

REVIEW OF APPLICATION FOR CERTIFICATION OF HOLYOKE HYDROELECTRIC SYSTEM

This report provides review findings and recommendations related to the application submitted to the Low Impact Hydropower Institute (LIHI) by the Holyoke Gas & Electric Department (HG&E or Applicant) for Low Impact Hydropower Certification of the HG&E Hydropower System, which consists of Holyoke Dam on the Connecticut River and the Holyoke Canal System.

I. PROJECT'S GEOGRAPHIC LOCATION

Holyoke Dam, the first dam on the mainstem of the Connecticut River upstream of Long Island Sound (River Mile 87). The dam and its associated hydroelectric facilities at the dam and in the canal system are located in Holyoke and South Hadley, Massachusetts 12.6 miles north of the Connecticut state line as shown in Figure 1.

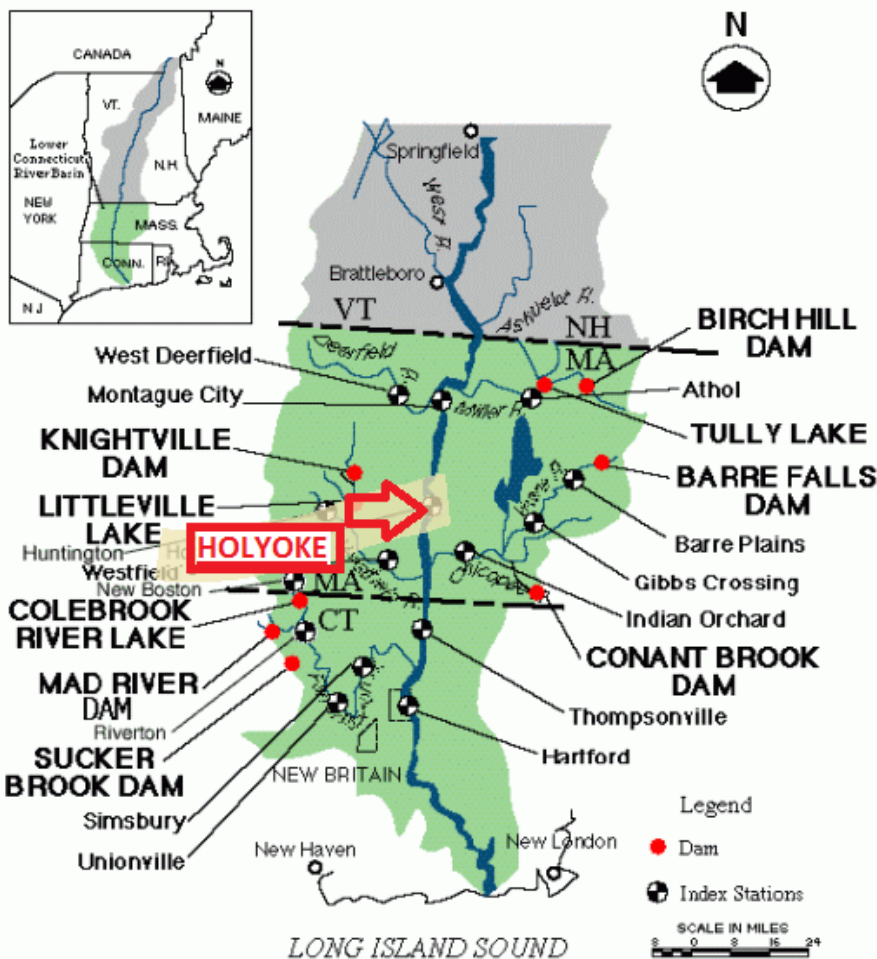


Figure 1. Location of Holyoke Dam, the first dam on the mainstem of the Connecticut River. Base map shows Corps of Engineers dams and index stations.

II. HYDROELECTRIC SYSTEM AND IMMEDIATE SITE CHARACTERISTICS

HG&E owns and operates hydroelectric facilities at Holyoke Dam (the Hadley Falls Station) and in the Holyoke Canal System. Figure 2 shows the layout of the Holyoke Hydroelectric System.

The dam and canal system were conceived and constructed as one system by the South Hadley Falls Company starting in 1847-1848. The purpose of the system was to harness the power of the falls by diverting water from the Connecticut River to mills for mechanical power for manufacturing. The first hydroelectric turbine was installed within the canal system in 1888. Holyoke Dam continued to be used solely for diversion of flow until 1950 when the first hydroelectric turbine was installed; a second unit followed in 1983.

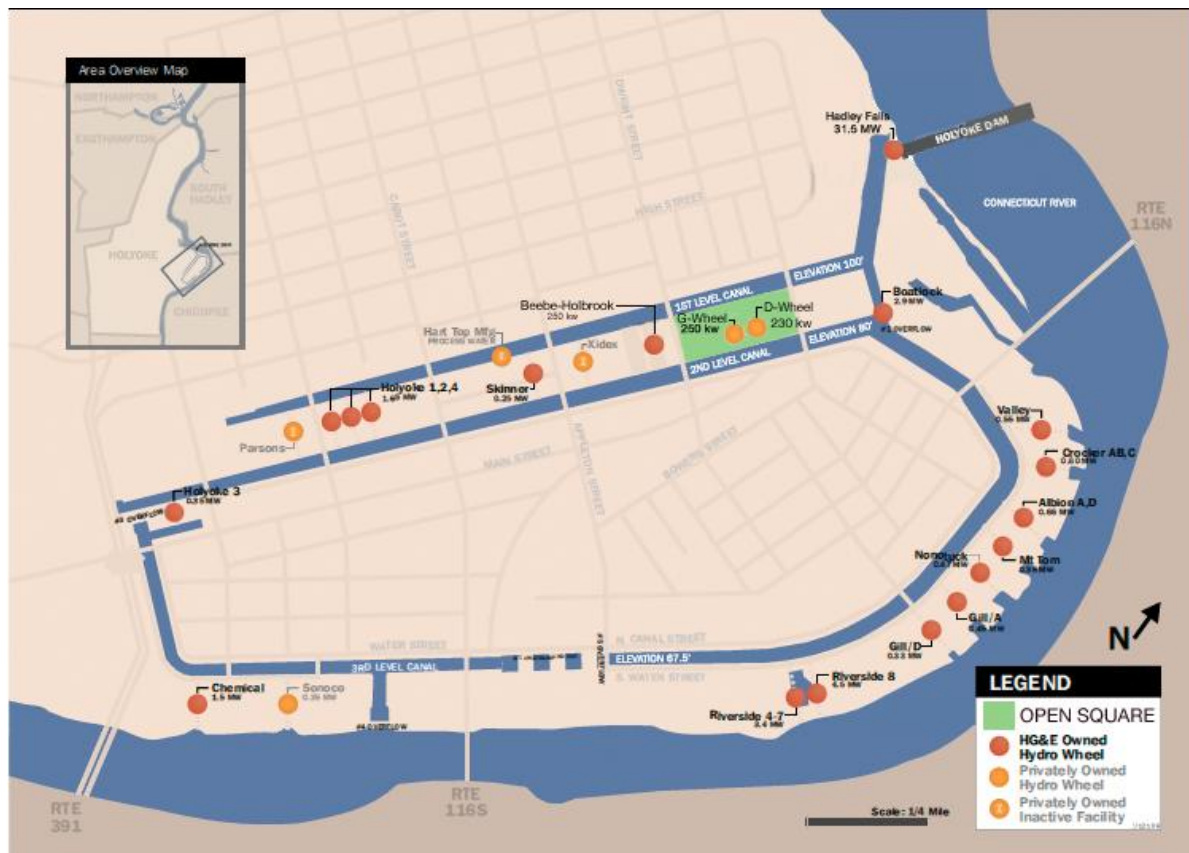


Figure 2. Dam and canal system layout. Flow enters canal system at upper right corner of schematic. The recently certified Open Square project is highlighted in green.

Holyoke Dam, of rubble masonry construction finished with ashlar granite, extends 1,020 feet from bank to bank. Founded on bedrock, it is 30 feet high. In 2001, HG&E installed five 3.5-foot-high, inflatable flashboard sections to replace the wooden flashboards. The inflatable flashboard system extends across the entire crest, except at the south end adjacent to the powerhouse intake, where a 25-foot-wide bascule gate with a permanent crest elevation of 94.60

feet is located. The air pressure in the flashboard system is regulated as necessary to prevent the 18-mile-long impoundment from rising above a maximum elevation 100.6 feet msl.¹



Figure 3. Holyoke Dam viewed from east end.

Hadley Falls Station

Hadley Falls Station is integral with the dam's south abutment. Four gated openings admit water to two 28-foot-diameter reinforced concrete penstocks that serve the two generating units. Hadley Unit 1, the older 1950 unit, consists of a full Kaplan (double regulated) turbine and a 15.8 MW generator; its hydraulic capacity is 4,500 cfs. Hadley Unit 2 consists of a turbine with a fixed blade propeller and a 15 MW generator; its hydraulic capacity is 3,750 cfs. Flows passed through the Hadley Falls Station are discharged into a 2,750-foot-long tailrace, a walled channel between the shore and the riverbed.

¹ Condition 10 of the water quality certification issued in 2001 for licensing of the Holyoke Project required the installation of the inflatable flashboard system in order reduce impoundment fluctuations and help attain run-of-river conditions.



Figure 4. Hadley Falls Station.

Holyoke Canal System

The canal system begins at a gatehouse structure located directly upstream of Hadley Falls Station. The canal system consists of three levels. Within the canal system, HG&E owns eighteen stations, two of which, Crocker Mill A and B and Crocker Mill C, are no longer operating and are scheduled for decommissioning. Most of the HG&E canal system hydroelectric units are located within buildings that are used for unrelated light commercial or industrial purposes.

The First Level Canal is a subsystem about 6,500 ft long. Stations located between the First Level Canal and the Second Level Canal utilize the 20 feet of available gross head between elevation 97.5 feet msl and elevation 77.5 feet msl. Six HG&E stations are so located, as are two privately owned stations, Open Square (a.k.a. Aubin Station) and Parsons. Open Square was certified by LIHI at the Governing Board's May 3, 2012, meeting. Parsons no longer operates as it has been partially demolished due to a fire.

The Second Level Canal includes nine 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 discharges to the Third Level Canal. Stations on the Second Level Canal are either located between the Second Level Canal and the Connecticut River (discharging about 3,500 ft north of the Boston & Maine Railroad bridge).

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 and not owned by HG&E) stations are located between the Third Level Canal and the Connecticut River, discharging about 3,400 ft south of the railroad bridge.

A downstream fish passage louver facility, further described in the Fish Passage section, is located in the canal starting about 554 feet downstream of the canal gatehouse. The No. 1 Overflow structure, which is located immediately downstream of the gatehouse, discharges water directly back to the Hadley Falls Station tailrace, or to the fish lift attraction water.

III. REGULATORY AND COMPLIANCE STATUS

The Holyoke Hydroelectric System consists of seventeen active developments operating under twelve separate FERC licenses. The Holyoke Project license (FERC Project No. 2004) includes the Hadley Falls Station and five of the canal stations. HG&E purchased its facilities after the Project No. 2004 license was issued in 1999 and proceeded to enter into settlement discussions to resolve outstanding rehearing requests. The discussions resulted in a comprehensive settlement agreement, which was filed with FERC on March 12, 2004. FERC amended the license consistent with the settlement agreement on April 19, 2005. The Massachusetts Department of Environmental Protection (MassDEP) also issued a new water quality certification on February 14, 2001 replacing a July 28, 1999, certification that had been the subject of an administrative appeal. The amended license and settlement agreement govern certain aspects of the other facilities, including flow management and threatened and endangered species protection.

On March 9, 2012, HG&E filed applications with FERC to surrender the license and decommission Crocker Mill A/B Wheels, Crocker Mill C Wheel, and Gill Mill A Wheel.

The following table summarizes the projects that are part of this application.

Table 1. Summary of Holyoke Hydroelectric System projects.

FERC License	FERC Project	Development	Headwater Location	Tailwater Location	Hydraulic Capacity (cfs)
2004 (8/20/99) (SA, 3/12/04) (Amended, 4/19/05)	Holyoke	Hadley Falls	River	River	8,400
		Boatlock	Level 1	Level 2	2,205
		Riverside	Level 2	River	3,750
		Chemical	Level 3	River	1,020
		Beebe-Holbrook	Level 1	Level 2	264
		Skinner	Level 1	Level 2	240
7758 (8/15/06)	Holyoke 4	City #4	Level 1	Level 2	340
2386 (2/28/89)	Holyoke 1	City #1	Level 1	Level 2	850
2387 (9/28/88)	Holyoke 2	City #2	Level 1	Level 2	760
2772 (6/29/89)	Gill Mill A	Gill Mill A	Level 2	River	200
2775 (6/29/89)	Gill Mill D	Gill Mill D	Level 2	River	170
2771 (6/29/89)	Nonotuck	Nonotuck	Level 2	River	260
2497 (6/29/89)	Mt Tom Mill	Mt Tom Mill	Level 2	River	310
2768 (6/29/89)	Albion Mill A	Albion Mill	Level 2	River	200
2766 (6/29/89)	Albion Mill D	Albion Mill	Level 2	River	240
2758 (6/29/89)	Crocker Mill A/B	Crocker Mill	Level 2	River	310
2770 (6/29/89)	Crocker Mill C	Crocker Mill	Level 2	River	150
10806 (6/29/90)	Station No. 5	Valley	Level 2	River	490
2388 (9/28/88)	Holyoke 3	City #3	Level 2	Level 3	720

IV. PUBLIC COMMENTS RECEIVED BY LIHI

The LIHI application was deemed complete and publicly noticed on May 14, 2010. No comments were received during the notice period, which ended July 14, 2010.

V. LIHI CRITERIA REVIEW

Under each of the issue sections that follow, I include a table that contains the related LIHI questionnaire sections and my analysis and conclusions.

General Conclusions and Recommendations. I recommend that the facility be conditionally certified for the standard period of five years, with one recommended condition related to addressing the downstream passage, as set forth below, and a second condition to address the licensee's non-compliance with the FERC-approved recreation plan.

Regarding flows, the Facility operates in accordance with flow management prescribed in HG&E's 2005 amended license for FERC Project No. 2004. HG&E is also in the process of finalizing operating protocols to attain a run-of-river mode that, while not instantaneous run-of-

river, deals with significant peaking inflows and balances impoundment water level fluctuations while maximizing environmental and recreational protection.

Regarding water quality, MassDEP indicates that Project No. 2004 is in compliance with its water quality certification and does not cause, or contribute to, the 303(d)-listed total suspended solids impairment of the Connecticut River downstream of Holyoke Dam.

Regarding fish passage, Project No. 2004 has a substantial investment in fish passage facilities but has not yet addressed downstream passage at Hadley Falls Station even though construction was to have been completed in 2009 under the settlement agreement schedule. Resource agencies have resigned themselves to the delays. To help assure that the licensee stays on schedule for completion by 2013 under the revised schedule, I recommend certifying the Facility subject to the following condition:

Issue: HG&E is behind schedule on implementation of downstream fish passage improvements at Hadley Falls Station.

Condition 1. If HG&E does not meet any of the downstream fish passage design and implementation deadlines that fall within the 5 year term of certification, LIHI will suspend certification unless HG&E demonstrates to LIHI that the resource agencies believe good cause exists for the schedule delay. Any subsequent re-certifications of the Facility will be dependent on HG&E's passage facilities meeting effectiveness targets set by the agencies.

Regarding cultural resources protection, Project No. 2004 has an approved cultural resources management plan and appears to be in compliance with that plan.

Regarding recreation, Project No. 2004 is out of compliance with its FERC-approved recreation plan as it has reduced the annual Shad Derby from two May weekends to one without resource agency consultation and/or amendment of the recreation plan. MassWildlife asked HG&E in writing both in 2011 and again this year to return to two weekends.

Issue: HG&E reduced the length of the annual Shad Derby without consultation of Resource Agencies and NGOs and without seeking an amendment of the FERC-approved recreation plan.

Condition 2. HG&E shall either 1) restore the Shad Derby to two May weekends per year starting with May 2013 and at a minimum through the term of this certification, or 2) shall sponsor the Shad Derby for only one May weekend per year but only if the change from two weekends to one is approved by FERC based on an application to amend the Project 2004 recreation plan, with full consultation of Resource Agencies and interested NGOs. Should HG&E seek to amend the recreation plan, the Shad Derby shall be sponsored for two weekends per year until such time as FERC acts. HG&E shall inform LIHI of its decision by October 1, 2012. If it chooses to seek to amend the recreation plan, it shall notify LIHI of FERC's final decision within 30 days of issuance. Continued non-compliance with this element of the recreation plan shall result in immediate

revocation of this certification.²

Regarding T&E listed species, at least one listed mussel species is present in the canal system, but the Facility does not degrade canal mussel habitat, which is protected under the provisions of the license for Project No. 2004. Shortnose sturgeon, a federally listed endangered species, is present; NMFS issued a related Biological Opinion and Incidental Take Statement for relicensing of Project No. 2004. The federally listed Puritan tiger beetle uses habitat associated with the Project No. 2004 impoundment; protection of its habitat is a factor in optimizing the run-of-river operation to reduce impoundment fluctuations.

Regarding the watershed protection criteria, Project No. 2004 has a FERC-approved land management plan and appears to be in compliance with that plan. There is no watershed enhancement fund that would qualify the facility for extension of the certification term by three years.

No dam removal has been recommended.

A. Flows

Conservation flow and monitoring and compliance requirements are set forth in HG&E's amended federal license (Project No. 2004), which establishes flows for both the canal system and the Hadley Falls bypass channel, as well as the Connecticut River downstream. Under Article 405, HG&E must operate in a run-of-river mode with a stable headpond.³ Article 406 prescribes seasonally adjusted flows for the bypass channel and the canal system; it also requires the system to be operated under a specific prioritization scheme: fish passage flows, bypass reach flows, canal system flows, and then generation flows. The highest priority is maintenance of 400 cfs of flow through the canal system and 150 cfs for operation of the downstream fish passage louver facility (550 cfs total release into the canal system at the canal gatehouse). Under Article 406, a modified Comprehensive Operations and Flow Plan (COFP) and a Comprehensive Canal Operations Plans (CCOP) were filed with and approved by FERC (orders of August 15, 2006 and January 11, 2006, respectively). Under Article 407, HG&E must operate under the CCOP to protect and enhance water quality and mussel populations in the canal system.

Run-of-river operation. Store-and-release operations at upstream dams, especially Turners Falls, cause flows entering the Holyoke impoundment to fluctuate significantly. Initially the

² Note: This sentence was added to the condition as voted by the Board on July 26, 2012: *Should HG&E obtain a written determination from FERC that the change from two weekends to one is not subject to FERC approval, HG&E shall provide LIHI with a copy of the determination and this condition shall become nullified.*

³ As licensed, the headpond level must be maintained within 0.2 foot of elevation 100.4 feet msl, which is 0.2 foot below the crest of the rubber flashboard system installed in 2001.

impoundment was managed using level sensors installed at the dam; however, it was found that, while the operators were able to maintain a relatively stable water level near the dam, the water level in the upper reach of the impoundment (upstream of a feature called The Narrows, about two miles upstream of the dam) continued to fluctuate outside of the permitted range of plus or minus 0.2 foot. Since operation is not *instantaneous* run-of-river (stable headpond), Article 405(b) required an evaluation for up to two years of a modified run-of-river operation's ability to meet the fluctuation limitations while protecting environmental and recreational values and conforming with the flow requirements for the canal and fish passage. Due to the problem using the dam water level sensors as the primary controls, HG&E started using sensors about nine miles upstream at a location near Rainbow Beach, which is a habitat for the federally threatened and state endangered, Puritan tiger beetle, and changed operations by increasing the drawdown at the dam as necessary to offset expected high inflows from the upstream hydropreaking.

By order dated October 20, 2006, FERC extended the evaluation period by an additional two years (2006 and 2007) at the licensee's request. In accordance with that order, HG&E filed an evaluation report for the four-year study period on April 28, 2008 and requested a continuation of the evaluation of its modified run-or-river operation for another three years (2008-2010) with revision of the COFP upon completion of the evaluation. By letter dated April 13, 2011, HG&E once again requested an extension, this time due to 2008 and 2009 being unusually wet years. FERC apparently never acted on that extension request; however, FERC did grant a more recent extension request through June 15, 2012. HG&E is currently in agency/NGO consultation on the 2012 evaluation report and the draft revision of the COFP with the intention of filing the documents with FERC by July 16, 2012, assuming yet another extension request is granted. The proposal is to make the increased drawdowns at the dam permanent, with an operating range between 99.2 feet and 100.6 feet msl; this may necessitate a license amendment since Article 405 limits the impoundment operating range to 0.4 foot.

Bypassed reach. The Hadley Falls bypassed reach is a wide, rocky section of river that extends approximately 3,000 feet from the Holyoke dam downstream to its confluence with the Hadley Falls Station tailrace and Second Level Canal (Valley Station) tailrace. It is comprised of three channels (i.e., the East Channel, the Center Channel, and the West Channel). The upper reach, from the dam to the Route 116 bridge, is characterized by shallow rocky areas with bedrock, boulder, and cobble substrates and is well scoured with little fines. The lower reach, from the Route 116 bridge downstream to the tailrace, contains large deep pools. The No. 2 Overflow channel is also part of the bypassed reach. This is 2,500-foot long remnant channel that extends from Boatlock Station downstream to the Hadley Falls tailrace. This channel contains a mixture of cobble, gravel, and sand substrates with pools, runs, and riffles. An IFIM study was completed in 1997 by Barnes-Williams Environmental Services. Minimum flows for bypass habitat support (about 840 cfs) are released outside of the fish passage season, and the MassDEP water quality certification sets the target distribution of flows between the three bypass channels. The fishlifts are currently operated from April 1 through July 14 and September 16 through November 15; when NOAA Fisheries determines that operation for shortnose sturgeon is necessary, the lifts will also be operated from July 15 through September 15⁴. Higher minimum flows (about 1,300

⁴ MassDEP uses the period July 16 through September 14 for sturgeon zone-of-passage flows in Condition 11(b) of the water quality certification.

cfs) in the bypass are released as zone-of-passage flows when migratory fish are present and the fishlifts are being operated. Under Condition 18(a) of the water quality certification, MassDEP reserves the right to issue an order increasing the bypass minimum flow effective no earlier than January 1, 2014.

Canal system. Water flows within the canal system vary based upon river flows and regulatory requirements. Water levels in the canals are maintained at constant elevations except for annual drawdowns for system maintenance (referred to as “canal system outages” in the HG&E license). Flows available to the canal system are controlled at the HG&E gatehouse, which is manned around the clock. Article 406(d) addresses protocols to protect fish, water quality, and mussels (included state and federally listed mussels) during the canal maintenance drawdowns.

By order dated June 22, 2005, FERC approved a minimum flow compliance plan for the canal system (*Order Approving Permanent Canal Minimum Flow Compliance Plan Under April 19, 2005 Order*). The order requires FERC notification of non-compliance events within 30 days of occurrence.

A review of FERC eLibrary records for the last three years did not disclose any incidences of non-compliance. A FERC-NYRO environmental inspection report (June 22, 2009) for a site visit on May 21, 2009 also did not indicate any flow-related problems. HG&E provided copies of its FERC minimum flow compliance reports for 2010 and 2011, and HG&E states in its reports that it was fully compliant with the minimum flow requirements throughout each of the years.

LIHI Questionnaire: Flows	
A.1	Is the Facility in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations) for both the reach below the tailrace and all bypassed reaches?
	<p>Reviewer Analysis/Conclusions: Resource Agency Recommendations are incorporated in the 1999 FERC license (amended 2005) for HG&E Project No. 2004, and are reflected in the 2005 settlement agreement to which the agencies are parties. HG&E manages flows and water levels in a manner that assures compliance with the license and FERC-approved Comprehensive Operations and Flow Plan (COFP) and a Comprehensive Canal Operations Plans (CCOP). HG&E is seeking approval of its impoundment management as related to run-of-river operations; since becoming the licensee, HG&E has worked to minimize impoundment fluctuations, which exceed the plus or minus 0.2-foot variation limit set in the license, but variations beyond the limits have not been considered license violations.</p> <p>YES = PASS</p>

B. Water Quality

The canal and river are Class B waters. MassDEP issued a revised water quality certification on February 14, 2001 for FERC Project No. 2004 and considers that certification to govern and control water quality in that segment of the Connecticut River and the canal system insofar as the hydroelectric facilities are concerned. In fact, MassDEP waived certification for FERC Project No. 7758 (Holyoke No. 4), another one of the stations at the First Canal Level, on the basis that the Project No. 2004 license and settlement agreement “specify all the conditions necessary to meet State water quality standards for the Holyoke No. 4 Project.” (FERC *Order Issuing Subsequent License* for City of Holyoke Gas & Electric Department, Project No. 7758-004, August 15, 2006, pp. 3-4). By email dated June 28, 2012 (appended), Robert Kubit, MassDEP, indicated that HG&E is in compliance with the Project No. 2004 water quality certification.

The 15.8-mile segment of the Connecticut River upstream of the Connecticut/Massachusetts state line (Segment 34-05), extending to Holyoke Dam, is 303(d) listed as a Category 5 water for which the pollutants are E. coli, Total Suspended Solids (TSS), and PCB in fish tissue (*Final Massachusetts Year 2010 Integrated List of Waters*, November 2011)⁵. The 34.4-mile segment (Segment 34-04) from Holyoke Dam upstream to the Deerfield River confluence is listed for E. coli and PCB in fish tissue⁶; this segment includes the entire project impoundment. Status remains the same in the proposed 2012 list (*Massachusetts Year 2012 Integrated List of Waters* (proposed), January 2012). PCB contamination and pathogens impair fish consumption and contact recreation uses, respectively. TSS impairs aesthetics. The source of TSS is unidentified, although it is likely related to runoff events and sewer overflows and not management of the hydroelectric facilities. In the same email dated June 28, 2012, Robert Kubit, MassDEP, confirmed that the Facility does not cause, or contribute to, the TSS impairment. Neither would it influence the PCB- and pathogen-related impairments

Table 2. 2010 303(d) listing.

Segment ID	Description	Pollutant
MA34-04	Deerfield River confluence to Holyoke Dam. 34.4 miles.	- Escherichia coli - PCB in Fish Tissue
MA34-05	Holyoke Dam to Connecticut state line. 15.8 miles.	- Escherichia coli - PCB in Fish Tissue - Total Suspended Solids (TSS)

⁵ http://ofmpub.epa.gov/tmdl_waters10/attains_waterbody.control?p_list_id=&p_au_id=MA34-05&p_cycle=2010&p_state=MA

⁶ http://ofmpub.epa.gov/tmdl_waters10/attains_waterbody.control?p_list_id=&p_au_id=MA34-04&p_cycle=2010&p_state=MA; note this source incorrectly omits the E. coli impairment of recreational use.

Under Article 404 of the license, HG&E collects water quality data on an ongoing basis and reports the results annually to MassDEP. Sampled parameters are dissolved oxygen, temperature, and pH.

LIHI Questionnaire: Water Quality	
B.1	<p>Is the Facility either: a) In Compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the Facility after December 31, 1986? Or b) In Compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?</p> <p><i>Reviewer Analysis/Conclusions:</i> The 2004 Project has a water quality certification issued in 2001 and considered by MassDEP to address water quality issues for all HG&E facilities. MassDEP states that the Project is in compliance. YES to (a) = Go to B.2</p>
B.2	<p>Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?</p> <p><i>Reviewer Analysis/Conclusions:</i> The river segment (including the canal) is 303(d) listed for PCB fish tissue contamination, E. coli, and TSS, and the segment upstream is listed for PCB fish tissue contamination and E. coli. YES = Go to B.3</p>
B.3	<p>If the answer to question B.2 is yes, has there been a determination that the Facility is not a cause of that violation?</p> <p><i>Reviewer Analysis/Conclusions:</i> According to MassDEP, the Project does not cause or contribute to the TSS exceedences (Robert Kubit, MassDEP, email message of June 28, 2012), and it would not be a factor in PCB fish tissue contamination and pathogenic pollution. YES = PASS</p>

C. Fish Passage and Protection

As the first dam encountered by fish migrating from the Atlantic Ocean, Holyoke Dam has been the focus of fish passage efforts since the 1800s. The first fishway, for American shad, was constructed in 1873 and later abandoned. A second fishway, constructed in 1940 at the east end of the dam, was also unsuccessful. The first functional fishway, a lift, was constructed in 1955 and modified in 1958. Currently two fishlifts serve upstream migrants, one for fish that move up the Hadley Falls Station tailrace and a second for fish moving up the bypass channel to the dam. Attraction water is drawn from the First Level Canal. The lifts discharge into a common exit flume. Migratory fish of interest include Atlantic salmon, American shad, blueback herring, alewife, striped bass, American eel, sea lamprey, and shortnose sturgeon. An eel ramp was constructed at the 1940 fishway location in 2004, and an eel ramp is also deployed at Hadley Falls Station; License Article 412 requires permanent eel passage facilities at both locations.

Downstream passage facilities are provided in the canal system and at Hadley Falls Station. For fish that enter the canal, there is a Louver Bypass Facility, which was built in 1993 and then modified in October 2002 to accommodate bottom-oriented species, such as American eel. Previously, it was only functional for surface migrants, including Atlantic salmon smolts, juvenile and adult American shad and blueback herring. The full-depth louver, 440 feet long, extends diagonally at an angle of 15° across the canal beginning 554 feet downstream of the gatehouse. The louver directs fish to a bypass pipe that discharges into the Hadley Falls Station tailrace. At Hadley Falls Station surface migrants are passed through an existing weir insert in the bascule gate and over Rubber Dam 5 near the bascule gate.

An interesting overview of passage at Holyoke is available at:
http://www.kleinschmidtusa.com/pubs/hadleyfalls_fishpassage.htm

Pursuant to Article 410 (b)(1)(H) of the 2004 Project license, HG&E has been conducting research and analyses on modifications to the Project facilities necessary to enhance downstream fish passage at Hadley Falls Station, including passage of shortnose sturgeon, which are not currently accommodated. The improvements will include an exclusion rack at the station intake and a new fish bypass system. Under the settlement agreement and license, these improvements were to have been completed in 2009 and operational in 2010 with effectiveness testing that first year. In 2008, HG&E sought FERC approval to extend the deadline for completion of the facilities to 2013 in order to allow for additional research; however, FERC apparently never acted on the request. Despite the lack of an extension, HG&E has proceeded with research and agency consultation regarding final designs, and no agency has objected to the revised schedule. In April 2012, HG&E received concurrence from the fish resource agencies, TU, and the CRWC to move forward with the final design of the rack and the plunge pool (email appended). By email dated July 9, 2012 (appended), MassWildlife confirms that the Project remains on schedule and is in compliance. Under the approved schedule, functionality will not be determined until post-construction testing is completed in 2018.

In October 2002, HG&E installed an exclusionary device in the attraction water intake to prevent shortnose sturgeon from entering the system that supplies attraction water to the upstream fish

passage facilities at the fishlifts. Shortnose sturgeon is federally listed as endangered.

HG&E monitors the number of fish using the upstream passage facilities and reports the information annually to FERC pursuant to Article 411 for Project No. 2004. Monitoring follows the Upstream Passage Evaluation and Monitoring Plan, which FERC approved by order dated May 19, 2006. Annual reports are also required for effectiveness evaluation of the eel passage facilities; a permanent upstream passage facility for eels on the Holyoke end of the dam has not yet been installed as the evaluation continues.

HG&E is continuing to work conscientiously and cooperatively to resolve outstanding fish passage issues and to finalize designs.



Figure 5. Holyoke fish lift's flume trap with an Atlantic salmon, an American shad, and several lamprey. (Monitoring Report: Upstream Fish Passage at HG&E's Holyoke Dam Fishway, Spring and Fall, 2011, January 2012)

LIHI Questionnaire: Fish Passage and Protection	
C.1	Is the Facility in Compliance with <i>Mandatory Fish Passage Prescriptions</i> for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986? Reviewer Analysis/Conclusions: HG&E is in compliance with the passage prescriptions, including the revised schedule, under the new Project No. 2003 license for both anadromous and catadromous species; however, there have been delays for which HG&E is responsible. Effective downstream passage is critical given the location of the dam in the Connecticut River system. This criterion is only met if HG&E complies with the new schedule.

	YES (subject to Recommended Condition #1) = Go to C.5
C.5	Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of <i>Riverine</i> fish?
	<i>Reviewer Analysis/Conclusions:</i> There are no prescriptions for riverine fish. N/A = Go to C.6
C.6	Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?
	<i>Reviewer Analysis/Conclusions:</i> Entrainment protection and tailrace barriers are an integral part of the fish passage measures at the Project. The rack at Hadley Falls Station will be modified as part of the final design for downstream passage at the dam. YES = PASS

D. Watershed Protection

Pursuant to Article 418 of the Project No. 2004 license and Condition 19 of the water quality certification, HG&E manages its project lands in accordance with the Comprehensive Recreation and Land Management Plan (CRLMP), which was filed with FERC on May 1, 2003, approved by FERC on March 31, 2004, and later modified by FERC order of November 23, 2004. The CRLMP includes a Recreation Plan, Land Management Plan, and Buffer Zone and Riparian Management Plan. The Land Management Plan includes provisions to conserve certain parcels of wildlife significance within the project boundaries, including Cove Island, Log Pond Cove (a setback area about half a mile upstream of the dam historically used for log drives), and the Bachelor Brook/Stony Brook area. HG&E also administers a permitting program for boat docks, boat ramps, and water withdrawals and reports related activities to FERC annually.

The 18-mile-long impoundment has about 48 miles of shoreline most of which is privately owned. HG&E has fee ownership of approximately 216 acres along the Holyoke impoundment, including Log Pond Cove (41 acres), Cove Island (51.8 acres), and the majority of shoreline lands in South Hadley upstream from the Route 116 bridge to Cove Island and in Holyoke from the Route 116 bridge to Ferry Road, between the impoundment and the railroad. According to the CRLMP, Massachusetts regulates most activities within 200 feet of the river under its River Protection Act.

Although HG&E has limited direct control over the majority of the shorelands, it monitors shoreland uses and cooperates with conservation and public use improvements on shoreland areas it does not own. This includes the Connecticut River Water Trail, Rainbow Beach, the Red Rock Complex, Hadley Cove, Sandy Beach, and Hockonum Flats.

The Buffer Zone and Riparian Management Plan designates a minimum 200-foot buffer zone along the Connecticut River within and adjacent to the project boundary on Log Pond Cove, Cove Island, and all other HG&E-owned property. Guidelines within this zone include limiting shoreline construction; limiting tree/vegetation removal; using native species when plantings are necessary for screening or to prevent erosion; leaving woody debris in place along shoreline for fish habitat; and no development, vegetation removal, or altering of shoreline areas used by threatened or endangered species. Camps on Cove Island are subject to a 50-foot setback where vegetation removal is controlled by HG&E. HG&E also contributes \$500 annually to the Connecticut River Watershed Council in furtherance of its mission to protect and enhance the Connecticut River.

LIHI Questionnaire: Watershed Protection	
D.1	Is there a buffer zone dedicated for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low-impact recreation) extending 200 feet from the high water mark in an average water year around 50 - 100% of the impoundment, and for all of the undeveloped shoreline?
	Reviewer Analysis/Conclusions: The riverine impoundment extends 18 miles upstream. HG&E does not own or control sufficient lands to meet this criterion.

	NO = Go to D.2
D.2	<p>Has the facility owner/operator established an approved watershed enhancement fund that: 1) could achieve within the project's watershed the ecological and recreational equivalent of land protection in D.1.,and 2) has the agreement of appropriate stakeholders and state and federal resource agencies?</p> <p><i>Reviewer Analysis/Conclusions:</i> There is no watershed enhancement fund. The facility does not qualify for an extension of the LIHI certification term by three years.</p> <p>NO = Go to D.3</p>
D.3	<p>Has the facility owner/operator established through a settlement agreement with appropriate stakeholders and that has state and federal resource agencies agreement an appropriate shoreland buffer or equivalent watershed land protection plan for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low impact recreation).</p> <p><i>Reviewer Analysis/Conclusions:</i> The Project No. 2004 settlement agreement does not include such a provision.</p> <p>NO = Go to D.4</p>
D.4	<p>Is the facility in compliance with both state and federal resource agencies recommendations in a license approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project?</p> <p><i>Reviewer Analysis/Conclusions:</i> The record at FERC's eLibrary does not include any evidence of non-compliance within the last year with regard to the Land Management Plan component of the Comprehensive Recreation and Land Management Plan.</p> <p>YES = PASS</p>

E. Threatened and Endangered Species Protection

The state-endangered bald eagle, the federally threatened and state-endangered Puritan tiger beetle, the federally endangered and state-endangered shortnose sturgeon, the federally endangered and state-endangered dwarf wedgemussel, and the state-endangered yellow lampshell mussel are found in the general Project area. Article 416 of the Project No. 2004 license requires HG&E to implement the Threatened and Endangered Species Protection Plan (T&E Plan) approved by FERC on June 6, 2003.

The T&E Plan and the CCOP include measures to protect mussels in the canal system. HG&E installed a weir at the beginning of the First Level Canal to prevent habitat dewatering during canal outages (maintenance drawdowns). HG&E monitors mussel habitat; provides conservation flows in the canal system; uses maintenance protocols that protect habitat; and schedules annual outages for October, which minimizes the impact on mussels. During the annual outages, surveys have been conducted annually since 2003 and are planned to continue through at least 2014; interim reports are issued every four years, and a final report is to be produced in 2014. The second interim report ending with the 2009 season was filed with FERC by letter dated March 26, 2010. To date, yellow lampshell mussels have been found, but no dwarf wedgemussels (HG&E LIHI application, April 2010).

HG&E is working to establish an impoundment water level management protocol that reduces impacts on tiger beetle caused by fluctuating water levels at Rainbow Beach, a critical habitat for that species. The Recreation Plan also includes provisions for public education, research assistance, and recreational use controls to help protect tiger beetle habitat.

In 2005, Endangered Species Act Section 7 consultation was completed between FERC and NOAA's National Marine Fisheries Service (NMFS) as related to the endangered shortnose sturgeon and FERC's approval of a Comprehensive Settlement and amendment of the license for Project No. 2004. NMFS issued a Biological Opinion on January 27, 2005 concluding that the proposed action was likely to adversely affect, but not likely to jeopardize, the continued existence of shortnose sturgeon. Article 416 requires HG&E to implement measures consistent with the Terms and Conditions included in the Incidental Take Statement attached to the NMFS Biological Opinion. This includes conformance with the approved shortnose sturgeon handling plan, updating that plan as necessary, monitoring the water quality in holding tanks, and reporting annually to NMFS on the number of sturgeon passing upstream or downstream, sturgeon mortality, and number of sturgeon rescued from dam apron pools. In 2008, FERC again requested consultation under Section 7 due to a delay in construction of downstream passage facilities; by letter dated June 19, 2008, NMFS acknowledged FERC's request, but the record does not indicate that NMFS provided a final response. The incidental take relates to sturgeon injury and mortality caused by construction and operation of the fish passage facilities.

LIHI Questionnaire: Threatened and Endangered Species Protection	
E.1	<p>Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?</p> <p><i>Reviewer Analysis/Conclusions:</i> As discussed above, several species are present. NO = PASS</p>
E.2	<p>If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the plan relevant to the Facility?</p> <p><i>Reviewer Analysis/Conclusions:</i> There are no recovery plans for any of the species of interest. N/A = Go to E.3.</p>
E.3	<p>If the Facility has received authority to incidentally <i>Take</i> a listed species through: (i) Having a relevant agency complete consultation pursuant to ESA Section 7 resulting in a biological opinion, a habitat recovery plan, and/or (if needed) an incidental Take statement; (ii) Obtaining an incidental Take permit pursuant to ESA Section 10; or (iii) For species listed by a state and not by the federal government, obtaining authority pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authority?</p> <p><i>Reviewer Analysis/Conclusions:</i> NMFS issued an Incidental Take Statement for shortnose sturgeon. Operation of the fish passage facilities is done in accordance with the terms of the Statement. Section 7 consultation is underway for modification of downstream passage at Hadley Falls Station. YES = Go to E.4.</p>
E.4	<p>If a biological opinion applicable to the Facility for the threatened or endangered species has been issued, can the Applicant demonstrate that:</p> <p>a) The biological opinion was accompanied by a FERC license or exemption or a habitat conservation plan? Or</p> <p>b) The biological opinion was issued pursuant to or consistent with a recovery plan for the endangered or threatened species? Or</p> <p>c) There is no recovery plan for the threatened or endangered species under active development by the relevant Resource Agency? Or</p> <p>d) The recovery plan under active development will have no material effect on the Facility's operations?</p> <p><i>Reviewer Analysis/Conclusions:</i> As indicated under E.3, a BO was issued for shortnose sturgeon, and HG&E is in compliance. YES with respect to shortnose sturgeon = Pass for that species.</p>
E.5	<p>If E.2 and E.3 are not applicable, has the Applicant demonstrated that the Facility and Facility operations do not negatively affect listed species?</p> <p><i>Reviewer Analysis/Conclusions:</i> With respect to all federally and state-listed species, including those other than shortnose sturgeon, HG&E has implemented the Threatened and Endangered Species Protection Plan approved by FERC on June 6, 2003 per Article 416. YES = PASS with respect to other species.</p>

F. Cultural Resource Protection

The Holyoke Canal and the South Hadley Canal systems are both listed as Historic Districts in the National Register of Historic Places. Under Article 420 of the Project No. 2004 license, a cultural resources management plan (CRMP) was filed with FERC on September 8, 2000. Under the CRMP, HG&E files activity reports annually with FERC. Although the CRMP only applies to Project No. 2004, HG&E states in the LIHI application that it voluntarily follows the CRMP for all of its stations. That would include consultation with the State Historic Preservation Office.

Located downstream of the dam at the South Hadley end is an abandoned mill building, the Texon Building. The building was slated for demolition by HG&E as part of the development of Upper Riverside Park. HG&E has been negotiating with the Town and the SHPO for several years over the disposition of the building (possible rehabilitation versus demolition) and the extent of associated canal restoration work to be done by HG&E. HG&E is hoping to enter into a memorandum of agreement on demolition of the building by the end of this summer.

LIHI Questionnaire: Cultural Resource Protection	
F.1	If FERC-regulated, is the Facility in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?
	Reviewer Analysis/Conclusions: The record does not indicate that the Facility has any Cultural Resource compliance issues. YES = Go to G


G. Recreation

The Comprehensive Recreation and Land Management Plan (CRLMP), discussed above under Watershed Protection, contains several provisions of Article 418: development of the Riverside Park and trail, a channel marking program, improved boat facilities, provisions for various facilities and programs, hiking and walking trails, camping facilities, the Dinosaur Footprints Reservation, installation of additional informational signage, portage access around the dam, the annual Shad Derby, a dam release warning system, and a plan and schedule for monitoring recreational use. HG&E owns and operates the Robert E. Barrett Fish Viewing Facility at Hadley Falls Station fish passage facility and the Holyoke Point (Slimshad Point) Recreation Area, and is developing, in cooperation with the Town of South Hadley, new facilities at Riverside Park (downstream of the dam) and the Canal Gatehouse Park. HG&E is also cooperating with the development of the Holyoke Canal Walk; the Canal Walk, a portion of which was completed in 2009, is a wide promenade planned along the First Level Canal and the Second Level Canal.

When Project No. 2004 was being licensed, and until 2011, the annual Shad Derby occurred over two consecutive weekends in May. In 2011, HG&E shortened the Derby to one weekend without consulting MassWildlife and/or seeking FERC approval. By letter dated May 9, 2011 to HG&E, MassWildlife objected to the change. In a second letter dated March 3, 2012 (appended at p. A-

8), MassWildlife repeated its objections, indicating that the change was inconsistent with both the settlement agreement and the CRLMP. HG&E has made it clear to this reviewer that it considers this to be a non-issue and that it is unwilling to consider reverting back to two weekends (email of July 4, 2012, appended). If that is the case, the change should only have been made after appropriate consultation of interested parties and amendment of the recreation plan, subject to FERC approval. The Project recreation plan, Section 2.4.17, describes HG&E's contribution to the Shad Derby as follows:

HG&E currently organizes the annual Shad Derby in the spring of each year, which is a fishing contest during the upstream migration of shad. HG&E will continue to sponsor (i.e., provide in-kind services such as staff resources, funding for the prizes, providing all facilities) the



- ▶ No Entry Fee! (FREE)
- ▶ \$1,000 Cash Grand Prize
- ▶ Both Senior and Junior Divisions
- ▶ Sponsored by Holyoke Gas & Electric

HG&E Shad Derby

May 12 & 13

The HG&E Shad Derby invites the region's anglers to fish the waters of the Connecticut River by the Holyoke Dam in a **FREE** contest to catch the largest American Shad.

Contestants must bring their fish to the official weighing station located by the Holyoke Fishlift, near the Route 116 Bridge.

Prizes are awarded to the top 10 catches in each of two divisions: junior (ages 14 & under) and senior (ages 15 and older). The event's grand prize is \$1,000 for the first place winner in the senior division. There are no entry or registration fees. Prizes will be awarded at the tournament's conclusion on Sunday, May 13th at 5PM.

Derby results from previous years and the official contest rules are viewable on the HG&E website at: www.hged.com/shadderby.

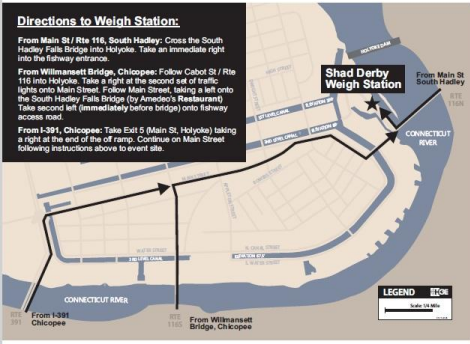
Prior to fishing, contestants should register at the weighing booth by the Holyoke Fishlift. Contestants in the senior division must have a valid fishing license.

Directions to Weigh Station:


From Main St / Rte 116, South Hadley: Cross the South Hadley Falls Bridge into Holyoke. Take an immediate right into the ferryway entrance.

From Wilmanett Bridge, Chicopee: Follow Cabot St / Rte 116 into Holyoke. Turn a right at the second set of traffic lights onto Main Street. Follow Main Street, taking a left onto the South Hadley Falls Bridge (by Amadeo's Restaurant). Take second left (immediately before bridge) onto ferryway access road.

From I-391, Chicopee: Take Exit 5 (Main St, Holyoke) taking a right at the end of the off ramp. Continue on Main Street following instructions above to event site.



more details online at:
www.hged.com/shadderby



annual shad derby each spring during the term of the license. Sponsoring the Shad Derby would continue to provide a fun and popular recreational event for anglers and interested public.

The recreation plan outlines in Table 2-7 (*Cost Table for all Proposed Measures in the CRLMP*) the level of support planned for different recreational activities. With respect to the Shad Derby, the table indicates that the expected annual cost is 300 staff hours and \$35,000 of O&M.

This non-compliance could be considered grounds for denial of the certification. However, given the scale of investment by the licensee in environmental mitigation and enhancement and public use improvements, I believe it is reasonable to condition the certification in a manner that brings the Project back into compliance with the recreation plan (Recommended Condition #2).

LIHI Questionnaire: Recreation	
G.1	<p>If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption?</p> <p><i>Reviewer Analysis/Conclusions:</i> HG&E no longer supports the Shad Derby at the level of support outlined in the FERC-approved recreation plan. I regard this to be non-compliance with the recreational accommodation provisions of the license; however, I recommend conditional certification to correct this non-compliance rather than outright denial.</p> <p>YES (if subject to Recommended Condition #2) = PASS</p>

H. Facilities Recommended for Removal

The record does not indicate an interest on the part of resource agencies in removing Holyoke Dam.

LIHI Questionnaire: Facilities Recommended for Removal	
H.1	<p>Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?</p> <p><i>Reviewer Analysis/Conclusions:</i> No.</p> <p>NO = PASS</p>

APPENDIX

Contents

Contacts..... A-1
Correspondence A-2 to A-12

CONTACTS

Entity	Authorized Representatives	Contact Information
City of Holyoke Gas & Electric Dept. (applicant)	James M. Lavelle Manager Paul S. Ducheney Superintendent - Electric Production	99 Suffolk St. Holyoke, MA 01040 Telephone: (413) 536-9311 Telephone: (413) 536-9340 Email: ducheney@hged.com
United States Fish and Wildlife Service	John P. Warner Assistant Supervisor Susi von Oettingen (T&E)	Conservation Planning Assistance and Endangered Species New England Field Office, U.S. Fish and Wildlife Service 70 Commercial Street, Suite 300 Concord, NH 03301 Telephone: (603) 223-2541 - ext.15 Email: John_Warner@fws.gov Telephone: (603) 223-2541 - ext.22
National Marine Fisheries Service	Pat Scida	55 Great Republic Drive Gloucester, MA 01930
Mass. Department of Environmental Protection Division of Watershed Management	Robert Kubit, P.E.	Mass DEP Division of Watershed Management 627 Main Street Worcester, MA 01608 Telephone: (508) 767-2854 Email: Robert.kubit@state.ma.us
Massachusetts Division of Fisheries and Wildlife	Caleb Slater, PhD Anadromous Fish Project Leader	Telephone: (508) 389-6331 Email: caleb.slater@state.ma.us
State Historical Preservation Office	Edward L. Bell Senior Archaeologist	Massachusetts Historical Commission 220 Morrissey Boulevard Boston, MA 02125 Telephone: (617) 727-5128
National Park Service Rivers and Special Studies Branch	Kevin Mendik	Telephone: (617) 223-5299 Email: kevin_mendik@nps.gov

From: Kubit, Robert (DEP) [mailto:robert.kubit@state.ma.us]
Sent: Thursday, June 28, 2012 9:54 AM
To: 'Jeffrey Cueto'
Subject: RE: Holyoke LIHI application

Hi Jeff,

In answer to your questions:

1. Yes
2. I can confirm the hydroelectric facilities at Holyoke do not cause or contribute to the TSS impairment downstream of the facility.

Bob

Robert Kubit, P.E.
MassDEP
Division of Watershed Management
627 Main Street
Worcester MA 01608
Telephone: (508) 767-2854
Email: robert.kubit@state.ma.us
Fax: (508) 791-4131

From: Jeffrey Cueto [mailto:ompompanoo@aol.com]
Sent: Thursday, June 28, 2012 9:48 AM
To: Kubit, Robert (DEP)
Cc: 'Paul Ducheney'
Subject: Holyoke LIHI application

Hi, Bob. I am working on wrapping the report for HG&E's LIHI application. I have a couple of questions for you, if you don't mind:

- 1) To the extent of your knowledge, is HG&E in compliance with the Hadley Falls Project (FERC No. 2004) water quality certification?
- 2) The Connecticut River segment from Holyoke Dam downstream to the state border is 303(d) listed for E. coli, PCBs in fish tissue, and TSS. With respect to TSS, I believe the source may be urban runoff and/or sewer overflows, but this is just speculation on my part. Could you confirm that the hydroelectric facilities at Holyoke do not cause, or contribute to, the TSS impairment?

Thank you very much for your help.

><{{{> **Jeffrey R. Cueto, P.E.**
><{{{> (802) 223-5175
><{{{> ompompanoo@aol.com

From: Slater, Caleb (MISC) [mailto:caleb.slater@state.ma.us]
Sent: Monday, July 09, 2012 8:33 AM
To: Jeffrey Cueto
Subject: RE: LIHI application: Holyoke

As I understand it, HG&E basically got the green light from the agencies to move forward with designs for downstream passage back in April after the March 8 conference call and is following the implementation schedule proposed in 2008, which would have the improvements completed by 2013. Would you mind confirming for me that HG&E is in compliance with the fish passage prescription for Holyoke?

Yes, they are on track- we approved the latest design for a new rack, but I would not be inclined to call them “low impact” until it is built and we know it works, but I bet LIHI will let them skate because they are not “out of compliance” with the fish passage prescription.

Caleb



Caleb Slater, PhD
Anadromous Fish Project Leader
Massachusetts Division of Fisheries and Wildlife
(508) 389-6331

From: Jeffrey Cueto [mailto:ompompanoo@aol.com]
Sent: Wednesday, July 04, 2012 1:22 PM
To: Slater, Caleb (FWE)
Subject: RE: LIHI application: Holyoke

Thanks, Caleb. If you wouldn't mind also answering my question about fish passage prescription compliance, I'd appreciate it.
Jeff

From: Paul Ducheney [mailto:ducheney@hged.com]
Sent: Monday, April 30, 2012 11:33 AM
To: Jeffrey Cueto
Cc: Jeanette Sypek
Subject: RE: LIHI application

Jeff,

Please see the attached approvals...

NOAA Response

Paul -

Based on the information that is currently available, NMFS has no objections to HG&E moving forward with the proposal for upstream and downstream passage measures and improvements presented on the March 8 CCT conference call and subsequent submissions by email and mail. As we have discussed, this proposal is different than what was considered in our January 27, 2005 Biological Opinion on project operations. It is our understanding that you will coordinate with the appropriate staff at FERC to ensure that FERC requests reinitiation of Section 7 consultation to consider changes in the proposed action. We also reiterate our past position that post-construction/modification monitoring will be essential. We also concur with the concerns raised by Caleb Slater and John Warner regarding lateral flows and fish reaction to the corner near the weir entrance.

Julie Crocker

USF&WS

Hi Rich - Based on our discussions on the March 8 Conference Call and the subsequent submittals in via e-mail, the Service agrees that the downstream passage measures and upstream passage improvements proposed by HGE meet the Settlement goal for passage measures at the Holyoke Project. The Service interprets the statement relative to the unit hydraulic capacity and the revised flow allocation table, to mean that HGE would not operate the project at flows over those identified on the flow allocation sheet during periods when downstream passage facilities are operated (without further consultation with the CCT).

Our support for moving forward with construction designs and permitting is based on the understanding that concerns relating to the need for and approaches to provide lateral flows across the rack face towards the bypass weir, flows across the depth of the water column, and fish reaction to the corner near the weir entrance and passage success will be addressed in the context of post-construction monitoring.

John Warner - USFWS

MA DEP

Hi Paul,

The Massachusetts Department of Environmental Protection agrees that the work proposed by HG&E as discussed on the March 8th conference call meets the Settlement goal for downstream fish passage at the Project, and agrees that HG&E should move forward with design and permitting. As we have further discussed, potential concerns relating to lateral flows to the weir, flows across the depth of the water column, and fish reaction to the corner near the weir entrance will be addressed in the context of post-construction monitoring.

Bob

CRWC

RE: Fw: CCT - Follow-up to our conference call on March 8th

Andrea Donlon

to:

'Kubit, Robert \ (DEP\)', 'Richard Murray',
'Bill McDavitt', Brett_Towler, 'Slater, Caleb
\ (MISC\)', don.pugh, Jessica.Pruden, john_warner,
julie.crocker, 'Paul Ducheney', 'McCollum, Robert J.
\ (DEP\)'

04/05/2012 03:55 PM

Cc:
"Chris Tomichek", David.Culligan, "George Hecker",
"Greg Allen", "Steve Amaral", "Tim Hogan", "Nancy Skancke
\(njskancke"

TU

Rich,

At the present time TU believes that proceeding with design drawings for the proposed angled rack in front of the Hadleys is a better alternative than not proceeding, as no other configuration is under consideration by HG&E, and retaining the current rack structure is inconsistent with adult shortnose sturgeon protection. TU has little faith that the proposed rack design will improve downstream protection over the current configuration at the Hadleys for any species or life stage other than adult shortnose sturgeon.

It is important that the runner for the turbine rebuilt incorporate as many fish friendly features as possible, particularly a rounded leading edge.

The downstream plunge pool should greatly improve survival for fish that pass over the bascule or rubber dam #5.

Don

MA. F&G

From: Paul Ducheney [mailto:ducheney@hged.com]
Sent: Wednesday, July 04, 2012 8:30 AM
To: ompompanoo@aol.com
Cc: fayer; Richard Murray
Subject: RE: Summary of information needs

Jeff - I will not discuss the Shad Derby with LIHI. I believe that I have stated HG&E's position with regards to this matter in the past very clearly. I would however, be available to discuss any other items that you have with regards to our license requirements.

We look forward to LIHI decision on our application at the July 26 meeting.

Regards,

Paul

-----"Jeffrey Cueto" <ompompanoo@aol.com> wrote: -----
To: "Paul Ducheney" <ducheney@hged.com>
From: "Jeffrey Cueto" <ompompanoo@aol.com>
Date: 07/03/2012 11:19AM
Cc: "Fred Ayer" <fayer@lowimpacthydro.org>, "Richard Murray" <rmurray@hged.com>
Subject: RE: Summary of information needs

Paul -- I'd suggest that we have a conference call with Fred today if possible so that we fully understand your position on the Shad Derby. Please let me know if that is acceptable with you and, if so, what time would be most convenient. Fred has a call-in number that I can give you.
Jeff

-----Original Message-----
From: Paul Ducheney [mailto:ducheney@hged.com]
Sent: Tuesday, July 03, 2012 10:27 AM
To: Jeffrey Cueto
Cc: 'Fred Ayer'; Richard Murray
Subject: RE: Summary of information needs

Jeff,

- 1) impoundment length is 18 miles
- 2) Texon demo or building status: we are currently working with the Town of south Hadley on a revised MOA for Demo. of building. I hope that we will have some movement toward final resolution by the end of summer.
- 3) HG&E's position is that we continue to conduct an annual shad derby. We feel that there is no issue to resolve here.

Regards,

Paul

From: "Jeffrey Cueto" <ompompanoo@aol.com>
To: "'Paul Ducheney'" <ducheney@hged.com>
Cc: "'Fred Ayer'" <fayer@lowimpacthydro.org>

Date: 07/03/2012 09:18 AM
Subject: RE: Summary of information needs

Thanks, Paul.

1. Could you confirm what the correct impoundment length is?
2. Could you let me know what the status of the Texon building demolition is...has any progress been made since the August 2011 CR report?
3. Did you give any further thought on how to resolve the Shad Derby issue?

Jeff

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

From: Paul Ducheney [<mailto:ducheney@hged.com>]
Sent: Tuesday, July 03, 2012 8:57 AM
To: Jeffrey Cueto
Cc: 'Fred Ayer'; 'Richard Murray'
Subject: RE: Summary of information needs

Jeff - Per your request, here are the remaining responses to your inquiry:

Flow - The modified run-of-river (ROR) protocol has been tested for a number of year, pursuant to the FERC's order approving the comprehensive settlement (111 FERC ¶ 61,106; issued April 19, 2005); see revised License Article 405(b). Per that revised License Article, after the testing was completed HG&E was to file a revision to its Comprehensive Operation and Flow Plan (COFP). Per FERC order issued April 25, 2012, the consolidated report of testing and the proposed revised COFP was to be filed June 15, 2012. On June 14, 2012 (see attached), HG&E filed a request with the FERC to extend that due date to July 16, 2012, to allow for completion of agency consultation prior to filing the revised COFP to implement the modified ROR on a permanent basis.

By letter date July 10, 2008 (see attached), the MADEP indicated that the testing of the modified ROR protocol was consistent with the 401 Water Quality Certificate (WQC). The MADEP staff did not oppose the extension of testing of the modified ROR protocol or the extension of the date for filing the revised COFP. HG&E is obtaining confirmation from MADEP whether anything more than the filing of the revised COFP is necessary to incorporate the modified ROR protocol under the 401 WQC.

Fish Passage - In response to the 2008 request for extension of time, FERC initiated formal consultation with NMFS by letter dated on June 3, 2008. HG&E has updated FERC on the status of the discussions with the federal and state resource agencies and other stakeholders on achieving a resolution of downstream fish passage issues, and the FERC has acknowledged such reports. For example, FERC's letter dated July 16, 2010, acknowledged HG&E's update dated April 1, 2010, and referenced the request for extension of time filed

in 2008 (see attached). HG&E has been in continuous consultation with the federal and state resource agencies and other stakeholders since prior to the filing/approval of the comprehensive settlement on implementation of downstream fish passage measures and on developing a consensus on enhancements to downstream fish passage at the Project. Documentation of such consultation will be included with HG&E's application to amend the Project license to reflect the fish passage enhancements which is anticipated this summer.

The MADEP letter dated July 10, 2008, affirmed the MADEP's approval of the 2008 request for extension of time.

I hope that this email, along with my prior responses, addresses all of your questions and that LIHI can expeditiously act on HG&E's application.

Regards,

Paul

(See attached file: P2004 - FERC Letter on Downstream Fish Passage_7-16-10.pdf) (See attached file: P2004-ROR Modification - EOT Request - 6-14-12.pdf) (See attached file: P2004-Settlement Supplement Letter to FERC_7-28-08.pdf)

From: "Jeffrey Cueto" <ompompanoo@aol.com>
To: "'Paul Ducheney'" <ducheney@hged.com>
Cc: "'Richard Murray'" <rmurray@hged.com>, "'Fred Ayer'" <fayer@lowimpacthydro.org>
Date: 07/02/2012 05:00 PM
Subject: RE: Summary of information needs

Paul - I would appreciate it if you would give me an idea as to by when you expect to have given me responses to the remaining items in my summary list. Rich provided the cultural resources annual report, so that's off the list, as well as water quality. If at all possible, it would be ideal to get responses by the end of this week.

I would also like to resolve the Shad Derby issue if at all possible. That is the only issue that I have identified to date that may jeopardize certification by LIHI. You mention in your 6/28 that FERC has not ruled on the issue. I know that Caleb Slater copied FERC on the two letters that were sent to HG&E, but it's not clear that FERC is actively investigating this as a compliance matter. I'd suggest that HG&E commit to continuing the Shad Derby at the level of support outlined in the recreation plan. If you wish to

change the Derby to only one weekend, then you could file to amend the recreation plan accordingly, providing FERC with Caleb's consultation comments (and any other consultation party comments) and your response to the comments and letting FERC decide the matter. I think approaching it that way would conform with LIHI's criteria. As it is, the project can be viewed as out of compliance with the recreation plan for the last two years.

Thanks.
Jeff

From: Jeffrey Cueto [<mailto:ompompanoo@aol.com>]
Sent: Friday, June 29, 2012 6:49 AM
To: 'Paul Ducheney'
Cc: 'Richard Murray'
Subject: RE: Summary of information needs

I received a response from Bob Kubit, so I'm all set on Water Quality.

From: Jeffrey Cueto [<mailto:ompompanoo@aol.com>]
Sent: Thursday, June 28, 2012 9:32 AM
To: 'Paul Ducheney'
Cc: 'Richard Murray'; 'Fred Ayer'
Subject: Summary of information needs

Paul - Here is a summary of what I think are outstanding needs to complete my review.

Flow

Since the license and water quality certification run-of-river requirements for P-2004 set the allowable headpond fluctuation at plus or minus 0.2 foot and the modified run-of-river operation will exceed that fluctuation, is it HG&E's intent to file requests to amend the license and certification?

Water Quality

If you have information to support a conclusion that the Project is not a contributor to the downstream TSS impairment, please provide it. If not, I can contact MassDEP directly. I think this probably relates to urban runoff and sewer overflows, but I want to confirm this.

Fish Passage

On April 30, 2008, you sought approval from FERC for a change in the Article 410 schedule for downstream fish passage improvements. FERC contacted NMFS about reinitiating Section 7 consultation. I could not find any formal action by NMFS or FERC on this. You referred my inquiry to someone, but not response yet.

Watershed Protection

Thanks for sending the CRLMP. Could you confirm the impoundment length for me? I've seen 18 miles and 25 miles.

Recreation

Thanks for confirming HG&E's position on the Shad Derby. I sent an email to Caleb. My initial view is that HG&E should provide at least the level of support shown in Table 2-7 of the Recreation Plan.

Cultural Resources

Please send a copy of the last annual CRMP report.

You had requested an extension from FERC until June 2012 for demolition of the Texon Building (as related to the Recreation Plan schedule). Did FERC act on the request, and could you let me know if you resolved your issues with the Town of South Hadley and what the demolition status is?

><{{{~> Jeffrey R. Cueto, P.E.

><{{{~> (802) 223-5175

><{{{~> ompompanoo@aol.com



Commonwealth of Massachusetts

Division of Fisheries & Wildlife

Wayne F. MacCallum, Director

March 3, 2012

James M. Lavelle
City of Holyoke Gas and Electric Department
99 Suffolk Street
Holyoke MA 01040-5082

RE: Compliance with recreational mandates of license
P-2004 Holyoke hydroelectric project

Dear James Lavelle,

The Massachusetts Division of Fisheries and Wildlife (Division) is the agency responsible for the protection and management of the fish and wildlife resources of the Commonwealth. As such we monitor operations at hydroelectric projects within the Commonwealth.

The Division is a signatory to the 2004 Settlement Agreement which resulted from the relicensing of the Holyoke Project (FERC No. P-2004) on the Connecticut River in Holyoke, MA. The Division believes that the annual HG&E Shad Derby scheduled for only one weekend in 2012 does not satisfy the requirements set out in Settlement Agreement.

The Comprehensive Recreation and Land Management Plan (required under the Settlement Agreement) states that HG&E will continue to fund and organize the annual Shad Fishing Derby. Traditionally the Shad Derby has been held over two consecutive weekends in May (see attachment from HG&E website). Last year (2011) HG&E made the unilateral decision to shorten the Shad Fishing Derby to one weekend. The Division believes that while not explicit, the meaning of "continue the Shad Fishing Derby" was understood by all to be a continuation of the derby as it has always been- an event held over two consecutive weekends.

Inclement weather or high flows in the river could easily ruin a weekend for fishing. Holding the derby over two weekends greatly reduces the chances of a total loss due to bad weather or poor river conditions and continues the tradition of a two weekend event.

The Division understands that HG&E has cited declining attendance and financial hardship as factors in its decision. Since registration is not required to fish in the Derby (see attached rules) any statements about declining attendance are purely anecdotal and the relatively small amount of money that shortening the derby will save will have no meaningful effect on the Project's bottom line.

Sincerely,

Caleb Slater, Ph.D.
Anadromous Fish Project Leader

cc: Paul Ducheneay, HG&E; Secretary, FERC; Nancy Skancke, GKRSE; Andrea Donlon, CRWC;
Don Pugh, TU; John Warner, USFWS, Bob Kubit, MADEP

www.masswildlife.org

Division of Fisheries and Wildlife
Field Headquarters, One Rabbit Hill Road, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-7890
An Agency of the Department of Fish and Game