610703

B. Longitude/Latitude: W 72°36' 38.53" / N 42°11' 59.81"

5.4 The Generation Unit located: (please check the appropriate box)

- X In the NEPOOL control area
- ❑ In a control area adjacent to the NEPOOL control area
- ❑ In a control area other than NEPOOL which is not adjacent to the NEPOOL control area ← *If you checked this box, then the generator does not qualify for the RI RES – therefore, please do not complete/submit this form.*

5.5 If you checked "In a control area adjacent to the NEPOOL control area" in Section 5.4 above, please complete Appendix E.

Appendix E completed and attached? ❑ Yes ❑ No X N/A

SECTION VI: Certification

6.1 Please attach documentation, using one of the applicable forms below, demonstrating the authority of the Authorized Representative indicated in Section 1.8 to certify and submit this Application.

Corporations

If the Owner or Operator is a corporation, the Authorized Representative shall provide **either**:

(a) Evidence of a board of directors vote granting authority to the Authorized Representative to execute the Renewable Energy Resources Eligibility Form, **or**

(b) A certification from the Corporate Clerk or Secretary of the Corporation that the Authorized Representative is authorized to execute the Renewable Energy Resources Eligibility Form or is otherwise authorized to legally bind the corporation in like matters.

Evidence of Board Vote provided? X Yes ❑ No ❑ N/A

Corporate Certification provided? X Yes ❑ No ❑ N/A

Individuals

If the Owner or Operator is an individual, that individual shall complete and attach APPENDIX A, or a similar form of certification from the Owner or Operator, duly notarized, that certifies that the Authorized Representative has authority to execute the Renewable Energy Resources Eligibility Form.

Appendix A completed and attached? ❑ Yes ❑ No X N/A

Non-Corporate Entities

(Proprietorships, Partnerships, Cooperatives, etc.) If the Owner or Operator is not an individual or a corporation, it shall complete and attach APPENDIX B or execute a resolution indicating that the Authorized Representative named in Section 1.8 has authority to execute the Renewable Energy Resources Eligibility Form or to otherwise legally bind the non-corporate entity in like matters.

Appendix B completed and attached? ❑ Yes ❑ No X N/A

6.2 Authorized Representative Certification and Signature:

I hereby certify, under pains and penalties of perjury, that I have personally examined and am familiar with the information submitted herein and based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties, both civil and criminal, for submitting false information, including possible fines and punishment. My signature below certifies all information submitted on this Renewable Energy Resources Eligibility Form. The Renewable Energy Resources Eligibility Form includes the Standard Application Form and all required Appendices and attachments. I acknowledge that the Generation Unit is obligated to and will notify the Commission promptly in the event of a change in a generator's eligibility status (including, without limitation, the status of the air permits) and that when and if, in the Commission's opinion, after due consideration, there is a material change in the characteristics of a Generation Unit or its fuel stream that could alter its eligibility, such Generation Unit must be re-certified in accordance with Section 9.0 of the RES Regulations. I further acknowledge that the Generation Unit is obligated to and will file such quarterly or other reports as required by the Regulations and the Commission in its certification order. I understand that the Generation Unit will be immediately de-certified if it fails to file such reports.

Signature of Authorized Representative:

SIGNATURE: DATE:

James M Lavelle 10/30/09

Manager
(Title)

CERTIFICATE

City of Holyoke Gas & Electric Department

I, Secretary of the Municipal Light Commission of the City of Holyoke, Massachusetts, Gas & Electric Department (HG&E) certify that at a meeting of the Commission held on June 16, 2008 of which meeting all members of the board were duly notified and at which a quorum was present and acting throughout, the following votes were unanimously passed, all of which appears in the official records of the board in my custody:

VOTED: (1) to authorize and direct James M. Lavelle, Manager to execute and deliver an Application under Section 1.8 of the State of Rhode Island Public Utilities Commission Renewable Energy Resources Eligibility Form on behalf of HG&E; and

(2) that the Manager is hereby authorized and directed to take any other action he deems necessary or advisable to carry out the purposes of these votes; and

(3) that any actions taken by the Manager consistent with the purposes of these votes are hereby ratified and confirmed.

I further certify that these votes were taken at a meeting open to the public; that notice stating the place, date and time of the meeting was filed with the City Clerk and a copy thereof posted in the office of the City Clerk or on the principal official bulletin board of the city at least 48 hours, including Saturdays but not Sunday and legal holidays, prior to such meeting and remained so posted at the time of the meeting; that no deliberation or decision in connection with the above votes were taken in private or executive session; and that the official record of the meeting was made available to the public promptly and will remain so available to the public, all in accordance with G.L. c. 39, § 23B, as amended.

Dated: July 9, 2008

Secretary of the City of Holyoke Gas & Electric Commission

P:\JJF\H\HG&E\Certificate-RI REC.doc

GIS Certification #:
_____

APPENDIX C
(Required of all Applicants with Generation Units at the Site of Existing Renewable Energy Resources)

STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISION

RENEWABLE ENERGY RESOURCES ELIGIBILITY FORM
Pursuant to the Renewable Energy Act
Section 39-26-1 et. seq. of the General Laws of Rhode Island

If the Generation Unit: (1) first entered into commercial operation before December 31, 1997; or (2) is located at the exact site of an Existing Renewable Energy Resource, please complete the following and attach documentation, as necessary to support all responses:

C.1 Is the Generating Unit seeking certification, either in whole or in part, as a New Renewable Energy Resource? ❑ Yes X No

C.2 If you answered "Yes" to question C.1, please complete the remainder of Appendix C. If you answered "No" and are seeking certification entirely as an Existing Renewable Energy Resource, you do NOT need to complete the remainder of Appendix C.

C.3 If an Existing Renewable Energy Resource is/was located at the site, has such Existing Renewable Energy Resource been retired and replaced with the new Generation Unit at the same site? ❑ Yes ❑ No

C.4 Is the Generation Unit a Repowered Generation Unit (as defined in Section 3.28 of the RES Regulations) which uses Eligible Renewable Energy Resources and which first entered commercial operation after December 31, 1997 at the site of an existing Generation Unit? ❑ Yes ❑ No

C.5 If you checked "Yes" to question C.4 above, please provide documentation to support that the entire output of the Repowered Generation Unit first entered commercial operation after December 31, 1997.

C.6 Is the Generation Unit a multi-fuel facility in which an Eligible Biomass Fuel is first co-fired with fossil fuels after December 31, 1997? ❑ Yes ❑ No

C.7 If you checked "Yes" to question C.6 above, please provide documentation to support that the renewable energy fraction of the energy output first occurred after December 31, 1997.

C.8 Is the Generation Unit an Existing Renewable Energy Resource other than an Intermittent Resource (as defined in Section 3.9 and 3.14 of the RES Regulations)? ❑ Yes ❑ No

C.9 If you checked "Yes" to question C.8 above, please attach evidence of completed capital investments after December 31, 1997 attributable to efficiency improvements or additions of capacity that are sufficient to, were intended to, and can be demonstrated to increase annual electricity output in excess of ten percent (10%). As specified in Section 3.22.v of the RES Regulations, the determination of incremental production shall not be based on any operational changes at such facility **not directly** associated with the efficiency improvements or additions of capacity.

C.10 Is the Generating Unit an Existing Renewable Energy Resource that is an Intermittent Resource? ❑ Yes ❑ No

C.11 If you checked "Yes" to question C.10 above, please attach evidence of completed capital investments after December 31, 1997 attributable to efficiency improvements or additions of capacity that are sufficient to, were intended to, and have demonstrated on a normalized basis to increase annual electricity output in excess of ten percent (10%). The determination of incremental production shall not be based on any operational changes at such facility **not directly** associated with the efficiency improvements or additions of capacity. In no event shall any production that would have existed during the Historical Generation Baseline period in the absence of the efficiency improvements or additions to capacity be considered incremental production. Please refer to Section 3.22.vi of the RES Regulations for further guidance.

C.12 If you checked "Yes" to C.10, provide the single proposed percentage of production to be deemed incremental, attributable to the efficiency improvements or additions of capacity placed in service after December 31, 1997. Please provide backup information sufficient for the Commission to make a determination of this incremental production percentage.

C.13 If you checked "no" to both C.3 and C.4 above, please complete the following:

a. Was the Existing Renewable Energy Resource located at the exact site at any time during calendar years 1995 through 1997? ❑ Yes ❑ No

b. If you checked "yes" in Subsection (a) above, please provide the Generation Unit Asset Identification Number and the average annual electrical production (MWhs) for the three calendar years 1995 through 1997, or for the first 36 months after the Commercial Operation Date if that date is after December 31, 1994, for each such Generation Unit.

c. Please attach a copy of the derivation of the average provided in (b) above, along with documentation support (such as ISO reports) for the information provided in Subsection (b) above. Data must be consistent with quantities used for ISO Market Settlement System.

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC UTILITY CONTROL
TEN FRANKLIN SQUARE
NEW BRITAIN, CT 06051

DOCKET NO. 08-04-11 APPLICATION OF HOLYOKE GAS & ELECTRIC DEPARTMENT FOR QUALIFICATION OF HARRIS ENERGY AS A CLASS II RENEWABLE ENERGY SOURCE

June 11, 2008

By the following Commissioners:

John W. Betkoski, III
Donald W. Downes
Anne C. George

DECISION

I. INTRODUCTION

A. SUMMARY

In this Decision, the Department of Public Utility Control determines that the six Harris Energy generation facilities each qualify as run-of-the river hydropower Class II renewable energy sources and assigns each facility a separate Connecticut Renewable Portfolio Standard (RPS) Number.

B. BACKGROUND OF THE PROCEEDING

By Application (Application) received on April 10, 2008, Holyoke Gas & Electric Department (HG&E) requests, through Brian C. Beauregard, its representative, that the Department of Public Utility Control (Department) determine that six separate run-of-the-river generation facilities qualify as Class II renewable energy sources. The six facilities, Albion A, Albion D, Gill A, Gill D, Mt. Tom and Nonotuck (collectively, the Facilities or Harris Energy), are located in Holyoke, Massachusetts, and comprise Harris Energy. Application, p. 1; HG&E April 9, 2008 Letter, p. 1. The generation facilities commenced commercial operation in 1919. The facilities have the following nameplate facilities: Albion A - .281 MW; Albion D - .395 MW; Gill A - .450; Gill D -.330; Mt. Tom - .473 MW and Nonotuck - .492 MW. Application, pp. 2 and 3. Each of the facilities obtained separate FERC licenses, issued June 29, 1989. Application, Attachments A through F. HG&E requests that the Department issue each facility a separate Connecticut RPS Registration Number. HG&E April 9, 2008 Letter.

The ISO-NE Generation Unit Asset Identification Number is 12168 Harris Energy. Application, p. 2.

C. CONDUCT OF THE PROCEEDING

A hearing in this matter is not required and none was held.

D. PARTIES TO THE PROCEEDING

The Department recognized Holyoke Gas and Electric Department, 99 Sulffock Street, Holyoke, Massachusetts; and the Office of Consumer Counsel, Ten Franklin Square, New Britain, Connecticut 06051 as Participants to this proceeding.

II. DEPARTMENT ANALYSIS

A. STATUTORY REQUIREMENTS

Conn. Gen. Stat. § 16-1(a)(27) defines a class II renewable energy source, in part as: energy derived from . . . a run-of-the-river hydropower facility provide such

facility has a generating capacity of not more than five megawatts, does not cause an appreciable change in the river flow, and began operation prior to July 1, 2003.

In interpreting Conn. Gen. Stat. §16-1(a)(27), the Department has determined that:

(1) "Facility" refers to an entire hydroelectric plant at a single site rather than a turbine generating unit within a hydroelectric plant;

(2) The "generating capacity of not more than five megawatts" refers to a hydroelectric facility's nameplate capacity, not its actual or average generation output;

(3) In order to qualify as "run-of-the-river," a hydroelectric facility must show a current FERC license or exemption that requires the facility to operate in run-of-river mode. In addition, a facility can qualify as a Class I or Class II renewable energy facility only to the extent that its FERC license or exemption requires run-of-river operation. Hydroelectric facilities that are not regulated by FERC will be required to show a FERC order or a court decision stating that FERC has no jurisdiction, or has declined to exercise jurisdiction, over such facility. In such cases, the hydroelectric facility must show that its operation allows the river inflow to equal outflow instantaneously and therefore, does not cause an appreciable change in the river flow; and

(4) "Began operations" means (A) the date an existing facility with existing generation began commercial operation as shown in documentation from FERC; (B) the new date given to an abandoned or destroyed facility that comes back into operation as shown in its documentation from FERC or as determined by the Department; (C) the date upon which a facility changes operation from store and release to run-of-river as shown in documentation from FERC; or (D) the new date that incremental generation is in operation at an existing facility as shown in its documentation from FERC.[1]

As provided in the application, the Facilities are hydroelectric and are located in Holyoke, Massachusetts. The Facilities are currently owned Holyoke Gas & Electric Department. According to the application and supporting documentation, the Facilities began operation in 1919 and are licensed to operate by FERC as run-of-river hydroelectric facilities. Application, FERC licenses issued June 29, 1989.

Based on the foregoing, the Department determines that the Harris Energy Facilities qualify as Class II renewable energy facilities.

III. FINDINGS OF FACT

1. Albion A, Albion D, Gill A, Gill D, Mt. Tom and Nonotuck comprise Harris Energy.

2. Albion A, Albion D, Gill A, Gill D. Mt. Tom and Nonotuck are each run-of–the-river facilities and each obtained a FERC license in June 1989.

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[1] See the Department's September 10, 2004 Decision in Docket No. 04-02-07, DPUC Declaratory Ruling Concerning "Run-of the River Hydropower" as That Term is Used in the Definitions of Class I and Class II Renewable Energy Source in C.G.S. § 16-1(a)(26) & (27).

3. The total generating capacity of the Facilities is less than 5 MW.

4. Total rated capacity for the Facilities is 2.421 MW.

5. Harris Energy is connected to the ISO-NE grid.

6. The Facilities began operation prior to July 1, 2003.

IV. CONCLUSION AND ORDERS

A. CONCLUSION

Based on the evidence submitted, the Department finds that the Albion A, Albion D, Gill A, Gill D, Mt. Tom and Nonotuck each qualify as Class II renewable energy sources pursuant to Conn. Gen. Stat. 16-1(a)(27).

The Department assigns each renewable generation source a unique Connecticut RPS registration number. The Facilities Connecticut RPS registration number is as follows: Albion A – CT00266-08A ; Albion D – CT00266-08B ,Gill A – CT00266-08C ; Gill D – CT00266-08D ; Mt. Tom – CT00266-08E ; and Nonotuck – CT00266-08F.

The Department's determination in this docket is based on the information submitted by HG&E. The Department may reverse its ruling or revoke the Applicant's registration in any material information provided by the Applicant proves to be false or misleading. The Department reminds HG&E that it is obligated to notify the Department within 10 days of any changes to any of the information it has provided to the Department.

DOCKET NO. 08-04-11 APPLICATION OF HOLYOKE GAS & ELECTRIC DEPARTMENT FOR QUALIFICATION OF HARRIS ENERGY AS A CLASS II RENEWABLE ENERGY SOURCE

This Decision is adopted by the following Commissioners:

John W. Betkoski, III

Donald W. Downes

Anne C. George

CERTIFICATE OF SERVICE

The foregoing is a true and correct copy of the Decision issued by the Department of Public Utility Control, State of Connecticut, and was forwarded by Certified Mail to all parties of record in this proceeding on the date indicated.

Louise E. Rickard
Acting Executive Secretary
Department of Public Utility Control

June 11, 2008
Date

[¶ 62,229]

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 refer-

[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.

ence 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:

Exhibit G-	*FERC No. 2386-*	*Showing*
sheet 1	16	Project Maps

(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

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.

(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 determi-

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

nation. 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.

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 agencies	*Date 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,

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

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.

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

[¶ 62,310]

The City of Holyoke, Gas & Electric Department, Project No. 2387-001

Order Issuing License (Minor Project)

(Issued September 28, 1988)

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

The City of Holyoke, Gas & Electric Department (Holyoke) filed a license application under Part I of the Federal Power Act (Act) to operate and maintain the constructed Number 2 Hydro Unit Project located on the First and Second Level Canals of the Holyoke Canal System off the Connecticut River, in Hampden County, Massachusetts.[1] The Connecticut River is a navigable waterway of the United States.[2]

The Holyoke Canal System takes water from the Connecticut River and discharges the water back into the Connecticut River at a point downstream. On July 5, 1949, the Commission issued a license to the Holyoke Water Power Company for Project No. 2004 which included therein the canal system as a part of the project works, but not the hydroelectric facilities owned by others and located along the canal system.

Notice of the application has been published. The comments filed by agencies and individuals have been fully considered in determining whether to issue this license. A motion to intervene was filed by the Holyoke Water Power Company in order to be a party in this proceeding.

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 Commission provided an interpretation of comprehensive plans under section 10(a)(2)[3] that is revised by the Order Granting Rehearing, issued April 27, 1988.[4] In granting rehearing, the Commission instructed the Director, Office of Hydropower Licensing, to request the state and federal agencies to file plans they believe meet the revised guidelines. Until the process is completed, the staff will consider all available plans pursuant to section 10(a)(2).

The staff reviewed 3 plans that address various aspects of waterway management in relation to the proposed project.[5] 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 Number 2 Hydro Unit 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 (EA) for the Number 2 Hydro Unit 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[6] 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.

License Term

Because section 15 of the Act was waived for this project when it was previously licensed, this application is being treated as an original license application. The Commission's policy on license terms for constructed projects proposing no new construction is to set the license term at

[1] On March 24, 1965, the Commission issued a license to Holyoke for this project. That license expired on March 31, 1988.

[2] See 2 FPC 387 (1941).

[3] Order No. 481, 52 Fed. Reg. 39,905 (October 26, 1987), *FERC Statutes and Regulations* ¶ 30,773 (1987).

[4] Order No. 481-A [*FERC Statutes and Regulations* ¶ 30,811] (April 27, 1988).

[5] 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.

[6] Because section 15 of the Act was waived in the original license for this project, the discussion of alternatives under sections C-4(a) and (c) of the EA is not relevant.

30 years.[7] Accordingly, this license will expire 30 years from the effective date of this license.

The Director orders:

(A) This license is issued to the City of Holyoke, Gas & Electric Department (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 Number 2 Hydro Unit Project. This license is subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The 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:

Exhibit	*FERC No.*	*Showing*
G-1	2384-26	Project area

(2) Project works consisting of: (1) an intake at the wall of the Holyoke first level canal; (2) two parallel 9-foot-diameter steel penstocks each 240 feet long; (3) one surge tank about 17 feet high and 10 feet in diameter; (4) a powerhouse 60 feet long, 40 feet wide and about 50 feet high, containing one vertical turbine-generator unit rated at 800 kW and 1,017 hp; (5) two parallel brick arched tailrace conduits, each 9 feet wide, 10 feet high and 120 feet long, discharging into the Holyoke second level canal; (6) one 4.8-kV transmission line, 800 feet long; and (7) 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.

* At the expiration of this license, any license application filed, including the licensee's, will be treated as an original license application. The municipal preference provisions of section 7(a) of the Act will apply.

(E) This license is subject to the articles set forth in Form L-9 (October 1975) [reported at 54 FPC 1852], 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 date 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 1,000 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

[7] *Montana Power Company*, 56 FPC 2008 (1976).

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 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.

(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

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review
August 26, 1988
Number 2 Hydro Unit
FERC Project No. 2387

A. Application

1. Application type: New minor license

2. Date filed with the Commission: March 31, 1987

3. Applicant: City of Holyoke, Massachusetts, Gas and Electric Department

4. Water body: Holyoke Canal; River basin: Connecticut

5. Nearest city or town: Holyoke, Massachusetts (see figure 1)

6. County: Hampden; State: Massachusetts

B. Purpose and Need for Action

1. Purpose

The project provides an estimated average annual generation of 4,243.4 megawatthours of electricity which is sold to the customers of the City of Holyoke, Gas and Electric Department.

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 commenced operation in 1938, was issued an initial license in 1965, which expired on March 31, 1988, and

is currently operating under annual license. The licensee has filed for a new license to continue operating the project. The project consists of the following existing facilities (see figure 2):

a. an intake at the wall of the Holyoke first level canal;

b. two parallel 9-foot-diameter steel penstocks each 240 feet long;

c. one surge tank about 17 feet high and 10 feet in diameter;

d. a powerhouse 60 feet long, 40 feet wide, and about 50 feet high, containing one vertical turbine-generator unit rated at 800 kilowatts and 1,017 horsepower;

e. two parallel brick arched tailrace conduits, each 9 feet wide, 10 feet high, and 120 feet long, discharging into the Holyoke second level canal;

f. one 4.8-kilovolt transmission line; 800 feet long; and

g. appurtenant facilities.

2. Proposed mitigation

Because the applicant proposes to continue operating the project as in the past, with no new construction, the applicant proposes no mitigative measures.

3. Federal lands affected.

No.

4. Alternatives to the existing project.

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

b. Federal takeover

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. Issuance of nonpower 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. Denial of 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).

a. U.S. Fish & Wildlife Service (FWS): Yes.

b. State(s): Yes.

c. National Marine Fisheries Service (NMFS): Yes.

2. Section 7 consultation (Endangered Species Act).

a. Listed species: Present;

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. Consultation: Not required.

Remarks: 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).

Required; applicant requested certification on 3/13/87.

Status: Granted by the certifying agency on 3/30/87.

4. Cultural resource consultation (Historic Preservation Act).

a. State Historic Preservation Officer (SHPO): Yes.

b. National Park Service (NPS): Yes.

c. *National Register* status: Eligible or listed.

d. Council: Not required.

e. Further consultation: Not required.

5. Recreational consultation (Federal Power Act).

a. U.S. Owners: No.

b. NPS: Yes.

c. State(s): Yes.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act).

Status: None.

E. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 5/5/88. No motions to intervene were filed.

Commenting agencies and other entities	*Date of letter*
Department of the Interior	6/23/88
Department of the Army, Corps of Engineers, New England Division	6/9/88

2. The applicant did not respond to the comments or motion(s) to intervene.

F. Affected Environment

1. Connecticut River Basin

a. Description of the Connecticut River Basin (See figure 3)

The Connecticut River Basin (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 this basin.

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

c. There are 7 pending license applications in the river basin, 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 Connecticut River Basin is anadromous fish. The anadromous fishery resource is described below in section F(3d). Impacts to anadromous fish are discussed in section G.

2. General 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 Mas-

sachusetts 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

Anadromous: Present.

Remarks: 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).

Resident: Present.

Remarks: Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner, white perch, bluegill, rainbow trout, and brown trout.

e. Vegetation

Cover type—Dominant species

upland hardwood forest—oaks, maple, white pine, pitch pine

industrial area—grasses, 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 are properties listed on, or eligible for listing on, the *National Register of Historic Places* in the area of the project's potential environmental impact.

Description:

The Holyoke Canal system is a contributing element in the Holyoke Canal Historic District. The district is listed on the *National Register of Historic Places*. 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 located in the City of Holyoke. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canals are used for generating hydroelectric power.

k. Socioeconomics

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

G. Environmental Issues and Proposed Resolutions

There is 1 issue(s) addressed below.

1. 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 Connecticut River Basin, 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 Holyoke Water Power Company (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.

Subsequently, the applicant and the HWPC have recently 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.

Therefore, continued operation of the Number 2 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 the applicant'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).

Assessment symbols indicate the following impact levels:

O = None;1 = Minor; 2 = Moderate; 3 = Major; A = Adverse; B = Beneficial; L = Long-term; S = Short-term.

Resource	Impact P	Ps	A	Resource	Impact P	Ps	A
a. Geology-Soils	0			f. Wildlife	0		
b. Streamflow	0			g. Cultural: Archeological	0		
c. Water quality: Temperature	0			Historical	0		
Dissolved oxygen	0			h. Visual quality	0		
Turbidity and sedimentation	0			i. Recreation	0		
d. Fisheries: Anadromous	0			j. Land use	0		
Resident	0			k. Socioeconomics	0		
e. Vegetation	0						

2. Recommended alternative (including proposed, required, and recommended mitigative measures):

Existing project.

3. Reason(s) for selecting the preferred alternative.

The power generated at this project is produced without any known adverse environmental impacts.

I. Unaviodable 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(3)] 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. 1987. Application for minor license. Number 2 Hydro Unit, FERC Project No. 2387-001, Massachusetts.

City of Holyoke, Gas and Electric Department. 1988. Additional information for the application for license for the Number 2 Hydro Unit, FERC Project No. 2387, Massachusetts. January 28, 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.

L. List of Preparers (Name—Position title)

James T. Griffin—Archeologist (Coordinator)

Spencer Gakner—Ecologist

John Staples—Ecologist

Peter Leitzke—Geologist

Ann E. Mates—Environmental Protection Specialist

Mary Nowak—Editor

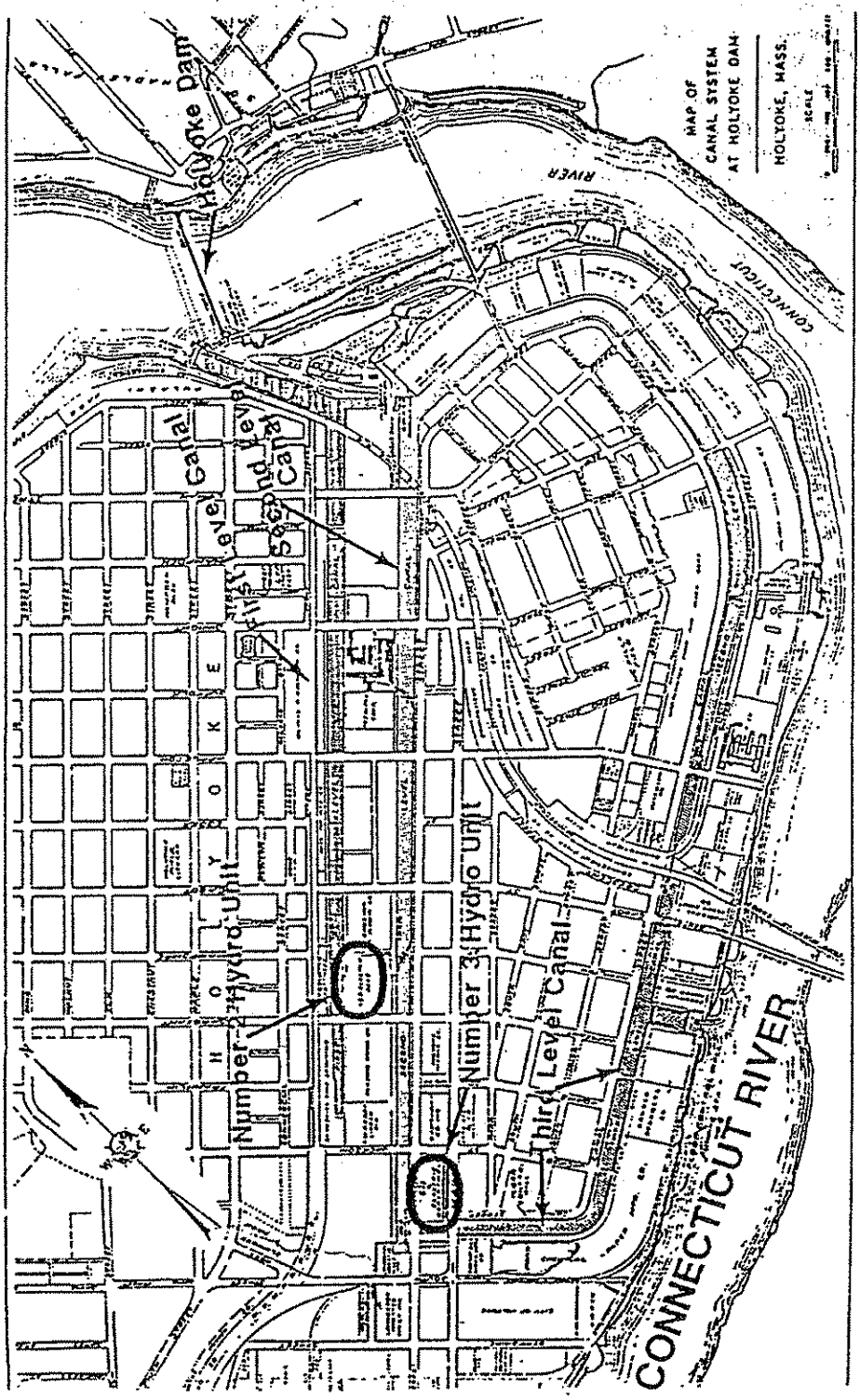

Figure 1. Location of the proposed Number 2 Hydro Unit, FERC Project No. 2387-001, Massachusetts.

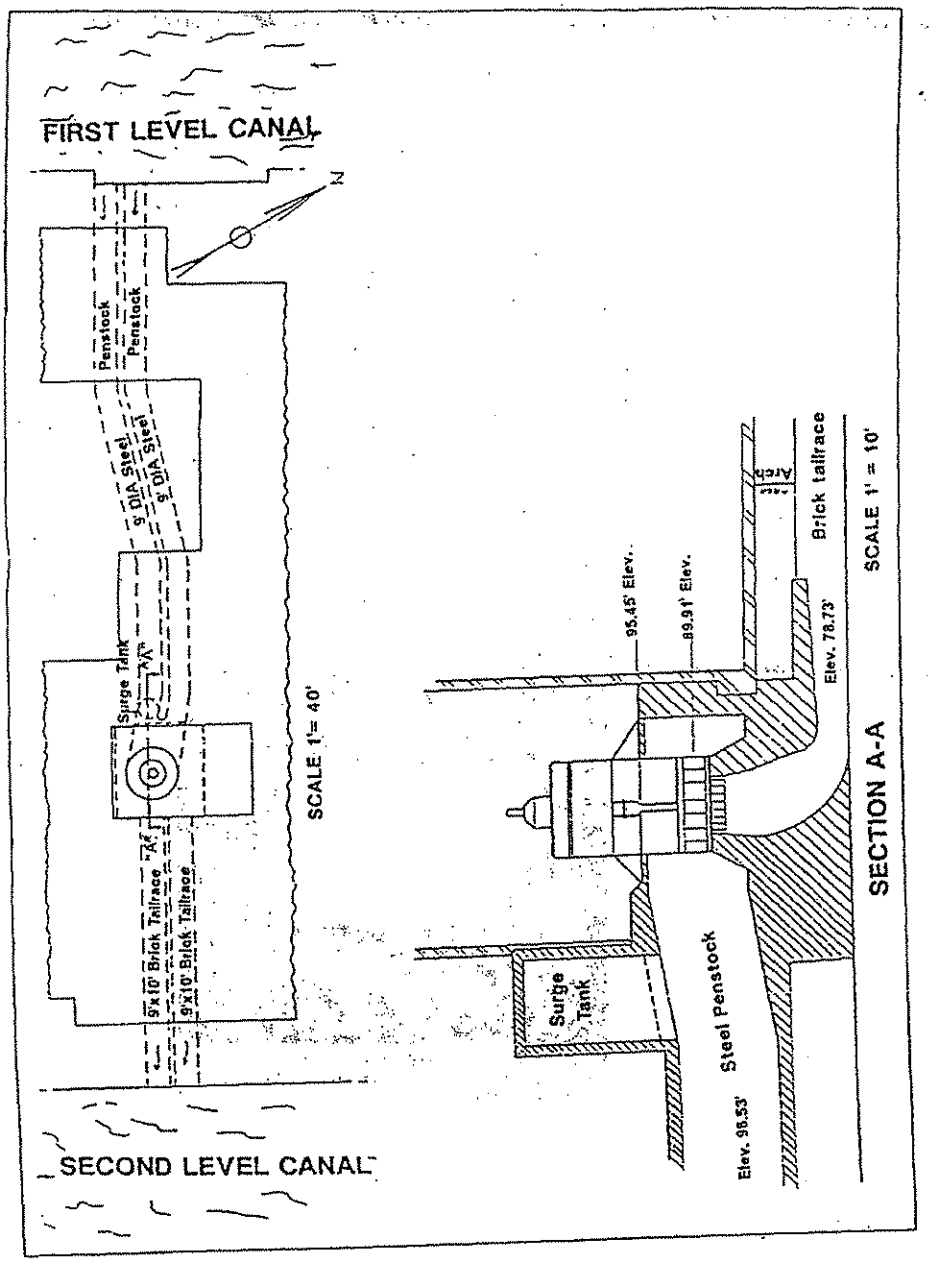

Figure 2. Location of project features for the proposed Number 2 Hydro Unit, FERC Project No. 2387-001, Massachusetts.

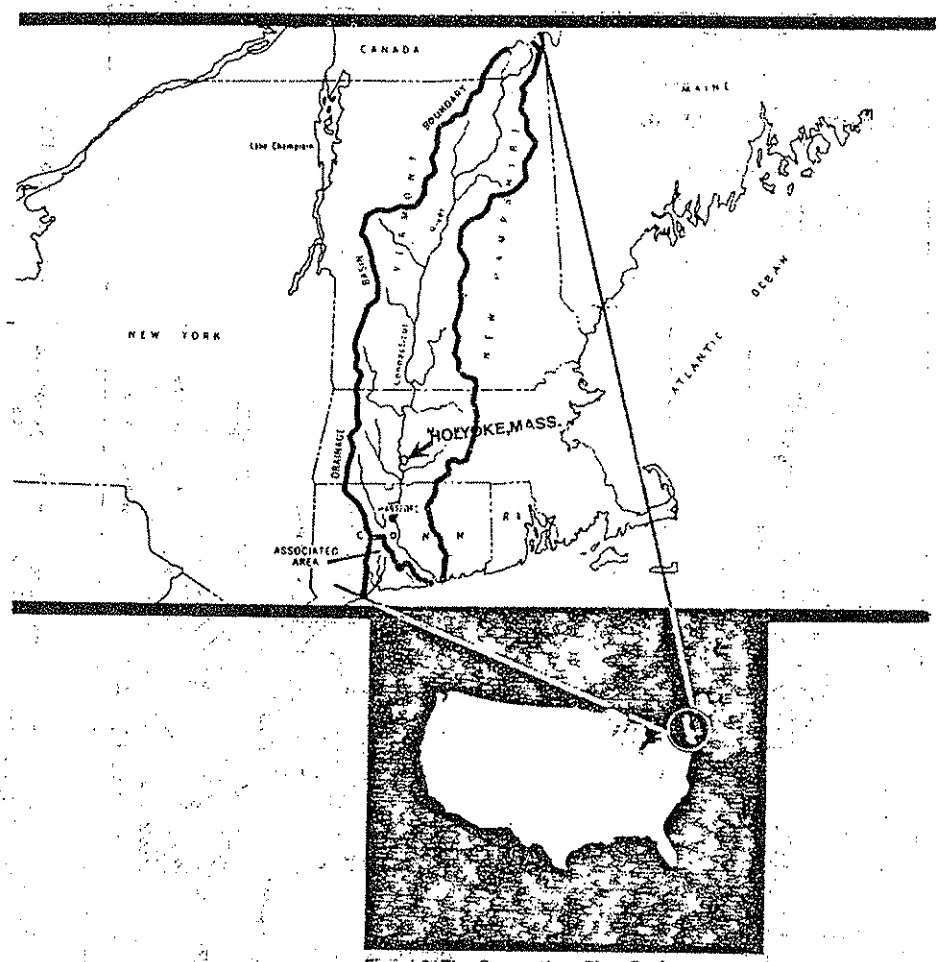

Figure 3. The Connecticut River Basin, showing the location of the City of Holyoke, Massachusetts

Safety and Design Assessment
Number 2 Hydro Unit
FERC Project No. 2387-001—Massachusetts

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) an intake at the wall of the Holyoke First Level Canal; (2) two parallel 9-foot-diameter steel penstocks, each about 240 feet long; (3) one surge tank about 17 feet high and 10 feet in diameter; (4) a powerhouse about 60 feet long, 40 feet wide and 50 feet high, equipped with one vertical turbine-generator unit rated at 1017 hp and 800 kW; (5) two parallel brick-arched tailrace conduits, each 9 feet wide, 10 feet high and about 120 feet long, discharging into the Holyoke Second Level Canal; (6) one 4.8-kV transmission line, 800 feet long, connecting to the City of Holyoke, Gas Electric Department's distribution system; and (7) appurtenant facilities.

Water Resources Planning

The Number 2 Hydro Unit Project was put into service in 1938, was licensed on March 24, 1965, and the owner (City of Holyoke) filed a license application on March 31, 1987. The original license terminated on March 31, 1988.

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 the Number 2 Hydro Unit Project 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 4,243,400 kWh annually, giving it a plant factor of about 61 percent. Its maximum water use of 720 cfs is about 5.1 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-term rates of the least costly alternative source of energy.

The staff concludes that the Number 2 Hydro Unit Project will adequately utilize the available head and flow at the site and would not conflict with any other planned development.

Exhibits

The following portions of exhibit A, and the following exhibit F drawings are included as part of the license.

Exhibit A

One page titled "Exhibit A, FERC Project Number 2387—Number 2 Hydro", filed with the application for license on March 31, 1987, describing the project's mechanical, electrical and transmission equipment.

Exhibit F

Sheet No.	*FERC No.*	*Description*
F-1	2387-22	General Plan & Cross Section
F-2	2387-23	Cross Sections of Penstocks & Draft Tube
F-4	2387-24	Generator Plan & Elevation
F-8	2387-25	Turbine Cross Section

[¶ 62,309]

The City of Holyoke, Gas & Electric Department, Project No. 2388-001

Order Issuing License (Minor Project)

(Issued September 28, 1988)

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

The City of Holyoke, Gas & Electric Department filed a license application under Part I of the Federal Power Act (Act) to operate and maintain the constructed Number 3 Hydro Unit Project located on the Second Level Canal of the Holyoke Canal System off the Connecticut River, in Hampden County, Massachusetts. The Connecticut River is a navigable waterway of the United States.[1]

The Holyoke Canal System takes water from the Connecticut River and discharges the water back into the Connecticut River at a point downstream. On July 5, 1949, the Commission issued a license to the Holyoke Water Power Company for Project No. 2004 which included therein the canal system as a part of the project works, but not the hydroelectric facilities owned by others and located along the canal system.

Notice of the application has been published. The comments filed by agencies and individuals have been fully considered in determining whether to issue this license. A motion to intervene was filed by the Holyoke Water Power Company in order to be a party in this proceeding.

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 Commission provided an interpretation of comprehensive plans under section 10(a)(2)[2] that is revised by the Order Granting Rehearing, issued April 27, 1988.[3] In granting rehearing,

[1] *See* 2 FPC 387 (1941).

[2] Order No. 481, 52 Fed. Reg. 39,905 (October 26, 1987), *FERC Statutes and Regulations* ¶ 30,773 (1987).

[3] Order No. 481-A, *FERC Statutes and Regulations* ¶ 30,811 (April 27, 1988).

the Commission instructed the Director, Office of Hydropower Licensing, to request the state and federal agencies to file plans they believe meet the revised guidelines. Until the process is completed, the staff will consider all available plans pursuant to section 10(a)(2).

The staff reviewed 3 plans that address various aspects of waterway management in relation to the proposed project.[4] 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 Number 3 Hydro Unit 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 (EA) for the Number 3 Hydro Unit 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[5] 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.

License Term

Because section 15 of the Act was waived for this project when it was previously licensed, this application is being treated as an original license application. The Commission's policy on license terms for constructed projects proposing no new construction is to set the license term at 30 years.[6] Accordingly, this license will expire on May 31, 2020.

The Director orders:

(A) This license is issued to the City of Holyoke, Gas & Electric Department (licensee), for a period of 30 years, effective June 1, 1990, to operate and maintain the Number 3 Hydro Unit Project. This license is subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The 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:

Exhibit	*FERC No.*	*Showing*
G-1	2388-28	Project area

(2) Project works consisting of: (1) an intake trashrack about 47 feet long and 11 feet high covering an opening in the Holyoke Second Level Canal; (2) two headgates about 11 feet square; (3) two low pressure brick penstocks each about 85 feet long and 93 square feet in cross section; (4) a reinforced concrete powerhouse about 42 feet long, 34 feet wide, and 28 feet high, housing one turbine-generator unit rated at 450 kW with an average head of 12.5 feet; (5) an open tailrace about 118 feet long, 29.7 feet wide, and 10 feet deep; (6) 4.8-kV generator leads that connect directly to the 4.8-kV area distribution system; and (7) 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

[4] 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.

[5] Because section 15 of the Act was waived in the original license for this project, the discussion of alternatives under sections C-4(a) and (c) of the EA is not relevant.

[6] *Montana Power Company*, 56 FPC 2008 (1976).

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.

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*At the expiration of this license, any license application filed, including the licensee's, will be treated as an original license application. The municipal preference provisions of section 7(a) of the Act will apply.

(E) This license is subject to the articles set forth in Form L-9 (October 1975) [reported at 54 FPC 1852], 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 June 1, 1990:

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 600 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 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.

(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

Federal Energy Regulatory Commission

Office of Hydropower Licensing

Division of Project Review

August 26, 1988

Number 3 Hydro Unit

FERC Project No. 2388

A. Application

1. Application type: New minor license

2. Date filed with the Commission: July 23, 1987

3. Applicant: City of Holyoke, Massachusetts, Gas and Electric Department

4. Water body: Holyoke Canal; River basin: Connecticut

5. Nearest city or town: Holyoke, Massachusetts (see figure 1)

6. County: Hampden; State: Massachusetts

B. Purpose and Need for Action

1. Purpose

The project provides an estimated average annual generation of 2,466 megawatthours of electricity which is sold to the customers of the City of Holyoke, Gas and Electric Department.

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 commenced operation in 1940 and was issued an initial license in 1965, which will expire on May 31, 1990. The licensee has filed for a new license to continue operating the project. The project consists of the following existing facilities (*see* figure 2):

a. an intake trashrack about 47 feet long and 11 feet high covering an opening in the Holyoke Second Level Canal;

b. two headgates about 11 feet square;

c. two low pressure brick penstocks each about 85 feet long and 93 square feet in cross section;

d. a reinforced concrete powerhouse about 42 feet long, 34 feet wide, and about 28 feet high, containing one turbine-generator unit rated at 450 kilowatts with an average head of 12.5 feet;

e. an open tailrace about 118 feet long, 29.7 feet wide, and 10 feet deep;

f. 4.8-kilovolt (kV) generator leads that connect directly to the 4.8 kV area distribution system; and

g. appurtenant facilities.

2. Proposed mitigation

Because the applicant proposes to continue operating the project as in the past, with no new construction, the applicant proposes no mitigative measures.

3. Federal lands affected

No.

4. Alternatives to the existing project

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

b. Federal takeover

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. Issuance of nonpower 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. Denial of 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).

a. U.S. Fish & Wildlife Service (FWS): Yes.

b. State(s): Yes.

c. National Marine Fisheries Service (NMFS): Yes.

2. Section 7 consultation (Endangered Species Act).

a. Listed species: Present:

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, August 3, 1987).

b. Consultation: Not required.

Remarks: 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).

Required; applicant requested certification on 5/12/87.

Status: Granted by the certifying agency on 7/14/87.

4. Cultural resource consultation (Historic Preservation Act).

a. State Historic Preservation Officer (SHPO): Yes.

b. National Park Service (NPS): Yes.

c. *National Register* status: Eligible or listed.

d. Council: Not required.

e. Further consultation: Not required.

5. Recreational consultation (Federal Power Act).

a. U.S. Owners: No.

b. NPS: Yes.

c. State(s): Yes.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act). Status: None.

E. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 3/31/88. No motions to intervene were filed.

Commenting agencies and other entities	*Date of letter*
Department of the Interior	5/26/88
Department of the Army, Corps of Engineers, New England Division	5/17/88
U.S. Environmental Protection Agency	6/1/88

2. The applicant did not respond to the comments or motion(s) to intervene.

F. Affected Environment

1. Connecticut River Basin

a. Description of the Connecticut River Basin (See figure 3)

The Connecticut River Basin (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 this basin.

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

c. There are 7 pending license applications in the river basin, 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 Connecticut River Basin is anadromous fish. The anadromous fishery resource is described below in section F(3d). Impacts to anadromous fish are discussed in section G.

2. General 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

Anadromous: Present.

Remarks: 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).

Resident: Present.

Remarks: Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner, white perch, bluegill, rainbow trout, and brown trout.

e. Vegetation

Cover type—Dominant species

upland hardwood forest—oaks, maple, white pine, pitch pine

industrial area—grasses, 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 are properties listed on, or eligible for listing on, the *National Register of Historic Places* in the area of the project's potential environmental impact.

Description:

The Holyoke Canal system is a contributing element in the Holyoke Canal Historic District. The district is listed on the *National Register*

of Historic Places. 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 located in the City of Holyoke. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canals are used for generating hydroelectric power.

k. Socioeconomics

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

G. Environmental Issues and Proposed Resolutions

There is 1 issue addressed below.

1. 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 Connecticut River Basin, 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 Holyoke Water Power Company (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.

Subsequently, the applicant and the HWPC have recently 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.

Therefore, continued operation of the Number 3 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 the applicant'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).

Assessment symbols indicate the following impact levels:

O = None; 1 = Minor; 2 = Moderate; 3 = Major; A = Adverse; B = Beneficial; L = Long-term; S = Short-term.

Resource	Impact P	Ps	A	Resource	Impact P	Ps	A
a. Geology-Soils	0			f. Wildlife	0		
b. Streamflow	0			g. Cultural: Archeological	0		
c. Water quality: Temperature	0			Historical	0		
Dissolved oxygen	0			h. Visual quality	0		
Turbidity and sedimentation	0			i. Recreation	0		
d. Fisheries: Anadromous	0			j. Land use	0		
Resident	0			k. Socioeconomics	0		
e. Vegetation	0						

2. Recommended alternative (including proposed, required, and recommended mitigative measures):

Existing project.

3. Reason(s) for selecting the preferred alternative:

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(3)] 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. 1987. Application for minor license. Number 2 Hydro Unit, FERC Project No. 2387-001, Massachusetts.

City of Holyoke, Gas and Electric Department. 1988. Additional information for the application for license for the Number 2 Hydro Unit, FERC Project No. 2387, Massachusetts. January 28, 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.

L. List of Preparers (Name—Position title)

James T. Griffin—Archeologist (Coordinator)

Spencer Gakner—Ecologist

John Staples—Ecologist

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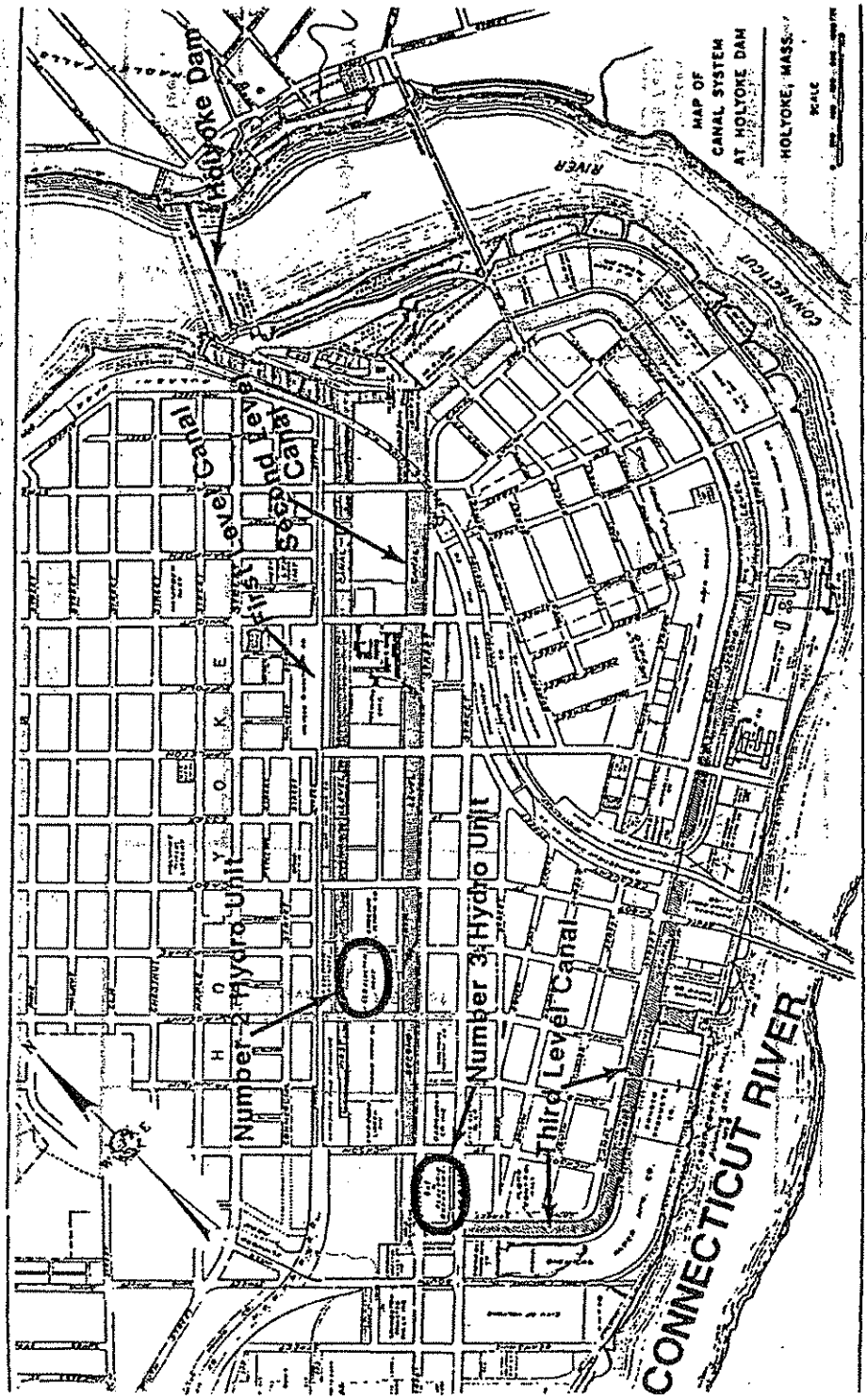

Figure 1. Location of the proposed Number 3 Hydro Unit; FERC Project No 2388-001, Massachusetts.

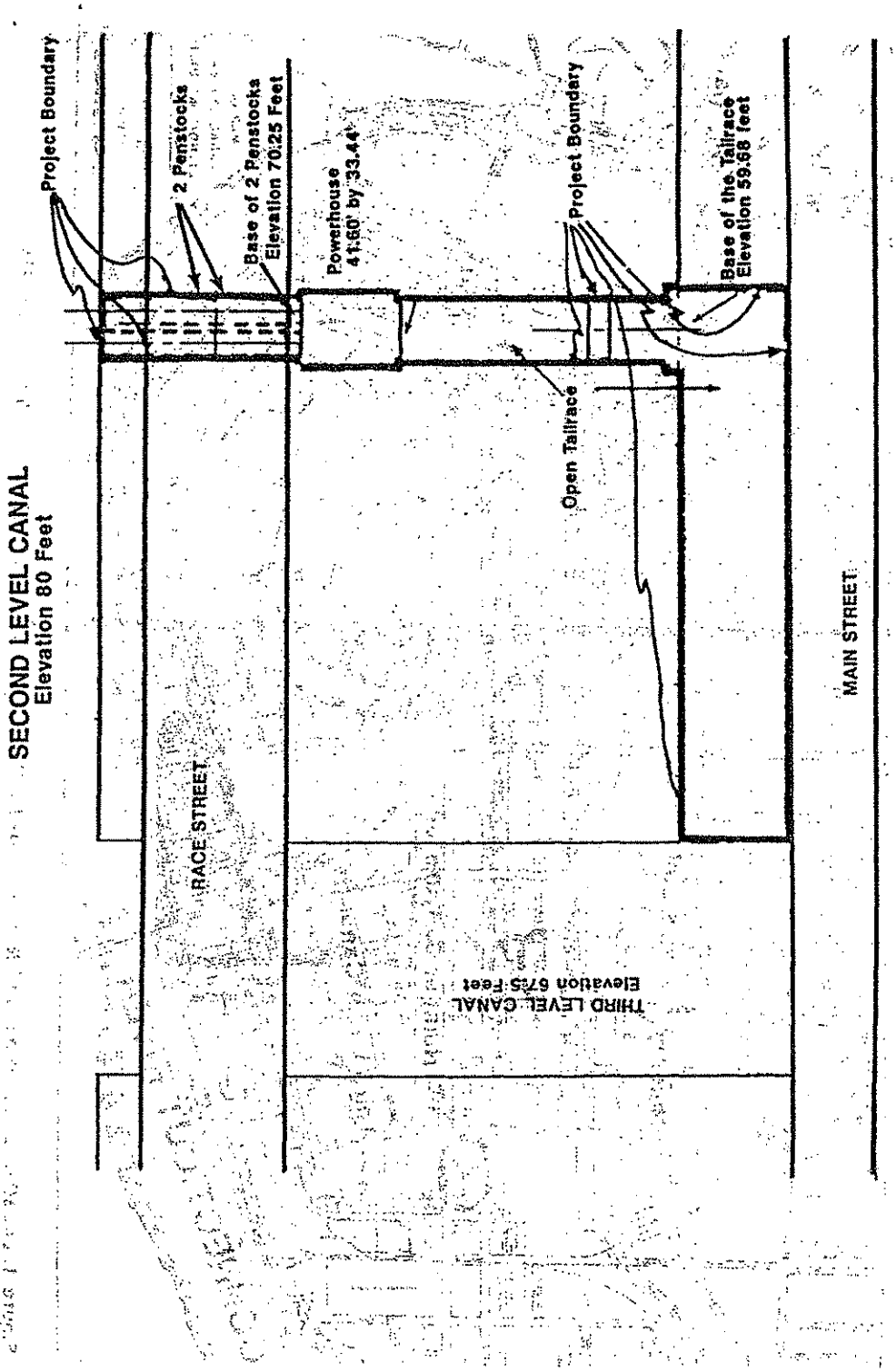

Figure 2. Location of project features for the proposed Number 3 Hydro Unit, FERC Project No. 2388-001, Massachusetts.

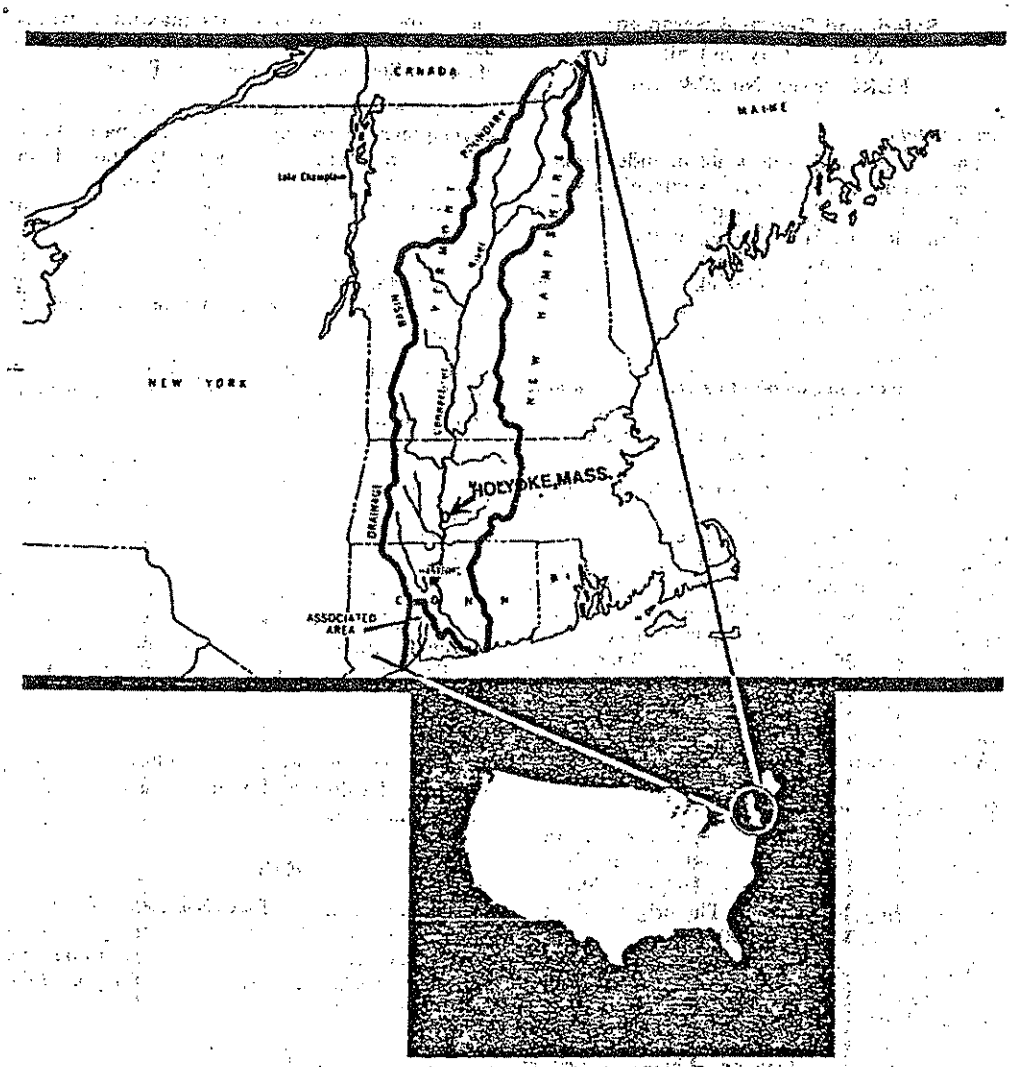

Figure 3. The Connecticut River Basin, showing the location of the City of Holyoke, Massachusetts.

Safety and Design Assessment
Number 3 Hydro Unit
FERC Project No. 2388-001

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) a trash rack about 47 feet long and 11 feet high covering an intake opening in the Holyoke Second Level Canal; (2) two headgates about 11 feet square each; (3) two parallel low pressure brick penstocks, each about 85 feet long and 93 square feet in cross section; (4) a reinforced concrete powerhouse about 42 feet long, 34 feet wide, and 28 feet high, equipped with one turbine-generator unit rated at 450 kilowatts (kW) with an average head of 12.5 feet; (5) an open tailrace about 118 feet long, 29.7 feet wide, and 10 feet deep; (6) 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.

Water Resources Planning

The Number 3 Hydro Unit was put into service in 1940, was licensed on March 23, 1965, and the owner (City of Holyoke) filed for relicense on July 23, 1987. The original license terminates on May 31, 1990.

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 3 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 2,466,000 kWh annually, giving it a plant factor of about 63 percent. Its maximum water use of 534 cfs is about 3.8 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-term rates of the least costly alternative source of energy.

The staff concludes that the Number 3 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 portions of Exhibit A, and the following Exhibit F drawings are included as part of the license.

Exhibit A

One page titled "FERC No. 2388—Number 3 Hydro Exhibit A", filed with the application for license on July 23, 1987, describing the project's mechanical, electrical and transmission equipment.

Exhibit F

Sheet No.	*FERC No.*	*Description*
F-1	2388-22	Powerhouse Elevations
F-2	2388-23	Powerhouse Cross Section
F-7	2388-24	Penstocks & Tailrace Plans Profiles & Cross Sections
F-8	2388-25	Turbine Floor Plan
F-9	2388-26	Turbine Pit & Draft Tube
F-13	2388-27	Turbine-Generator Cross Section

[¶ 62,270]

Holyoke Gas & Electric Department, Project No. 7758-001

Order Issuing License (Minor Project)

(Issued March 19, 1987)

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

Holyoke Gas & Electric Department has filed a license application under Part I of the Federal Power Act (Act) to operate and maintain the Number 4 Hydro Project, located in Hampden County, Massachusetts, on the Holyoke Canal System, 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, as discussed below.

License Term/Back Annual Charges

This project should have been licensed on March 4, 1941, the date when the Connecticut River was determined to be a navigable waterway of the United States. Absent extraordinary circumstances, the Commission's policy is to issue licenses for a term expiring 20 years from the first day of the month in which the license is issued. The effective date of this license will be March 1, 1957. [2]

Annual charges will be assessed from the effective date. Moreover, in order to place this licensee in the same position as those similarly situated licensees that received their licenses timely and paid annual charges, the licensee will be required to pay an amount equivalent to the annual charges that would have been due for the period between March 4, 1941 and March 1, 1957.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Federal Power Act (FPA), as amended by the Electric Consumers Protection Act of 1986 (ECPA), Pub. L. No. 99-495, 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 (EA) for the Number 4 Hydro Project, which was prepared prior to ECPA, addresses most of the concerns of the federal and state fish and wildlife agencies, but does not adopt the Massachusetts Division of Fisheries and Wildlife (MDFW) recommendation, contained in MDFW's letter dated August 23, 1985, that a fish screen system be immediately installed.

Consistent with the new Section 10(j)(2) of the FPA, the Commission staff succeeded in resolving the difference between MDFW's fish screen recommendation and the staff's recommendation as reflected in the EA. By letter dated December 15, 1986, the Director, Office of Hydropower Licensing (Director), advised the MDFW of the differences between the MDFW recommendation and the provisions that the staff believes are necessary to limit project-related impacts on fish resources.

On December 18, 1986, the MDFW notified the Director that, upon further review and analysis of the project's impacts, they concur with the staff's conclusion that additional fish screening is not needed at this time. Two existing trashracks at the project which serve as fish screens should be adequate to prevent significant impacts to anadromous fish. If, in the future, additional fish screening or downstream passage facilities are found to be needed, terms and conditions of the license will provide for the construction and operation of these facilities.

Comprehensive Plans

Section 10(a)(2) of the FPA, as amended by ECPA, requires the Commission to consider the extent to which a project is consistent with comprehensive plans (where they exist) for improving, developing, or conserving a waterway or waterways affected by the project that is prepared by an agency established pursuant to federal law that has the authority to prepare such a plan or by the state in which the facility is or will be located. The Commission considers plans to be within the scope of Section 10(a)(2) only if such plans reflect the preparers' own balancing of the competing use of a waterway, based on their data and applicable policy considerations (i.e., consider and balance all relevant public use considerations). With regard to plans prepared at the state level, such plans are within the scope of Section 10(a)(2) only if they are prepared and adopted pursuant to a specific act of the state legislature and developed, implemented and managed by an appropriate state agency.[3]

No comprehensive plans of the types referred to in Section 10(a)(2) of the FPA relevant to this project have been identified. Two resource plans [4] that touch on various aspects of waterway management were brought to our attention and have been reviewed in relation to the proposed project as part of our broad public interest examination under Section 10(a)(1) of the FPA. No conflicts were found with the above-mentioned plans.

Based upon our review of the agency and public comments filed in this proceeding, and our independent analysis, as discussed herein, we conclude that the Number 4 Hydro Project is best adapted to a comprehensive plan for the Connecticut River Basin, taking into consideration the beneficial public uses described in Section 10(a)(1) of the FPA.

Summary of Findings

An Environmental Assessment (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. A water quality certificate was issued on June 12, 1984. 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 and support for related license articles are provided in the Safety and Design Assessment attached to this order.

Subsequent to the September 22, 1986 issuance of the EA for this project, the Safety and Design Assessment was updated. The updated December 15, 1986 Safety and Design Assessment is 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 the Holyoke Gas & Electric Department (licensee) for a period, effective March 1, 1957, and expiring February 28, 2007, to operate and maintain the Number 4 Hydro Project. This license is subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The 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:

Exhibit G-	*FERC No. 7758-*	*Showing*
Sheet 1	12	Project Plan
Sheet 2	13	One Line Electric Station

(2) Project works consisting of: (a) two 7-foot-diameter and 76-foot-long penstocks drawing water from the first level canal of the Holyoke Canal System; (b) a powerhouse with 2 turbine-generator units with a total rated capacity of 760 kW in the first floor of a 3-story brick building; (c) two 13-foot-wide and 300-foot-long tailraces discharging into the second level canal; (d) a 4.8-kV, 25-foot-long transmission line; (e) the 0.48-kV generator leads; (f) the 0.48/4.8-kV transformer; and (g) 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." The license is also subject to the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective March 1, 1957:

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 1,000 horsepower.

Article 202. The licensee shall pay the United States an amount equal to the annual charges that would have been assessed for the period from March 4, 1941 to March 1, 1957, if the project had been licensed during that period.

Article 401. The licensee, before starting any ground-disturbing or land-clearing activities within the project boundaries, shall consult with the Massachusetts State Historic Preservation Officer (SHPO) about the need for a cultural resources survey and salvage work. The licensee shall file with the Commission documentation of the nature and extent of consultation, including a cultural resources management plan and a schedule to conduct the necessary investigation, together with a copy of a letter from the SHPO commenting on the plan and schedule, 60 days before starting any such ground-disturbing or land-clearing activities. The licensee shall make funds available in a reasonable amount for the required work. If the licensee discovers any previously unidentified archeological or historic sites during the course of constructing or developing project works or other facilities at the project, the licensee shall stop all construction and development activities in the vicinity of the sites and shall consult a qualified cultural resources specialist and the SHPO concerning the eligibility of the sites for listing in the *National Register of Historic Places* and any measures needed to avoid the sites or to mitigate effects on the sites. If the licensee and the SHPO cannot agree on the amount of money to be spent for project-specific archeological and historical purposes, the Commission reserves the right to require the licensee to conduct the necessary work at the licensee's own expense.

Article 402. (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 other 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 uses 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 types 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) noncommercial 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 uses 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 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 certificates 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 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 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.

(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 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 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) This order is issued under authority delegated to the Director and is final unless appealed under Rule 1902 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.

— Footnotes —

[1] 2 FPC 380,387 (1941).

[2] 6 FERC ¶ 61,287.

[3] 99 Cong. Reg. § 4140 (remarks by Senator McClure, April 11, 1986).

[4] U.S. Fish and Wildlife Service's Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin - 1982; Massachusetts Comprehensive Outdoor Recreation Plan-1983-1988.

Environmental Assessment

Division of Environmental Analysis, Office of Hydropower Licensing

Federal Energy Regulatory Commission

Date: September 22, 1986

Project Name: Number 4 Hydro

FERC Project No. 7758-000

A. Application

1. Application type: Minor license, constructed; Date filed: 10/31/84

2. Applicant: Holyoke Gas & Electric Department

3. Water body: First and second level canals of the Connecticut River; River basin: Connecticut

4. Nearest city or town: Holyoke

5. County: Hampden; State: Massachusetts

B. Resource Development

1. Purpose: The constructed project would continue to provide an estimated average of 3,148,000 kilowatthours (kWh) of electrical energy per year for use by the Holyoke Gas & Electric Department in its system.

2. Need for power: The power from the project would continue to be useful in meeting a small portion of the need for power projected for the New England Power Pool (NEPOOL) area of the Northeast Power Coordinating Council (NPCC) region. From the time the project went on-line (i.e., into commercial operation), it was available to displace fossil-fueled, electric power generation in the NPCC region thereby conserving non-renewable fossil fuels and reducing the emission of noxious by-products caused by the combustion of fossil fuels.

3. Hydroelectric power and resource utilization: The powerplant was purchased in 1966 from the Standard Paper Company. The powerhouse has been in operation and would continue to generate power for use by the applicant in its system. The value of power is estimated at 50 mills per kWh. The applicant does not propose any redevelopment or new construction at the project. The powerplant would continue to operate without additional cost, except for the operation and maintenance cost upon issuance of the license. The project power therefore is economical. The project would operate in a run-of-river mode in which instantaneous inflow to the project would equal instantaneous outflow. The hydraulic capacity of the powerplant is 598 cubic feet per second (cfs) and the average flow at the project site is

506 cfs. The average head developed is 18 feet. Because of the small size of the constructed project, the developed capacity is considered reasonable. The applicant estimates, based on a 5-year historic record, that the project would generate 3,148,000 kWh annually. The Commission's Planning Status Report for the Connecticut River Basin discusses the existing water resource development within the basin. The project does not conflict with any existing or planned development or any pending applications for exemption, license, or preliminary permit.

C. Proposed Project and Alternatives

1. Description of the proposed action: The applicant proposes to continue operation of an existing run-of-river project located between the first and second level canals of the Connecticut River. The canals are part of the Hadley Falls Project (FERC Project No. 2004), which is owned by the Holyoke Water Power Company. The existing project consists of two 76-foot-long penstocks drawing water from the first level canal, a powerhouse with two units rated at a total capacity of 760 kilowatts, two tailraces discharging into the second level canal, and a 25-foot-long, 4.8-kilovolt transmission line. No new construction or changes in project operation are proposed. The project has been operating in the same manner for approximately 80 years.

2. Applicant's proposed mitigative measures.

a. Construction: None.

b. Operation: None.

3. Federal lands affected.

No.

Remarks: None.

4. Alternatives to the proposed action.

a. No other reasonable action alternatives have been found.

b. Alternative of no action.

No action would prohibit the applicant from continuing to operate the proposed project. No action would involve no alterations to the existing environment and would preclude the applicant from continuing to produce electrical power at the site.

D. Affected Environment

1. Descriptions of the resources in the project area.

a. Geology and soils. The project area is located within the Connecticut River Valley, which is a relatively flat lake bed situated between Berkshire Hills on the west and the Central Highlands on the east.

b. Streamflow.

low flow: 0 cfs; flow parameter: minimum yearly canal shut-down

high flow: 5,155 cfs; flow parameter: first level canal capacity

Remarks. 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 located along 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/1) 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/1 and a pH between 6.5 and 9.0. Water in the project area conforms to the state water quality standards.

d. Fisheries.

Anadromous: Species include: American shad, Atlantic salmon, blueback herring, sea lamprey, striped bass, shortnose sturgeon, and American eel (catadromous).

Resident: Species include: carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner, white perch, bluegill, rainbow trout, and brown trout.

Remarks. A significant restoration effort is underway to restore Atlantic salmon and American shad in the Connecticut River Basin.

e. Vegetation.

Cover type—Dominant species

industrial area—grasses, shrubs

Remarks. The dominant, natural vegetation of the project vicinity is hemlock-northern hardwood forest, although much of the area has been cleared for urban industrial development.

f. Wildlife.

Species inhabiting the project area include: raccoon, eastern cottontail, Norway rat, English sparrow, cardinal, starling, robin, and mockingbird.

Remarks. Migrating waterfowl and raptors pass through the area in spring and fall. The Connecticut River in the project area also serves as a breeding area for herring gulls during the spring fish runs.

g. Cultural.

There are properties listed on or eligible for listing on the *National Register of Historic*

Places in the area of the project's potential environmental impact.

Description. The project is located within the Holyoke Canals Historic District which is on the *National Register of Historic Places*. The Massachusetts Deputy State Historic Preservation Officer (SHPO) indicates by letter dated May 15, 1984, that the project would have no effect on the significant architectural and historical characteristics of the National Register property.

Remarks. None.

h. Visual quality. The project is located in a heavily industrialized setting. The project facilities blend well with the industrialized surroundings.

i. Recreation. The immediate project area receives no significant recreational use because of the existence of industrial developments adjacent to the project site. Recreational use of the Connecticut River in the project vicinity includes boating and fishing.

j. Land use. Land in the project area is predominantly used for industrial development and hydroelectric power production.

k. Socioeconomics. The socioeconomic well-being of the area is influenced by industry. In 1980 the population of the City of Holyoke was approximately 44,720.

l. Ambient noise. Ambient noise levels in the project area are moderate because of its location near industrial development and roads.

m. Ambient air quality. Ambient air quality in the project area is fair because of nearby industry and roads.

n. Other resources. No other resources would be affected by the project.

E. Consultation and Compliance

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

(a) Fish & Wildlife Service (FWS): Yes

(b) State(s): Yes

(c) National Marine Fisheries Service (NMFS): No

Remarks. Shortnose sturgeon occur in the mainstream Connecticut River in the project vicinity, but none have been reported in the canal system.

2. Section 7 consultation (Endangered Species Act).

(a) Listed species. None.

(b) Not required.

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

3. Section 401 certification (Clean Water Act).

Received: 6/12/84

4. Cultural resource consultation (Historic Preservation Act).

(a) *Register* status: Eligible or listed.

(b) State Historic Preservation Officer (SHPO): Yes

(c) National Park Service (NPS): No

(d) Council: Not required.

(e) Further consultation: Not required.

Remarks. None.

5. Recreation consultation [Federal Power Act, § 10(a)].

(a) U.S. Owners: No

(b) NPS: Yes

(c) State(s): Yes

Remarks. None.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

Remarks. None.

7. LWCFA lands and facilities affected (Land and Water Conservation Fund Act).

Status: None.

Remarks. None.

F. Comments

1. The following entities provided comments on the application in response to the public notice dated 6/28/85.

Commenting entity—Date of letter

Massachusetts Historical Commission—7/22/85

Department of the Army, New England Division, Corps of Engineers—8/14/85

Massachusetts Division of Fisheries and Wildlife—8/23/85

Department of the Interior—8/27/85

Environmental Protection Agency—8/28/85

2. The applicant responded to the comments by letter dated 11/19/85.

G. Environmental Impacts and Recommendations

Mitigative measures recommended by the staff are in addition to those proposed by the applicant, Section C(2), and those conditions identified in Section C(3), as appropriate. There are 3 issues addressed below.

1. Issue: The possibility of outmigrating anadromous fish entering the project intake and being subject to turbine mortality.

(a) Comments: The U.S. Fish and Wildlife Service (FWS) states that continued operation of the project would not cause significant impacts to fish and wildlife resources. The FWS, however, recommends the inclusion of an article requiring fish screens or other fish passage facilities when prescribed by the Secretary of the Interior. The Massachusetts Division of Fisheries and Wildlife (MDFW) recommends the immediate installation of a fish screen system. The MDFW states that downstream facilities may be required in the future.

(b) Applicant's response: The applicant states that the project is equipped with two trashracks that serve as fish screens. The outer rack has a 1-inch spacing between vertical metal bars and the inner rack has a 1-inch spacing between horizontal, wooden slats. The applicant therefore believes that additional screens are not necessary.

(c) Conclusions and recommendations: A recently signed agreement between the applicant and the Holyoke Water Power Company (licensee for Project No. 2004) would allow for more flexibility in controlling flows into the first level canal. This flexibility would allow for flow reduction into the first level canal and increased flow into an existing downstream migrant bypass facility. This condition is expected to improve the efficiency of the existing bypass and reduce the number of downstream running juvenile shad, blueback herring, and Atlantic salmon smolts that enter the first level canal. Along with the reduced numbers of fish in the canal, the existing trashracks should prevent significant impacts to anadromous fish. No further fish screening or downstream fish passage facilities would be necessary at this time.

2. Issue: Archeological and historic sites identified during ground-disturbing and land-clearing activities, or affected by changes in the design or location of project facilities.

(a) Comments: None.

(b) Applicant's response: None.

(c) Conclusions and recommendations: If the applicant encounters unidentified archeological or historic sites during the development of project works or related facilities, the applicant should stop ground-disturbing and land-clearing activities in the vicinity of the sites and consult the Massachusetts SHPO. Before starting any ground-disturbing or land-clearing activities within the project boundaries, other than that specifically authorized in this license, the applicant should consult with the SHPO. In these instances, the applicant should file a plan, including a schedule, for the necessary studies, and the SHPO's written comments concerning the plan.

3. Issue: Cumulative impacts from multiple hydropower development in the Connecticut River Basin.

(a) Comments: Federal and state resource agencies and other interested parties have raised concerns that multiple hydropower development within the Connecticut River Basin (CRB) could have cumulative adverse effects on environmental resources, especially on Atlantic salmon.

(b) Applicant's response: None.

(c) Conclusions and recommendations: The Atlantic salmon is currently the primary target species for a major federal, state, and private sector restoration effort in the CRB. As such, restoration of Atlantic salmon in the CRB has and will continue to have beneficial effects on other resources. Restoration of Atlantic salmon will continue to foster a public awareness of water quality and will enhance the restoration of other anadromous fish such as river herring and American shad (U.S. Fish and Wildlife Service, 1984).

Salmon smolts on their seaward migration must pass numerous hydropower developments where they may be subject to entrainment and impingement losses. The more hydropower facilities that Atlantic salmon have to negotiate on their outmigration, the greater the losses to the population. In the vicinity of the Holyoke No. 4 Project, salmon encounter the Holyoke dam and canal system. Studies have shown that when river discharges are high and water is flowing over the dam, smolts pass downstream with little or no delay (Northeast Utilities Service Company, 1984). If smolts arrive, however, at the Holyoke dam after flashboards have been installed and there is little or no spillage, they may enter the canal system.

A bypass system has been installed by the licensee for the Hadley Falls Project, FERC Project No. 2004. The system is located at one end of the first level canal, but has had little success (letter from Gordon E. Beckett, Supervisor, New England Field Office, U.S. Fish and Wildlife Service, Department of the Interior, Concord, New Hampshire, August 10, 1984). Studies to increase the efficiency of the bypass system are continuing.

High flows attract outmigrating fish to the first level canal. The FWS states that if flow to units along the first canal could be reduced or eliminated, down stream fish passage through the bypass system probably would be more

efficient (letter from Gordon E. Beckett, Supervisor, New England Field Office, Ecological Services, U.S. Fish and Widllife Service, Department of the Interior, Concord, New Hampshire, August 10, 1984). An agreement between the licensee for Project No. 2004 and the applicant for the Holyoke No. 4 Project has recently been reached. By this agreement, the licensee for Project No. 2004 would sell electricity rather than water to users along the canal during certain times of the year to minimize the trapping of anadromous fish in the canal (letter from William Patterson, Regional Environental Officer, Office of Environmental Review, Department of the Interior, August 27, 1985). This would reduce or eliminate project-related impacts to Atlantic salmon. Thus, the staff determines that the Holyoke No. 4 Project would not contribute to cumulative adverse impacts to Atlantic salmon.

H. Summary of Environmental Impacts

1. Assessment of adverse and beneficial impacts expected from the project as proposed by the applicant (P); the proposed project with the staff's recommended mitigation (Ps) [Section G]; and any other alternative considered (A). *

a. Geology/Soils—P: 0

b. Streamflow—P: 0

c. Water quality: Temperature—P: 0; Dissolved oxygen—P: 0; Turbidity and sedimentation—P: 0

d. Fisheries: Anadromous—P: 1AL; Resident—P: 0

Remarks. d: Project operation would result in minor impacts on outmigrating anadromous fish because of impingement of adult shad and some entrainment and turbine mortality of juvenile American shad, blueback herring, and Atlantic salmon.

e. Vegetation—P: 0

f. Wildlife—P: 0

g. Cultural: Archeology—P: 0; History—P: 0

h. Visual quality—P: 0

i. Recreation—P: 0

j. Land use—P: 0

k. Socioeconomics—P: 0

l. Ambient noise—P: 0

m. Ambient air quality—P: 0

* The assessment reflects the adoption of any federal land management agency's conditions, in addition to the applicant's proposed mitigation. Assessment symbols indicate the following impact levels:

0 = No impact; 1 = Minor impact; 2 = Substantial impact; 3 = Major impact;

A = Adverse; B = Beneficial; L = Long-term impact; S = Short-term impact.

(*e.g.*, 1BL = Minor, beneficial, long-term impact)

2. Impacts of the no-action alternative.

Under the no-action alternative, there would be no construction of project facilities or changes to the existing physical, biological, or cultural components of the area. Electrical power that would be generated by the proposed hydroelectric project would have to be generated from other available sources or offset by conservation measures.

3. Recommended alternative (including proposed, required, and recommended mitigative measures): Proposed project.

4. Reason(s) for selecting the preferred alternative.

The proposed project is the preferred alternative since its purpose can be achieved without creating significant adverse impacts.

I. Summary of Unavoidable Adverse Environmental Impacts

Some entrainment of juvenile American shad and blueback herring and subsequent turbine mortality may occur during continued operation of the proposed project.

J. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [H(3)] 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. List of Preparers (Name—Position title)

Suzanne E. Brown—Environmental Protection Specialist (Coordinator)

Khawaja Akhtar—Civil Engineer

Robert Grieve—Fisheries Biologist

Mary Nowak—Writer/Editor

Edwin Slatter—Archeologist

Martin J. Thorpe—Electrical Engineer

John P. Warner—Fishery Biologist

L. Literature Cited

1. City of Holyoke Gas and Electric Department. 1984. Application for minor license. Number 4 Hydro Project, FERC Project No. 7758-000, Massachusetts. Filed October 31, 1984.

2. Northeast Utilities Service Company. 1984. Review of cancelled Atlantic salmon smolt

(Salmo salar), radiotelemetry study at the Holyoke Dam, Massachusetts, Hartford, Connecticut. September 1984.

3. U.S. Fish and Wildlife Service. 1984. Draft environmental impact statement for the restoration of Atlantic salmon to New England Rivers. Department of the Interior, Newton Corner, Massachusetts. August 1984. 105 pp. and appendices.

Safety and Design Assessment

Number 4 Project

FERC Project No. 7758-001—Massachusetts

Dam Safety

There are no dams or impoundment structures associated with the project. The constructed project is located between the first and second levels of the canal.

Project Design

The design of the constructed power project would remain unchanged. The intake is located on the first level canal and the tailrace on the second level canal creating a differential head of 18 feet which is utilized for generation. The powerplant consists of two Francis type generating units rated at 380 kW each for a total installed capacity of 760 kW.

Exhibits

The following portions of Exhibit A and the following Exhibit F drawings, both filed on April 9, 1985, conform to the Commission's rules and regulations and should be included in the license.

Exhibit A. Items 2 and 6 of Attachment A.

Exhibit F Drawing	*FERC No. 7758-*	*Description*
F-1	1	Cross Section of Powerplant
F-2	2	Cross Section of Hydro Unit
F-3	3	Generating Unit
F-4	4	Top Section of Water Wheel
F-5	5	Base Section of Water Wheel
F-6	6	Bottom View of Water Wheel
F-7	7	Braces for Water Wheel
F-8	8	Water Wheel Shaft Mechanism
F-9	9	Bearings for Shaft
F-10	10	Gates
F-11	11	Gate Opening Mechanism

Resource Development

A. Purpose

The constructed project would continue to provide an estimated average of 3,148,000 kilowatt hours (kWh) of electrical energy per year for utilization by the Holyoke Gas & Electric Department in its system.

B. Need for Power

The power from the project would continue to be useful in meeting a small portion of the need for power projected for the New England Power Pool (NEPOOL) area of the Northeast Power Coordinating Council (NPCC) region. From the time the project went on-line (i.e., into commercial operation) it was available to displace fossil-fueled electric power generation in the NPCC region and thereby, conserved nonrenewable fossil fuels, and to reduce the emission of noxious byproducts caused by the combustion of fossil fuels.

C. Conservation Planning

The applicant is applying to license a project that was constructed in the past but not previously licensed. The project power is currently being used to serve the applicants' system load and any installation of additional conservation resources as an alternative to continued use of the project would impose costs on the applicant's consumers that would not be required if the project is licensed and continues to operate. Therefore, additional consideration of the applicant's electricity consumption efficiency improvement program is not warranted in relation to issuance of a license for the project to the applicant.

D. Economic Feasibility

The powerplant was purchased in 1966 from the Standard Paper Company. The powerplant has been in operation and would continue to generate power for utilization by the applicant in its system. The value of power is estimated at 50 mills per kWh. The applicant does not propose any redevelopment or new construction at the project. The powerplant would continue to operate without additional cost except for the minimal operation and maintenance cost upon issuance of the license. The project power, therefore is economical.

E. Water Resource Planning

The project would operate run-of-river. The hydraulic capacity of the powerplant is 598 cfs and the average flow at the project site is 506 cfs. The average head developed is 18 feet. Because of the small size of the constructed project the developed capacity is considered reasonable.

The applicant estimates that based on five years of historic record, the project would generate 3,148,000 kWh annually. Staff's review shows that this estimate is reasonable.

No specific state and federal agency comments or recommendations were made addressing flood control, navigation, water supply, or irrigation requirements in the basin.

The Connecticut River Planning Status Report includes no projects, either proposed or constructed on the Connecticut River that this project would impact and the project would not conflict with any pending applications for exemption, license or preliminary permit.

Based on the above, staff concludes that the existing Number 4 Project adequately utilizes the available flow and head at the site and would not conflict with any existing or planned water resource developments in the basin.

Alternatives to the Proposed Project

If the project is not licensed the municipal department would have to cease operating the project. In the short term it would have to purchase alternative power, utilize existing installed reserve capacity, or reactivate inactive reserved capacity, if available.

In the long term, it would have to revise, update and possibly accelerate existing generation expansion programs.

116 FERC ¶62,128
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

City of Holyoke Gas & Electric Department — Project No. 7758-004

ORDER ISSUING SUBSEQUENT LICENSE

(August 15, 2006)

INTRODUCTION

1. On February 25, 2005, pursuant to Part I of the Federal Power Act (FPA),[1] the City of Holyoke Gas & Electric Department (HG&E) filed an application for a subsequent license to continue to operate the existing 750-kilowatt (kW) Holyoke No. 4 Hydroelectric Project No. 7758. The project is located on the Holyoke Canal System, which is adjacent to the Connecticut River, in the City of Holyoke, Hampden County, Massachusetts.[2] The Holyoke No. 4 Project does not occupy federal land. As discussed below, I am issuing a subsequent license for the project.

BACKGROUND

2. The Commission issued the original license for the project on March 19, 1987, effective March 1, 1957,[3] for a 50-year period expiring on February 28, 2007.

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[1] 16 U.S.C. §§ 791a – 825r (2000).

[2] The project is located on the Holyoke Canal, which receives water from the Connecticut River, a navigable waterway of the United States. 2 FPC 380, 387 (1941).

[3] 38 FERC ¶ 62,270 (1987). This project was required to have been licensed on March 4, 1941, the date when the Connecticut River was determined to be a navigable waterway of the United States. Therefore, when the Commission licensed the project in 1987, it backdated the license to 1957, consistent with Commission practice at that time, thus allowing the maximum possible license term (50 years), but giving the licensee 20 years to operate under the license before it expired.

3. Notice of application was published in the Federal Register on June 8, 2005. No protests or motions to intervene were filed.

4. On September 27, 2005, the Commission issued public notice that the project was ready for environmental analysis and solicited comments, recommendations, terms and conditions, and prescriptions. In response, comments were filed by the U.S. Department of the Interior (Interior).

5. An environmental assessment (EA) was prepared by Commission staff and issued on May 18, 2006. No comments were filed on the EA. The comments and recommendations have been fully considered in determining whether, and under what conditions, to issue this license.

PROJECT DESCRIPTION

6. The Holyoke No. 4 Project is located within the Holyoke Canal System, which contains 20 hydropower developments. Six of the developments, and the Holyoke Canal System itself, are licensed under the adjacent Holyoke Project No. 2004 (Hadley Falls Hydro Station).[4] The other developments, including the Holyoke No. 4 Project, are licensed separately. However, the operation of the Holyoke No. 4 Project is dependent on the operation of the Holyoke Project No. 2004, as discussed below.

7. The Holyoke No. 4 Project facilities are located between the first and second levels of the three-level Holyoke Canal System. The project draws water from the first level and releases it into the second level. The Holyoke No. 4 Project consists of: (1) two 7-foot-diameter, 76-foot-long penstocks drawing water from the first level canal of the Holyoke Canal System into; (2) a powerhouse with two 375-kW generating units with a total installed capacity of 750 kW leading to; (3) two 13-foot-wide, 300-foot-long tailraces discharging into the second level canal; (4) a 25-foot-long, 4.8-kilovolt (kV) transmission line; and (5) appurtenant facilities.[5] The proposed project boundary encloses all of the above facilities except the transmission line, but in this order I am requiring the inclusion of the transmission within the project boundary.

8. HG&E currently operates the Holyoke No. 4 Project only when sufficient flows are available in the first level of the canal. Flows into the Holyoke Canal System are regulated by HG&E through the operation of the Holyoke Project No. 2004 according to a

[4] 88 FERC ¶ 61,186 (1999); and 111 FERC ¶ 61,106 (2005).

[5] One of the generating units was destroyed in an October 2004 fire and is currently not operating.

Comprehensive Flow Plan (Flow Plan) and Comprehensive Canal Operations Plan (Canal Operations Plan), which were approved by the Commission on June 24, 2003, and January 11, 2006, respectively.[6]

9. Within the first level of the canal, HG&E prioritizes flows first to the Holyoke No. 2 Project (FERC No. 2387), located at the far west end of the first level and beyond the Holyoke No. 4 Project, in order to provide flow through as much of the first level as possible. Flows are next provided to the Holyoke No. 1 Project (FERC No. 2386), located between Holyoke No. 2 and Holyoke No. 4. As such, the Holyoke No. 4 Project is operated primarily during higher flow periods when both Holyoke No. 1 and No. 2 are operating or when those projects are out-of-service. If Holyoke No. 1 and No. 2 are out-of-service, HG&E uses the Holyoke No. 4 Project to pass flows from the first level to the second level of the canal system.

10. HG&E proposes to rehabilitate the damaged generating unit to its former 375-kW capacity, and to continue to operate the project consistent with the Canal Operations and Canal Flow Plans under the Holyoke Project No. 2004 license.

WATER QUALITY CERTIFICATION

11. Under section 401(a) (1) of the Clean Water Act (CWA),[7] the Commission may not issue a license for a hydroelectric project unless the state water quality certifying agency either has issued a water quality certification (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. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license or permit that is issued.[8]

12. On February 24, 2006, HG&E requested a waiver of certification from the Massachusetts Department of Environmental Protection (Massachusetts DEP). By letter filed on April 19, 2006, the Massachusetts DEP waived certification for the project, explaining that the certification issued for Project No. 2004 and the Settlement

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[6] 103 FERC ¶ 62,178 (2003), and 114 FERC ¶ 62,017 (2006). Pursuant to Article 406 of Project No. 2004 license (see 111 FERC ¶ 61,106), HG&E filed a revised Flow Plan in Project No. 2004 on September 6, 2005, which is currently pending before the Commission. Holyoke No. 4 will of course be operated consistent with any revised Flow Plan for Project No. 2004.

[7] 33 U.S.C. § 1341(a) (1) (2000).

[8] 33 U.S.C. § 1341(d) (2000).

Agreement for the relicensing of that project "specify all the conditions necessary to meet State water quality standards for the Holyoke No. 4 Project."

COASTAL ZONE MANAGEMENT ACT

13. Under section 307(c)(3)(A) of the Costal Zone Management Act (CZMA),[9] the Commission cannot issue a license for a project within or affecting a state's costal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification.

14. By electronic mail dated March 30, 2006, the Massachusetts Office of Coastal Zone Management stated that the activities associated with the project fall outside the geographical boundaries of the Massachusetts Coastal Zone[10] and described in the Massachusetts Coastal Management Plan, and, therefore, are not subject to federal consistency review. Therefore, no consistency certification is required.

SECTION 18 FISHWAY PRESCRIPTIONS

15. Section 18 of the FPA[11] provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate. By letter filed November 22, 2005, Interior requested that the Commission reserve its authority to require fishways. Consistent with Commission policy, Article 402 of this license reserves the Commission's authority to require fishways that may be prescribed by Interior for the Holyoke No. 4 Project.

THREATENED AND ENDANGERED SPECIES

16. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA),[12] requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of

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[9] 16 U.S.C. § 1456(3)(A) (2000).

[10] *See* Chapter 5: Massachusetts Coastal Regions and an Atlas of Resources, June 1, 1977.

[11] 16 U.S.C. § 811 (2000).

[12] 16 U.S.C. § 1536(a) (2000).

federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

17. The federally threatened bald eagle and Puritan tiger beetle, and the federally endangered dwarf wedgemussel and shortnose sturgeon are known to occur in the project area. However, the project does not provide habitat for the Puritan tiger beetle or the bald eagle; shortnose sturgeon are excluded from the Holyoke Canal System; and a recent survey of the Holyoke Canal System did not locate any dwarf wedgemussels.[13] Therefore, relicensing the Holyoke No. 4 Project would not affect these species.

NATIONAL HISTORIC PRESERVATION ACT ISSUES

18. Under Section 106 of the National Historic Preservation Act (NHPA)[14] and its implementing regulations,[15] federal agencies are required to take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register (defined as historic properties) and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.

19. The Holyoke 4 project is within the Holyoke Canal Historic District, which is listed in the National Register of Historic Places, but the project structures have not been evaluated for their eligibility. By letter filed April 6, 2005, the Massachusetts State Historic Preservation Officer (SHPO) found that relicensing the Holyoke No. 4 Project would have no adverse effect on historic properties. The SHPO noted that if changes are proposed at Holyoke 4, the project is sufficiently connected to the Holyoke Project No. 2004 such that the procedures contained within the latter's Cultural Resources Management Plan[16] (CRMP) will provide the SHPO the opportunity for review and comment.

20. The Project No. 2004 CRMP requires HG&E to consult with the SHPO and follow the *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* to apply the National Register Criteria to properties that have not been previously evaluated for National Register eligibility and may be affected by an

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[13] Rare Mussel Species Survey Report for Holyoke Project, FERC No. 2004, filed March 24, 2006.

[14] 16 U.S.C. § 470 *et seq.* (2000).

[15] 36 C.F.R. Part 800 (2005).

[16] The CRMP for the Holyoke Project No. 2004 was filed on September 8, 2000, and approved by the Commission on June 27, 2001.

undertaking, such as the generator replacement proposed by HG&E and required by Article 301. The EA notes, however, that the CRMP does not specifically include provisions for the Holyoke No. 4 Project facilities. Therefore, Article 403 of this license requires the licensee to use the procedures established in the CRMP to identify and protect historic resources and consult with the SHPO prior to conducting any alterations at the Holyoke No. 4 Project. This consultation satisfies the Commission's responsibilities under section 106 of the NHPA.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

21. Section 10(j)(1) of the FPA[17] 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,[18] to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife, (including related spawning grounds and their habitat)" affected by the project. No section 10(j) recommendations were filed for the Holyoke No. 4 Project.

OTHER ISSUES

Project Operation

22. As stated, HG&E currently operates the Holyoke No. 4 Project only when sufficient flows are available in the first level canal according to the Canal Operations Plan for Project No. 2004, which specifies how flows are to be distributed throughout the three levels of the canal.

23. HG&E proposes no changes to project operation and would continue to operate the project in accordance with the Project No. 2004 Canal Operations Plan. The EA recommended licensing the project as proposed by HG&E to ensure that aquatic resources in the canal are protected during the license term. Accordingly, Article 401 of this license requires project operation in accordance with the Canal Operations Plan, the pertinent portions of which are attached to this license as Appendix A.

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[17] 16 U.S.C. § 803(j)(1) (2000).

[18] 16 U.S.C. § 661 *et seq.* (2000).

Generator Rehabilitation

24. In October 2004, a fire damaged one of the project's generating units and rendered it unusable. HG&E proposes, and the EA recommends, rehabilitating the damaged generating unit to make use of the hydro potential of the site. Accordingly, Article 301 of this license requires a plan to rehabilitate and operate the damaged unit.

ADMINISTRATIVE CONDITIONS

A. Annual Charges

25. The Commission collects annual charges from licensees for administration of the FPA. Article 201 provides for the collection of funds for administration of the FPA. Under the regulations currently in effect, projects such as this with an authorized installed capacity of less than or equal to 1,500 kW are not assessed an annual charge.

B. Exhibit F Drawings

26. The Commission requires licensees to file sets of approved project drawings on microfilm and in electronic file format. Article 202 requires the filing of these drawings.

C. Exhibit G Drawings

27. The exhibit G drawings filed on September 1, 2005, do not meet the current Commission requirements. The exhibit G drawings, sheets 1 and 2, do not include a stamp by a Registered Land Surveyor, and sheet 2 does not show the 25-foot-long transmission line within the project boundary and three known reference points. Article 203 requires HG&E to file revised exhibit G drawings. The exhibit G drawings filed on September 1, 2005, are therefore not approved and are not made part of the license (see ordering paragraph (C)).

D. Use and Occupancy of Project Lands and Waters

28. Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Therefore, Article 404 allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

STATE AND FEDERAL COMPREHENSIVE PLANS

29. Section 10(a)(2)(A) of the FPA,[19] requires the Commission to consider the extent to which a hydroelectric project is consistent with federal and state comprehensive plans for improving, developing, or conserving waterways affected by the project.[20] Under section 10(a)(2)(A), staff identified and reviewed 9 federal and state comprehensive plans that are relevant to this project.[21] No conflicts were found.

APPLICANT'S PLANS AND CAPABILITIES

30. In accordance with section 10 of the FPA,[22] and the Commission's regulations, staff have evaluated HG&E's record as a licensee with respect to the following: (A) need for power; and (B) safe management, operation, and maintenance of the project.[23] I accept the staff's findings in each of the following areas.

A. Need for Power

31. The Holyoke No. 4 Project is located in the New England Power Pool region of the North American Electric Reliability Council (NERC). According to the NERC, demand for electric energy in the region is expected to increase at an average rate of 1.5 percent per year through 2014. Staff concludes that the project's power, low cost, displacement of nonrenewable fossil-fired generation, and contribution to the region's diversified generation mix will help meet the need for power in the region.

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[19] 16 U.S.C. § 803(a)(2)(A) (2000).

[20] Comprehensive plans for this purpose are defined at 18 CFR § 2.19 (2005).

[21] The list of applicable plans can be found in section IX of the EA for this project.

[22] 16 U.S.C. § 803 (2000).

[23] In order No. 513, the Commission exempted licensees of minor projects, such as HG&E, whose license waives sections 14 and 15 of the FPA, from the information requirements of 18 C.F.R. § 16.10 (2000). *See Hydroelectric Relicensing Regulations Under the Federal Power Act,* 54 *Fed. Reg.* 23756 (June 2, 1989) and 55 *Fed. Reg.* 10768 (March 23, 1990), FERC Statutes and Regulations, Regulations Preambles 1986-1990 ¶ 30,854 at 31,445 (May 17, 1989).

B. Safe Management

32. Staff have reviewed HG&E's management, operation, and maintenance of the Holyoke No. 4 Project and the project's operation reports and concludes that there is no reason to believe that HG&E cannot continue to safely manage, operate, and maintain these facilities under a subsequent license.

PROJECT ECONOMICS

33. In determining whether a proposed project will be best adapted to a comprehensive plan for developing a waterway for beneficial public purposes, the Commission considers a number of public interest factors, including the economic benefit of the project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,[24] the Commission employs 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 the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of 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.

34. In applying this analysis to the Holyoke No. 4 Project, staff have considered two options: a no action alternative and HG&E's proposal, as licensed herein. Under the no action alternative, without rehabilitating the damaged generator, the estimated average annual generation of the Holyoke No. 4 Project is 1,574 MWh, providing an annual power value of about $84,000, or $53.35/MWh.[25] The annual cost would be $56,000, or $35.56/MWh. To determine whether the proposed project is currently economically beneficial, staff subtracts the project's cost from the value of the power the project produces. Therefore, in the first year of operation, the project would cost $28,000, or $17.79/MWh less than the likely alternative cost of power.

35. As proposed by HG&E and licensed herein, including rehabilitating the damaged generator, the annual cost of the project would be about $135,300, or $42.97/MWh. The annual power value for the estimated annual generation of 3,148 MWh, would be

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[24] 72 FERC ¶ 61,027 (1995).

[25] Our estimate of the cost of alternative power is based on the Energy Information Administration's (EIA) Annual Energy Outlook for 2005 and its supplemental data on the EIA Internet Homepage.

$167,900, or $53.35/MWh. Therefore, in the first year of operation, the project would cost $32,700, or $10.38/MWh less than the likely alternative cost of power.

36. In considering public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary service benefits). These benefits include their capacity to provide almost instantaneous load-following response to dampen voltage and frequency instability on the transmission system, system-power-factor-correction through condensing operations, and a source of power available to help in quickly putting fossil-fuel-based generating stations back on line following a major utility system or regional blackout.

COMPREHENSIVE DEVELOPMENT

37. Sections 4(e) and 10(a) of the FPA[26] require the Commission to give equal consideration to the power development purpose and to the purposes of energy conservation, 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 a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

38. The EA for the project contains background information, analysis of effects, and support for related license articles. I conclude based on the record of this proceeding, including the EA and the comments thereon, that licensing the Holyoke No. 4 Project as described in this order would not constitute a major federal action significantly affecting the quality of the human environment. The project will be safe if operated and maintained in accordance with the requirements of this license.

39. Based on our independent review and evaluation of the project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the EA, I have selected the Holyoke No. 4 Project as proposed by HG&E, and find that it is best adapted to a comprehensive plan for improving or developing the Connecticut River.

40. I selected this alternative because: (1) issuance of a subsequent license will serve to maintain a beneficial, dependable, and an inexpensive source of electric energy; (2) the required environmental measures will protect aquatic resources and historic properties; and (3) the 750 kilowatts of electric energy generated from this renewable resource will

[26] 16 U.S.C. §§ 797(e) and 803(a)(1).

continue to offset the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable resources and reducing atmospheric pollution.

LICENSE TERM

41. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such measures; and 50-year terms for projects with extensive measures. In this case, as explained in this order, given the relationship of this project to the Holyoke Project No. 2004, the term of this license will be such that it will expire at the same time as the Project No. 2004 license.[27] Therefore, the term of this license will be 32 years and 6 months, and will expire August 31, 2039, the expiration date of the Project No. 2004 license.

The Director orders:

(A) This license is issued to the City of Holyoke Gas & Electric Department (licensee) for a period of 32 years and 6 months, effective March 1, 2007, to operate and maintain the Holyoke No. 4 Project. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interest in those lands, enclosed by the project boundary shown by the revised exhibit G drawings filed September 1, 2005.

(2) Project works consisting of: (1) two 7-foot-diameter, 76-foot-long penstocks drawing water from the first level canal of the Holyoke Canal System; (2) a powerhouse with two 375-kW generating units with a total installed capacity of 750 kW (one of the generating units was destroyed in an October 2004 fire and is currently not operating); (3) two 13-foot-wide, 300-foot-long tailraces discharging into the second level canal; (4) a 25-foot-long, 4.8-kV transmission line; and (5) appurtenant facilities.

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

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[27] In issuing new and subsequent licenses, the Commission will coordinate the expiration dates of licenses to the maximum extent possible, to maximize future consideration of cumulative impacts at the same time in contemporaneous proceedings at relicensing. See 18 C.F.R. § 2.23 (2004).

Exhibit A: Pages A-5 and A-14 filed on February 25, 2005.

Exhibit F: The following exhibit F drawings filed on September 1, 2005.

Exhibit F Drawings	FERC No. 7758-	Showing
Sheet 1	1001	Plan and Section
Sheet 2	1002	Intake Details

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

(C) The exhibits A and F described above are approved and made part of this license. The exhibit G drawings filed as part of the application for license do not conform to Commission regulations and are not approved.

(D) The following sections of the FPA 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 (Revised October 1975), entitled "Terms and Conditions of License for Constructed Minor Project Affecting Navigable Waters of the United States," (*see* 54 FPC 1799 *et seq.*), and the following additional articles:

Article 201. *Administrative Annual Charges.* The licensee shall pay the United States annual charges, effective March 1, 2007, as determined in accordance with provisions of the Commission's regulations in effect from time to time, for the purposes of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 750 kilowatts. Under the regulations currently in effect, projects with authorized installed capacity of less than or equal to 1,500 kilowatts will not be assessed annual charges.

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

a) Three sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Drawing Number (*e.g.*, P-1234-1001 through P-1234-####) 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, etc.), Drawing Title, and date of this license shall be typed on the upper left corner of each aperture card.

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

b) The licensee shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the Commission's Division of Dam Safety and Inspections-New York Regional Office. Exhibit F drawings must be identified as (CEII) material under 18 CFR §388.113(c). Each drawing must be a separate electronic file, and the file name shall include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and file extension in the following format [P-1234-####, F-1, Project Description, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

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

Article 203. *Exhibit G Drawings.* Within 45 days of the effective date of this license, the licensee shall file, for Commission approval, revised exhibit G drawings enclosing all licensed project works, including the 25-foot-long, 4.8-kV transmission line necessary for operation and maintenance of the project. The revised exhibit G drawings must comply with sections 4.39 and 4.41 of the Commission's regulations.

Article 301. *Rehabilitation of Damaged Generating Unit.* Within 3 months of the effective date of this license, the licensee shall file for Commission approval a plan, with schedule, to rehabilitate and operate the damaged generating unit. The licensee shall

submit one copy to the Division of Dam Safety and Inspections-New York Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division Dam Safety and Inspections).

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

Article 401. *Project Operation.* The project shall operate in accordance with sections 2.0 and 3.0 (Appendix A of this license) of the Comprehensive Canal Operations Plan filed for the Holyoke No. 2004 Project on June 20, 2005, supplemented on October 11, 2005, and approved on January 11, 2006 (114 FERC ¶ 62,017), as that Plan may be modified from time to time.

Project operation may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee and the Massachusetts Department of Fish and Wildlife and the U.S. Department of the Interior. If project operation is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 402. *Reservation of Authority to Prescribe Fishways.* Authority is reserved by the Commission to require the licensee to construct, operate, and maintain, or to provide for construction, operation, and maintenance of, such fishways as may be prescribed by the Secretary of the U.S. Department of the Interior under section 18 of the Federal Power Act.

Article 403. *Cultural Resources Management Plan.* Prior to rehabilitating the damaged generating unit at Holyoke No. 4 Project, the licensee shall follow the procedures provided in the Action Plan (section IV) of the Cultural Resources Management Plan (CRMP) for the Holyoke No. 2004 Project, filed September 8, 2000, as modified and approved by the Commission on June 27, 2001 (95 FERC ¶ 62,274).

If rehabilitation of the project is found to affect historic properties, the licensee shall prepare a plan and 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 Massachusetts State Historic Preservation Officer (SHPO), and specific descriptions of how the SHPO's comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the SHPO to comment and to make recommendations before filing the plan with the Commission for approval. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on

site-specific information. The licensee shall not commence rehabilitation of the damaged unit notified by the Commission that the plan is approved.

Article 404. *Use and Occupancy.* (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters, and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy are 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 occupancy, 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 (much of this needs to be removed): (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 enhancements. 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 impoundment 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 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 impoundment. 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 approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary 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 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 5 acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Energy Projects, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G 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 paragraphs (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 shall occur in a manner that shall 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 drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article shall 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 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 the filing. Proof of service on these entities must accompany the filing with the Commission

(G) 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 license.

J. Mark Robinson
Director
Office of Energy Projects

Form L-9
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED MINOR PROJECT AFFECTING NAVIGABLE WATERS OF THE UNITED STATES

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and

supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage,

and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 7. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 8. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 9. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 10. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 11. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 12. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 13. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and

adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 14. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon the request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 15. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 16. Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 17. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the

Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 18. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 19. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

Appendix A

The City of Holyoke Gas & Electric Department
Comprehensive Canal Operations Plan
Sections 2.0 and 3.0 Filed June 20, 2005

2.0 HOLYOKE CANAL SYSTEM

The Holyoke canal system consists of three levels, referred to as First, Second, and Third Level Canals (see Figure 1-1). The typical water surface elevation of each of the canals is 97.47 ft, 77.47 ft and 64.97 ft, respectively (NGVD). Each level of the canal system provides water for industrial use and hydropower generation. During mean flow conditions, the canal system is operated at various total discharges up to its 6,600 cfs hydraulic design capacity, with a total generation flow of approximately 6,000 cfs. Some distribution of flows between the various canal levels and project and non-project hydro stations on the canal is determined by long standing water use agreements. At all times the flow entering the canal system must be balanced with total canal flow returned to the river to maintain safe operating levels in the canal. Canal inflow is directed back to the river or to the next canal level through various generating stations, water conduits, overflow structures, and leakage.

There are a total of 20 hydroelectric generating stations currently in service on the Holyoke canal system (Table 2-1). The Hadley Falls station is located on the impoundment. The canal system begins with the canal gatehouse structure located between the Hadley Falls station and the western shore. The gatehouse discharges water into the First Level Canal, a subsystem about 6,500 ft long, running through the City of Holyoke. The No. 1 Overflow structure, which is located immediately downstream of the gatehouse, discharges water directly back into the river.

The First Level Canal discharges water into the Second Level Canal through nine generating stations located along its length; seven of these stations are operational.[28] The HG&E licensed projects (all operational) on the First Level Canal are: Boatlock, Beebe-Holbrook, and Skinner (all covered in FERC No. 2004); Holyoke 1 (FERC No. 2386); Holyoke 2 (FERC No. 2387); and Holyoke 4 (FERC No. 7758). The First Level Canal also includes two unlicensed projects - Aubin (also known as Anitec) and the out-of-service Parsons station - and the location of the former unlicensed Xidex station; none of these is owned or operated by HG&E. There is a downstream fish passage louver facility, which begins 554 ft downstream of the canal gatehouse. The louver is angled across the

[28] There is also a facility owned by Hart Top Manufacturing, which is used as process water and is not a generating facility.

canal and is 440 ft long. It ends at a bypass facility and pipe which transports migrating fish to the Hadley Station tailrace.

The Second Level Canal includes eleven in-service generating stations, the No. 2 Overflow structure that discharges into the Hadley Falls Station tailrace, the No. 3 Overflow, and a pipe that discharge to the Third Level Canal. The following stations on the Second Level Canal are located between the Second Level Canal and the Connecticut River about 3,500 ft north of the Boston & Maine Railroad bridge: Riverside (FERC No. 2004), Station No. 5 (FERC No. 10806), Crocker Mill A and B (FERC No. 2758), Crocker Mill C (FERC No. 2770), Albion Mill D (FERC No. 2766), Albion Mill A (FERC No. 2768), Mt. Tom Mill (FERC No. 2497), Nonotuck (FERC No. 2771), Gillmill A (FERC No. 2772), and Gillmill D (FERC No. 2775).[29] The Holyoke 3 station (FERC No. 2388) is located between the Second and Third Level Canals.

The Third Level Canal is supplied with water from the Holyoke 3 station and the No. 3 Overflow. It is about 4,000 ft 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 No. 4 Overflow structure located between the canal and the Connecticut River. The Chemical (FERC No. 2004) and Sonoco (unlicensed) stations are located between the Third Level Canal and the Connecticut River about 3,400 ft south of the railroad bridge.[30]

The Holyoke Canal District was listed in the National Register in 1980 and is eligible for listing as an historic district.

3.0 CANAL OPERATIONS PLAN

The Canal Operations Plan details HG&E's proposed methods to: (1) release and circulate the required 400 cfs continuous minimum flow through the canal system downstream of the louver bypass; and (2) achieve and maintain the minimum canal flow and protective requirements for aquatic resources, including mussels during canal maintenance drawdowns.

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[29] All of these stations are owned by HG&E. As noted above, the Crocker Mill A and B, Crocker Mill C, Albion Mill D, Albion Mill A, Mt. Tom Mill, Nonotuck, Gillmill A, and Gillmill D stations were acquired by HG&E from Harris Energy and Realty Coiporation, and are jointly referred to as "the Harris Projects." Further, as noted above, Station No. 5 has been recently re-acquired by HG&E.

[30] Only the Chemical station is owned by HG&E.

3.1 Canal Operations and Flow Releases

Minimum project flows for the Holyoke Project, including flows into the canal system, are detailed in LA 406 from the Settlement Agreement and WQC Condition 12. HG&E's plan to provide minimum flows for the entire Holyoke Project is detailed in the COFP, which was developed in conjunction with this CCOP. Both LA 406 and the WQC call for a year-round continuous minimum flows of 400 cfs downstream of the louver bypass. As reflected in LA 406(e), this minimum canal flow is assigned the highest priority of any minimum flow, including flows into the bypass reach.

The Holyoke Project Canal system is typically operated by continuously maintaining the First Level Canal at Elevation 97.47 ft (NGVD) except during drawdowns, inspections, and emergencies. The number of open headgates, positions of each headgate, and headpond elevations, are used to regulate the amount of water entering the canal to maintain the canal system at a constant level. The position of the 12 headgates and headpond elevations are continuously monitored by the gatehouse operator, adjusted as necessary to maintain a constant canal elevation.

Water from the First Level Canal is discharged into the Second Level Canal or attraction water gates and louver bypass gates utilized to operate upstream and downstream fish passage facilities. Water in the Second Level Canal is discharged to either the Third Level Canal or directly to the river through turbines or canal drain gates.

Estimates of water flow through the canal turbines have been derived using turbine manufacturer data and/or correlating generation to hydraulic flows for the turbines on the canal system. All canal generation is monitored by the gatehouse operator and recorded hourly in a log. Drain and feed gate positions on the canal system are, and will continue to be, monitored and recorded hourly by the gatehouse operator along with the volume of water flow that passes through the gatehouse gates.

HG&E developed a series of matrices detailing project operations (including dispatch of the canal units) over a range of flows for habitat flows, and the Spring and Fall Bypass Zone of Passage (ZOP) flows for upstream and downstream fish passage seasons, pursuant to LA 406(a) under the Settlement. These matrices are included below as Figures 3-1, 3-2, and 3-3. In developing the project operations matrices, HG&E's goal was to dispatch the canal units in a manner that would maximize the amount and distribution of water throughout the canal system. Specific details on canal station dispatch are described below.

3.1.1 Spring Passage

During spring fish passage season (generally April 1- July 15), while water is first dispatched to the canal system, the amount that is allocated depends on the river flow (Figure 3-1). When river flows are below 5,400 cfs, 400 cfs will be circulated in the First Level Canal below the louver bypass and will normally be discharged through HG&E's Holyoke 2 station into the Second Level Canal. From there, the water will pass through the Holyoke 3 or No. 3 Overflow and Riverside Stations. Flow will split approximately evenly between the two stations, which in turn will maximize flow distribution throughout the Second Level Canal. Water discharged from Holyoke 3 will enter the Third Level Canal, while water discharged from Riverside Station will flow back into the Connecticut River. In the Third Level Canal, water will be discharged through the Chemical station, Sonoco station, and/or the No. 4 Overflow back into the river.

When river flows reach approximately 5,400 cfs, water in the canal system will increase from 400 cfs to 2,400 cfs. Station dispatch is as noted above, but on the First Level Canal, Parsons (or other units under HG&E control), Aubin and Boatlock stations are also brought online, if the stations are operational. On the Second Level Canal, Station No. 5 and all eight Harris Projects are brought online as a single block.

When river flows reach approximately 16,000 cfs, flow in the canal system will be increased to a maximum of 6,600 cfs is reached - 6,000 cfs for generation and 600 cfs for fish passage operation. At this point all available generating stations on all three canal levels are able to generate.

3.1.2 Fall Passage

During fall fish passage season (generally September 16 - November 15), water is first dispatched to the canal system; the amount that is allocated will again depend on the river flow (Figure 3-2). When river flow is below 15,940 cfs, 400 cfs of water will be passed into the First Level Canal and be dispatched through HG&E's Holyoke 2 station into the Second Level Canal. From there, water will be passed through the Holyoke 3 and Riverside stations. Water from Holyoke 3 will enter the Third Level Canal, while flows from Riverside will be discharged into the Connecticut River. In the Third Level Canal flow will pass through the Chemical station and/or the No. 4 Overflow back into the river.

When river flows reach approximately 16,000 cfs, flows in the canal system will be increased to the maximum of 6,600 cfs - 6,000 cfs for generation and 600 cfs for fish passage operation. At this point, all available generating stations on all three canal levels are able to generate.

3.1.3 Habitat Flows

During the period of habitat flows (generally July 15 - September 15, and November 16 - March 31), water is again first dispatched to the canal system and the amount that is allocated depends on the river flow (Figure 3-3). When river flows are less than 11,400 cft, 400 cfs will enter the First Level Canal and is dispatched through HG&E's Holyoke 2 station into the Second Level Canal. From there, water is passed through the Holyoke 3 and Riverside stations. Water from Holyoke 3 enters the Third Level Canal, while water from Riverside discharges back into the Connecticut River. In the Third Level Canal, water is passed through the Chemical station, Sonoco station, and/or the No.4 Overflow back into the river.

When river flows reach 11,300 cfs, flow in the canal system is increased from 400 cfs to 2,200 cfs. Station dispatch is as noted above, but on the First Level Canal Parsons/Aubin and Boatlock Station are also brought online. On the Second Level Canal Station No. 5 and all eight Harris Projects are brought online as a single block.

When river flows reach approximately 15,000 cfs, flows in the canal system will be increased to a maximum of 6,000 cfs. At this point all available generating stations on all three canal levels are able to generate.

3.2 Canal Minimum Flow Plan

As noted above, LA 406 and the WQC requires that a minimum flow of 400 cfs be passed through the canal system downstream of the louver bypass system. Upstream of the louver bypass system, 440 cfs is required at the No. 1 Overflow during spring and fall upstream fish passage. The 440 cfs is the maximum flow for the upstream fish passage attraction facilities: up to 200 cfs at the spillway entrance and up to 120 cfs at each tailrace entrance. During downstream fish passage, 150 cfs bypass flow is required for the louver bypass system.

LA 406 and the WQC assigns the canal minimum flow the highest priority of any other flow release, including minimum flows into the bypass reach. Under low flow conditions, therefore, the first 400 cfs available will be passed through the canal system, as detailed in HG&E's Low Flow Contingency Plan, included in the COFP.

3.2.1 Canal Flow

After acquiring the project in December 2001, HG&E noticed that a significant amount of leakage existed in the canal system. Tests were performed to measure the leakage and HG&E has discovered approximately 300 cfs of leakage in the canal system. Most of the leakage appears to originate downstream of the louver bypass facility. The

volume of the water that is leaking through the canal system was determined by shutting down all generation on the canal and observing the headgate settings.

Since canal flow receives the highest priority, this leakage is significant. If leakage were not accounted for, during low flow conditions, the first 700 cfs would be diverted from the river to the canal system before discharging any water to the bypass reach. Including leakage in calculating minimum flows in the canal system provides more water in the bypass reach.

After reviewing this issue with the stakeholders, HG&E developed a study plan to verify flow distribution using the leakage component to achieve the 400 cfs minimum flow. The primary objectives of this study was to (1) determine flow patterns in Holyoke Project canal system, and (2) measure water quality in the canal system downstream of the louver bypass. To confirm that water is moving through the three levels of the canals, HG&E took field measurements to determine detectable water movement at various locations in each canal. Leakage or water movement in the canal system primarily occurs as water passes through a unit's wicket and/or headgates or through overflow waste gates. Measurements were taken at various roadway and footbridge crossings located throughout the canal system to record detectable velocity.

The study was originally performed in the summer of 2002, and based upon a review of the results, stakeholders agreed to allow leakage to be used to meet the canal minimum flow requirement. The results of the study showed that a total canal headgate opening of 60 inches provides 400 cfs of inflow to the canal, and that the existing inter-canal leakage in the system provided enough flow distribution so that detectible water velocities were measured at every sampling point in the study. To provide a means of compliance tracking, HG&E installed an Acoustic Doppler Current Profiler (ADCP) near Cabot Street nearly two-thirds of the way down the First Level Canal. The 2002 study results and conclusions were reflected in the Permanent Canal Minimum Flow Plan filed with FERC on June 30, 2004.

To ensure that the ADCP was calibrated properly, in the fall of 2004, HG&E recreated the minimum flow study that was performed in 2002. As described in the June 2004 Permanent Canal Minimum Flow Plan (at page 9), "[t]his allowed HG&E to document the exact discharge passing through the downstream end of the First Level Canal for future compliance. HG&E also observed the relative distribution of flows between the Second and Third Level Canals to verify acceptable conditions (i.e., that the majority of the flow remains in the Second Level Canal. The velocity meter at the Cabot Street Bridge was correlated to measure flow corresponding to the flow in the downstream end of the First Level Canal during the calibration exercise. The meter was tied to HG&E's gatehouse supervisory system, allowing constant monitoring and documentation of flow distribution within the canal system."

A total of 400 cfs was allowed into the canal (measured via canal headgate openings), and the velocity sampling points were again measured to prove that there was detectible water velocities throughout the canal system (see Figure 3.4). During this time, the portion of the canal near the ADCP was gauged to calculate the flow passing the sensor at that time. The reading from the ADCP and the gauging of the canal showed a flow of 111 cfs, a variance of only 5% from the calculated flow from the gauging. This variance is most likely due to irregular velocity paths at low flows in the canal.

The remaining 289 cfs of the 400 that entered the canal through the headgates passed through to the Second Level Canal via leakage paths between Boatlock Station and the sensor near Cabot Street.

3.2.2 Compliance Measures and Documentation

In accordance with LA 406(c)(1) and the WQC, HG&E will provide 400 cfs downstream of the louver bypass. This flow will be provided continuously, year-round, except during canal drawdown situations. The 400 cfs will be distributed through the canal system downstream of the louver bypass system via a combination of leakage and/or generation. In the future the amount of leakage may change as holes (wicket gate, headgate openings, overflow gate leakage, etc.) in the canal system, which may end up blocked and no longer leaking, or flow leaking through a faulty gate that suddenly closes and no longer leaks. For that reason, minimum flow in the canal system will be verified by maintaining a minimum flow 111 cfs at the ADCP. It has been shown that as long as 111 cfs passes the sensor near Cabot Street, there is adequate flow distribution throughout all three levels of the canal.

Compliance will be documented by maintaining logs of the readings of the canal flow sensor by Cabot Street on the First Level Canal. These readings are taken on a real-time basis, and are saved to the HG&E computer system in hourly increments.

As further stated in the Permanent Canal Minimum Flow Plan (filed in June 2004, at page 9): "As provided for under Section 4.3(c) of the Settlement, if significant modifications are made by HG&E or any other entity on the canal system that could change leakage or the distribution of flow in the canal system, HG&E will evaluate the magnitude and distribution of flows in the canal system, and then, in consultation with the stakeholders, will propose to MADEP a revision to the permanent canal system minimum flow compliance measures set forth herein, as necessary to achieve the resource management objectives and the minimum flow requirements."

3.3 Need and Frequency of Drawdowns

WQC Condition 13(d) contains a provision to evaluate "the frequency and necessity of canal drawdowns." Canal drawdowns are necessary to maintain facilities in the three-level system to ensure continued safe operation of the canal, the generating units, and fish passage facilities. HG&E typically performs two drawdowns each year, the first in the spring and the second in the fall.

The spring outage usually lasts one or two days and the longer fall outage typically lasts five to seven days. The spring drawdown has two purposes: (1) to prepare for the spring freshet via cleaning various structures and performing any emergency repairs, and (2) to inspect the canal system infrastructure and develop a scope of work for the fall drawdown. During the fall drawdown, HG&E typically performs maintenance to the gatehouse, four masonry canal overflows, sixteen active flow control gates, approximately four and one half (4.5) miles of canals (including eight miles of canal walls), the louver facility on the First Level Canal, and 31 active water wheel installations (see Table 2-1).

Based on the spring drawdown, HG&E will develop a scope of work, plan, and schedule the fall outage. To the extent possible, HG&E will include maintenance work planned by other owners on the canal system.

3.4 Canal Drawdown Procedure

HG&E will attempt to reasonably expedite work performed during future drawdowns, and will attempt to undertake such work in a manner that least impacts aquatic resources. Pursuant to LA 406(d)(2)(C) and Section 4.3(e) of the Settlement, HG&E will notify all canal water users and resource agencies prior to any scheduled (i.e., non-emergency) canal system outage. Below are HG&E's drawdown procedures for the First and Second Level Canals.

3.4.1 Permanent Canal System Outage Plan

Pursuant to LA 406(d) and Section 4.3 (e) of the Settlement Agreement, HG&E describes herein its permanent canal system drawdown procedures. HG&E will attempt to reasonably expedite work performed during future drawdowns, and will attempt to undertake such work in a manner that least impacts aquatic resources. HG&E will follow the procedures outlined below to maintain whatever flow is possible during the drawdowns. Below are HG&E's drawdown procedures for the First and Second Level Canals.

3.4.2 First Level Canal

Stakeholders have expressed three concerns with conditions in the First Level Canal during drawdowns: (1) watering of mussel habit, (2) removal of sediment in front of Boatlock Station, and (3) placement of heavy equipment in the canal. The following discussion reiterates the measures described in the mussels section of the Threatened and Endangered Species Protection Plan (T&E Plan, as approved by FERC on June 6, 2003; 103 FERC ¶ 62,131) at Sections 5.1 (Habitat Enhancement) and 5.4.1 (First Level Canal Drawdown).

Following recommendations from USFWS and Trout Unlimited (TU) at the June 14 and 27, 2002 meetings (Appendix A), HG&E has attempted to mitigate any effects that may be caused by the dewatering of the First Level Canal by building a weir at the beginning of that canal just upstream of the railroad bridge. The weir spans the entire width of the canal, and is approximately three feet high, maintaining watered conditions approximately 930 ft into the First Level Canal. The result in wetted area is approximately 0.85 acres.

Another concern of the stakeholders was the practice of the prior owners of the Holyoke Project of hauling sediment from in front of Boatlock station and depositing it into the head of the First Level Canal branch. HG&E will use a clamshell to clean the area in front of Boatlock Station and remove the sediment and debris from the canal.

With the installation of the full depth louvers and a trashrake before the Spring 2003 drawdown, the need for heavy machinery in the canal and time it takes to remove debris at Boatlock has been significantly diminished. If heavy machinery should be necessary in the fixture, HG&E will walk the area and clear the area of any visible mussels then install cones to mark boundaries available to vehicular traffic in front of Boat Station during maintenance drawdowns.

3.4.3 Second Level Canal

The following discussion reiterates the measures described in the mussels section of the T&E Plan, Section 5.4.2 (Second Level Canal Drawdown).

During the Spring 2002 drawdown, modified procedures were utilized in an effort to provide the maximum amount of wetted canal floor in the Second Level Canal downstream of Boatlock Station. Stakeholders were on-site to observe the effects of these procedures, and all present were generally satisfied with the conditions. Therefore, the drawdown procedures are being replicated for future outages. HG&E will attempt to coordinate drawdown efforts with other station owners to maintain maximum wetted area.

Below are the general procedures HG&E will follow under normal (non-emergency) conditions:

1) Before the canal drain begins all HG&E and customer units except Boatlock and Riverside Stations must be shut down.

2) The canal headgates will be closed, beginning the canal drainage.

3) Boatlock Station units will be operated until the water level in the First Level Canal reaches approximately El. 92.5 (NGVD). After the water elevation reaches approximately El. 92.5 (NGVD), Boatlock feed gates will be opened to continue draining the First Level Canal.

4) One or more waste gates at the No. 1 Overflow will be opened to assist the draining process. These waste gates will have to be carefully regulated as to not overflow the fishway attraction system and/or allow the attraction water system and 4-ft diameter drain pipe to the Hadley tailrace to fill with debris.

5) The No. 2 Overflow will remain closed during the drawdown until the end, as maintenance activities require. Should HG&E find that the No. 2 Overflow does not maintain sufficient water levels, HG&E will consult with stakeholders about the feasibility of installing a weir in front of the No. 2 Overflow.

6) When the Second Level Canal reaches approximately El. 74.5 (NGVD), all but one of the Riverside station generating units will be secured. A unit on the Second Level will be operated at speed/no load to drain the Second Level Canal. This eliminates the previously employed step of securing all units at Riverside Station, opening penstock drain valves on Units 4 and 5. The waste gates at the No. 2 Overflow will be opened during the last 24 hours of the outage for inspection of both the civil works and safety on each unit. Drainage will occur slowly to allow for maximum wetting of the canal floor. Slow drainage typically takes 6-8 hours; emergency drainage lasts 2 hours.

7) The No. 3 Overflow will remain closed during the drawdown until the end, as maintenance activities require, maintaining pooled areas between Boatlock and Riverside.

8) The No. 4 Overflow gates will be opened to drain the Third Level Canal.

HG&E shall also develop a plan for evaluation of the experimental weir in the First Level Canal to determine if it retains water and to develop and implement plans to modify as required; and a plan for evaluation of the need for additional weirs to keep mussel habitat areas watered.

HG&E may need to occasionally deviate from the above drawdown procedure to perform essential maintenance work. This may include drawing the Second Level Canal down deeper to gain access to certain structures and equipment. These types of drawdowns are infrequent and HG&E will make all reasonable efforts to minimize the duration of the drawdowns.

Typically during drawdowns there is some leakage past the headgates, which serves to provide a minimal amount of flow through a portion of the canal system. To the extent it does not interfere with maintenance activities, HG&E will not completely seal off leakage past the headgates.

3.5 Full Depth Louver Operations

Pursuant to LA 408(b) in the April 2005 Order, HG&E shall continue to operate, clean and otherwise maintain the full depth louvers in the First-Level Canal and the exclusion racks at the attraction water intake gates to ensure efficient and reliable operation of these facilities for the protection of aquatic resources. HG&E shall annually inspect the full depth louvers and exclusion racks, and repair them as necessary. In the event the full depth louver facility is out of service during the Upstream Passage Season [defined in LA 406(a)(2)], the Canal System will not be operated and the headgates will be closed to seal flows into the Canal. If necessary, at the end of the Upstream Passage Season a slow drain of the Canal will be performed to return any fish to the River. In the unlikely event of a failure of the canal louver bypass system, HG&E shall shut the Canal down. If there is a structural failure of the louver panels, HG&E shall implement a slow drawdown process to allow any fish in the Canal downstream of the louver facility to return to the River. As described below, the process consists of: (i) notification, and (ii) slow draining of the canal system:

(i) Notification: HG&E shall notify MADFW, USFWS and NOAA Fisheries within 24 hours of the louver bypass system outage.

(ii) Slow Drain: The No. 1 Overflow attraction water gate will be cracked to drain the First Level Canal; the No.2 Overflow gates will be cracked to drain the 'upper' section of the Second Level Canal, and the Riverside Station sluice gate will be cracked to drain the 'lower' portion of the Second Level Canal. HG&E shall monitor the Canal System during the

slow drain process and regulate the drain gates as required to allow fish to exit the Canal System.

In conjunction with the slow drain process, HG&E shall make all reasonable efforts to expedite repairs to the louver bypass facility and return the facility to service.