OPEN SQUARE
HYDROELECTRIC FACILITY

Recertification Application to the Low Impact Hydropower Institute

LIHI #86

Prepared by
John Aubin, Managing Member
Open Square Properties, LLC

April 26, 2017

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INTRODUCTION

This is an application to the Low Impact Hydropower Institute (LIHI) for recertification of Open Square Hydroelectric Facility (LIHI #86), subsequent to a previous LIHI certification that expires May 31, 2017. There have been no material changes in the facility design or operation since the most recent LIHI review that was concluded in December 2012 (see LIHI reviewer's report by Jeffrey Cueto, dated 5/3/2012). There also have been no material changes in the environmental conditions in the project vicinity since that most recent LIHI review. The only material changes that have occurred recently are in the revised LIHI certification criteria described in the 2016 version of LIHI's certification handbook.

I have reviewed the project description for the Open Square facility that is posted on the LIHI website and determined that it is an accurate representation of the subject facility. The information provided in this recertification application provides an update to support a new LIHI certification.

PART I. FACILITY DESCRIPTION

The key features of the Open Square Hydroelectric Facility (the "Facility") are described in Table 1. A description of the facility can be found on the LIHI website at http://lowimpacthydro.org/lihi-certificate-86-open-square-hydroelectric-project/.

Table 1. Facility Description Information for recertification of the Open Square Hydroelectric Facility (LIHI #86).

Information Type	***Facility Description***
Name of the Facility	• Open Square Hydroelectric Facility
Location	• Open Square Way, Holyoke Massachusetts • Holyoke Hydroelectric System (Dam & Canal System), Holyoke Massachusetts • Connecticut River • Connecticut River basin • Hampden County, Massachusetts
Facility Owner	• Owner: Open Square Properties, LLC • Operator: Open Square Properties, LLC • Authorized Representative: John Aubin, Managing Member
Regulatory Status	• Non-Licensed, pre 1935 project • Water Quality Certification covered under Holyoke Hydroelectric System, FERC #2004
Characteristics of the Power Plant	• Date of construction – 1928 (D Wheel) & 1935 (G Wheel) • Total name-plate capacity – 540 KW Typical Maximum Output • Average annual generation – Approximately 3,000 MWH/year • Plant has two turbine/generators D Wheel – Leffel Z Francis Turbine, 335 kW maximum rated output, 240 cfs maximum rated hydraulic capacity. Typical maximum output 260 kW. G Wheel – Leffel Z Francis Turbine, 335 kW maximum rated output, 240 cfs maximum rated hydraulic capacity. Typical maximum output 280 kW. • Modes of operation: Run-of-river • Major equipment upgrades – Automated controls and safety features with new exciters and HPU Units (for gate operation). • There have been no recent operational changes • A feasibility study is in progress to evaluate refurbishing or replacing the D Wheel with a more efficient and higher output system to utilize unused Mill Powers (water rights).
Characteristics of the Dam or Diversion:	Date of construction - The Holyoke dam and canal system were conceived and constructed as one system by the South Hadley Falls Company starting in 1847-1848. • Dam height – 30 feet • Spillway elevation – 100.6 ft (1,020 foot masonry dam) • Head Race elevation – 97.5 ft • Tailwater elevation – 77.5 ft • Length and type of all penstocks and water conveyance structures between reservoir and powerhouse – Holyoke dry laid stone wall canals extending on to the Open Square site and running through steel penstocks into powerhouse(s) • Dates and types of major, generation-related infrastructure improvements – the Hydro facility which at it's peak included thirteen turbines on the Open Square site, was integral to the original mill development starting in 1847 and extending into the first decate of the 20th century. All but the two operating turbines were abandoned by the 1980's. No major infrastructure improvements have been made in the recent past.
Characteristics	The Open Square Facility receives flow from the Connecticut River through the Holyoke Canal

Information Type	***Facility Description***
of Reservoir and Watershed:	System at the First Level Canal via two open raceways on the Open Square site. The two open raceways have an approximate surface area of .23 acres and an estimated volume of 3.49 acre-feet of water.
Hydrologic Setting:	Average annual flow at the dam is 17,000 cfs but seasonal extremes range from more than 80,000 cfs in spring to less than 5,000 cfs in late summer. The Holyoke Canal System has a capacity of 6,000 cfs. Open Square's water rights permit operation Monday through Friday from 6am to 10pm excluding canal drain downs twice per year and holidays. The Open Square Facility operates 24/7 when flow in the Connecticut River exceeds the capacity of all units in the system by agreement with HGE (owner of the Holyoke Hydroelectric System). Additional rights to operate on Sundays and Holidays are currently in dispute with HGE. On average, the Open Square Facility loses two days per year of operation due to low water flows in the Connecticut River and eighteen additional days due to holidays and canal drain downs. • Location and name of relevant stream gauging stations above and below the facility: Above – USGS 01172000 CONNECTICUT RIVER AT HOLYOKE, MA Below – USGS 01172010 CONNECTICUT R AT I-391 BRIDGE AT HOLYOKE, MA Watershed area at the dam : 8,309 square miles
Designated Zones of Effect:	• The Open Square Facility has one Zone of Effect that is limited to the head and tail races of the D Wheel and G Wheel.
Additional Contact Information:	List names, addresses, phone numbers and e-mail for local resource agencies and non-governmental stakeholders: Dr. Caleb Slater Anadromous Fish Team Leader Massachusetts Division of Fisheries and Wildlife Field Headquarters 1 Rabbit Hill Road Westborough, MA 01581 (508) 389-6331 Caleb.Slater@state.ma.us Mr. Robert Kubit NPDES Massachusetts Department of Environmental Protection 627 Main Street Worcester, MA 01608 (508) 767-2854 Robert.Kubit@state.ma.us Mr. John Warner Energy/Hydropower Coordinator U.S. Fish and Wildlife Service - New England Field Office 70 Commercial Street, Suite 300 Concord, NH 03301 (603) 223-2541 John_Warner@fws.gov Mr. Josh Knox Superintendent The Trustees of Reservations - Connecticut River Valley Management Unit (413) 532-1660 jknox@ttor.org

Information Type	*Facility Description*
Photographs of the Facility	• Photographs of key features of the facility and each of the designated zones of effect  D Wheel Head Raceway fed from Holyoke Canal System (seen beyond)  G Wheel Head Raceway fed from the Holyoke Canal System (seen beyond)

Information Type	*Facility Description*
	 D Wheel  G Wheel

PART II. STANDARDS MATRICES

There is only one designated zone of effect for this application, the Open Square site beginning at the head race intakes for D Wheel and G Wheel branching from the First Level Canal of the Holyoke Canal and extending to the discharge/tail race of the D Wheel and G Wheel into the Second Level anal of the Holyoke Canal System. The standards selected to satisfy the LIHI certification criteria in these zones are identify in the following tables.

Table II-1. LIHI standards selected for each certification criterion for Zone 1.

		Alternative Standards Applied				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	***X***				
B	**Water Quality**	***X***				
C	**Upstream Fish Passage**	***X***				
D	**Downstream Fish Passage**	***X***				
E	**Watershed and Shoreline Protection**	***X***				
F	**Threatened and Endangered Species Protection**	***X***				
G	**Cultural and Historic Resources Protection**	***X***				
H	**Recreational Resources**	***X***				

PART III. SUPPORTING INFORMATION

This section contains information that explains and justifies the standards selected to pass the LIHI certification criteria (see Part II for selections).

III.A.1 Ecological Flow Standard for Zone 1.

The facility satisfies Standard A-1, Not Applicable/De Minimis Effect, in Zone 1.

Supporting Information Required.

Criterion	***Standard***	***Instructions***
A	*1*	*Not Applicable / De Minimis Effect:* • *Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.* • *If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.* • *In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.* • *For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – **NOTE:** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.*

- *Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.*

The Open Square Facility is located between the first and second levels of the Holyoke Canal system. Each power house is fed from an open head race branching off from the first level canal and discharging into the second level canal. There are no other active raceways, penstocks or turbines active on the Open Square site.

- *If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to*

ensure such an operational mode is maintained.

The Open Square Facility is within the engineered Holyoke Canal System, which is monitored and regulated at a fixed water level. All canal flows that feed the Open Square Facility are controlled by the Holyoke Hydroelectric System owner, the Holyoke Gas and Electric Company, from the Gate House at the Holyoke Dam and regulated under FERC license 2004 as a modified Run of River (ROR) operation and certified by LIHI. The Open Square Facilities operations are governed by historic indentured water rights know as Mill Powers which permits primary operation Monday thru Saturday from 6am to 10pm. Open Square typically runs 24 hours a day when flows at the Connecticut River exceed approximately 15,000 cfs under a separate agreement with HG&E.

- *In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.*

Not Applicable – not a conduit project.

- *For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – **NOTE:** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.*

Not Applicable. This is not an impoundment zone.

III.B.1 Water Quality in Zone 1

The facility satisfies Standard B-1, Not Applicable/De Minimis Effect, in Zone 1.

Supporting Information Required.

B	*2*	*<u>Agency Recommendation:</u>* • *If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.* • *Provide a copy of the most recent Water Quality Certificate, including the date of issuance.* • *Identify any other agency recommendations related to water quality and explain their scientific or technical basis.* • *Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.*

- *If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.*

Water Quality Certification is addressed by HGE through its FERC license 2004 for the Holyoke Hydroelectric System. A copy of the MADEP Massachusetts Year 2014 Integrated List of Waters (most recent version) pursuant to Clean Water Act Sections 305(b), 314 and 303(d) is available at the following link: http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf According to this report, the Connecticut River within the Holyoke Project boundaries is a Category 5 impaired water (i.e. requiring Total Maximum Daily Loads). TMDL pollutants identified in this report include: Escherichia Coli, PCB in Fish Tissues and Total Suspended Solids. Appendix A-1 is Confirmation from MADEP that the Holyoke Project is not the cause of this impairment.

- *Provide a copy of the most recent Water Quality Certificate, including the date of issuance.*

Not Applicable. Water Quality Certification is addressed by HGE through its FERC license 2004 for the Holyoke Hydroelectric System.

- *Identify any other agency recommendations related to water quality and explain their scientific or technical basis.*

Not Applicable. Water Quality Certification is addressed by HGE through its FERC license 2004 for the Holyoke Hydroelectric System.

- *Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.*

The Holyoke Canal System that feeds the Open Square Facility is a Class B waterway. HG&E monitors Temperature, dissolved oxygen and fecal coliform bacteria at two locations in the canal.

III.C.1 Upstream Fish Passage in Zone 1

The facility satisfies Standard C-1, Not Applicable/De Minimis Effect, in Zone 1.

Supporting Information Required.

Criterion	***Standard***	***Instructions***
C	*1*	*Not Applicable / De Minimis Effect:* • *Explain why the facility does not impose a barrier to upstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural upstream movement (e.g., entrainment into hydropower turbines).* • *For riverine fish populations that are known to move upstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.* • *Document available fish distribution data and the lack of migratory fish species in the vicinity.* • *If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.*

- *Explain why the facility does not impose a barrier to upstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural upstream movement (e.g., entrainment into hydropower turbines).*

Not Applicable. There is no passage from the Connecticut River into the Holyoke Canal System for fish swimming upstream. Upstream fish passage on the Connecticut River is addressed by HGE, the Holyoke Hydroelectric System owner, at the dam with a fish elevator and monitoring station.

In 2016, HG&E completed modifications to its Hadley Falls Intake intended to enhance fish passage, particularly for downstream migrating Shortnose Sturgeon (SNS). Additional upstream fish passage enhancements include an extension of the upstream fish passage flume, fishway entrance modifications and rock excavation in the vicinity of the fishway entrance. These improvements were informed with over 10 years of studies and design, which included flume studies, field studies, data analyses and computational fluid dynamic models.

Post-construction monitoring efforts for these passage enhancements are currently ongoing, and a report

on initial findings from the 2016 studies will be completed in 2017. Initial results are looking favorable to date.

For riverine fish populations that are known to move upstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.

Not Applicable. See above.

- *Document available fish distribution data and the lack of migratory fish species in the vicinity.*

Extensive fish distribution data is available through Holyoke Hydroelectric System owner HGE.

- *If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.*

Not Applicable.

III.D.1 Downstream Fish Passage in Zone 1

The facility satisfies Standard D-1, Not Applicable/De Minimis Effect, in Zone 1.

Supporting Information Required.

Criterion	*Standard*	*Instructions*
D	*1*	*Not Applicable / De Minimis Effect:* • *Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).* • *For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.* • *Document available fish distribution data and the lack of migratory fish species in the vicinity.* • *If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.*

- *Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).*

The Holyoke Canal System, which feeds the Open Square Facility, is designed to exclude migratory fish through a louver and bypass system at the beginning of the canal system as described below.

In 2016, HG&E completed modifications to its Hadley Falls Intake intended to enhance fish passage, particularly for downstream migrating Shortnose Sturgeon (SNS). These downstream fish passage enhancements include: a vertical exclusion rack with 2" clear spacing, surface and subsurface downstream bypasses at the Bascule Gate, as well as a training wall, apron deflector and plunge pool downstream of the dam. These improvements were informed with over 10 years of studies and design,

which included flume studies, field studies, data analyses and computational fluid dynamic models.

Post-construction monitoring efforts for these passage enhancements are currently ongoing, and a report on initial findings from the 2016 studies will be completed in 2017. Initial results are looking favorable to date.

Downstream Migratory Fish Passage Facilities at the Holyoke Canal System

Canal Louvers and Louver Bypass

The current primary downstream fish passage facilities at the Project are the Louver Bypass Facility (including the Full Depth Louvers and the Louver Bypass Discharge Pipe), and the Downstream Sampling Facility. The addition of the Full Depth Louver Bypass System (and Trash Rake) in October 2002 replaced an earlier Louver system(1993) that had been designed to guide and pass Atlantic salmon smolts, juvenile and adult American shad and blueback herring, all of which migrate close to the surface. In October 2002 modifications were made to guide bottom-oriented species to the bypass pipe and are described in further detail below. HG&E operates and maintains the Full Depth Louvers located in the Canal System. The purpose of the Full Depth Louvers is to create hydraulic conditions that guide approaching fish migrating downstream to the entrance of the bypass. The Downstream Fish Passage Louver facility begins 554 ft downstream of the Canal Gatehouse. The Louver extends across the First Level Canal at an angle and is 440 ft long. It diverts fish from the Canal into a pipe that bypasses the generating units and transports fish into the Hadley Station tailrace.

- *For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.*

Not Applicable. See above.

- *Document available fish distribution data and the lack of migratory fish species in the vicinity.*

Extensive fish distribution data is available through Holyoke Hydroelectric System owner HGE.

If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

Not Applicable.

III.E.1 Watershed and Shoreline Protection in Zone 1

The facility satisfies Standard E-1, Not Applicable/De Minimis Effect, in Zone 1.

Supporting Information Required.

E	*1*	*<u>Not Applicable / De Minimis Effect:</u>* • *If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary).* • *Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.*

- *If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary).*

The only land under project control is the 8 ½ acre urban mill site on which the Open Square Facility is located bordered by the manmade stone canals to the East and West and city streets to the North and South. Watershed and shoreline protection associated with the Holyoke Hydroelectric System that feeds the Open Square Facility are addressed by HGE through their FERC License 2004.

- *Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.*

III.F.1 Threatened and Endangered Species in Zone 1

The facility satisfies Standard F-1, Not Applicable/De Minimis Effect, in Zone 1.

Supporting Information Required.

F	*1*	*Not Applicable / De Minimis Effect:* • *Document that there are no listed species in the facility area or affected riverine zones downstream of the facility.* • *If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species.* • *If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.*

- *Document that there are no listed species in the facility area or affected riverine zones downstream of the facility.*

In accordance with License Article 416 HG&E filed its Threatened and Endangered Species Plan (T&E Plan) on July 15, 2002. The Plan was approved by FERC Order dated June 3, 2003. The T&E Plan includes provision related to the federally listed threatened bald eagle (Haliaeetus leucocephalus)4 and Puritan tiger beetle (Cicindela puritana), endangered shortnose sturgeon (Acipenser brevirostrum), and mussels including, but not necessarily limited to, the state listed endangered yellow lampmussel (Lampsilis cariosa) and dwarf wedge mussel (Alismidonta heterodon). Of the threatened and endangered species listed, only the yellow lamp mussel and dwarf wedge mussel are found in the Holyoke Canal System that feeds the Open Square Facility. HG&E's T&E plan for these two species is outlined below. Information regarding the other threatened and endangered species specific to the Connecticut River and Holyoke Dam are available in the attached HG&E LIHI questionnaire or upon request.

Yellow Lamp Mussel and Dwarf Wedge Mussels in the Holyoke Canal System

HG&E's T&E Plan, and the Comprehensive Canal Operations Plan (CCOP) (See discussion in Section 3 of this Application) include measures to protect and enhance the yellow lamp mussel and dwarf wedge mussel. HG&E has installed a concrete weir at the beginning of the first level canal to provide protection of mussel populations during canal maintenance draw downs; monitors habitat; provides minimum canal flows; and implements specific drawdown procedures to maintain watered conditions in mussel habitat areas. In addition, HG&E has also moved the annual maintenance drawdown to October, which minimizes drawdown effects on mussel populations. HG&E surveys the canal system to document the populations and the location of drawdown pools supporting mussel populations. This survey has been conducted regularly since 2003 and will continue pursuant to the T&E Plan and CCOP until at least 2014. Yellow lamp mussels have been documented to occur in the canal. HG&E's operational measures, including drawdown procedures and minimum canal flows, were specifically developed to protect and enhance the habitat for this species.

- *If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species.*

We know of no endangered species that existed in the facility area that are no longer there.

- *If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.*

We know of no endangered species that existed in the facility area that are no longer there.

III.G.1 Cultural and Historic Resources in Zone 1

The facility satisfies Standard G-1, Not Applicable/De Minimis Effect, in Zone 1.

Table III-1. Supporting Information Required.

G	*1*	*Not Applicable / De Minimis Effect:* • *Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility.* • *Document that the facility construction and operation have not in the past adversely affected any cultural or historic resources that are present on facility lands.*

- *Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility.*

Open Square is located on the Holyoke Canal System and within a densely developed commercial and light industrial area. The Holyoke Canal System is listed in the National Register as a Historic Structure. The city of Holyoke has at various times investigated creating a Historic District incorporating the Holyoke Canal System, but has not pursued this designation. The current designation carries no restrictions on Open Square. Open Square's hydroelectric facility is located within historic mill buildings and occupies a small percentage of space and land that is utilized for separate commercial development. Open Square is not required to develop a specific Cultural Resources Management Plan (CRMP) as part of its facility operations, but is aware of and complies with all federal, state and local requirements concerning cultural resources including requirements of the Massachusetts Environmental Policy Act (MEPA), the Massachusetts Historical Commission and the Holyoke Historic Commission. Open Square is also active in sponsoring and promoting the cultural resources of Holyoke and Open Square through a number of activities. These include: providing tours of the mill buildings as well as active and inactive water turbines; sponsoring the development and hosting the performance of the historical play *Between the Canals* by the Enchanted Circle Theater (http://www.enchantedcircletheater.com/performances.php?show_id=1) and supporting local organizations including the Holyoke Public Library and the YMCA.

- *Document that the facility construction and operation have not in the past adversely affected any cultural or historic resources that are present on facility lands.*

Open Square develops utilizing best practices for respecting the history of the site and buildings while creating economic development and jobs for the community. In 2007, Open Square received a PVPC (Pioneer Valley Planning Commission) Smart Growth Award of Excellence for Mixed Use Development in acknowledgement of this work.

Open Square tenants and visitors enjoying the bridge over the D Wheel Head Race

III.H.1 Recreational Resources in Zone 1

The facility satisfies Standard H-1, Not Applicable/De Minimis Effect, in Zone 1.

Supporting Information Required.

H	*1*	*Not Applicable / De Minimis Effect:* • *Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.*

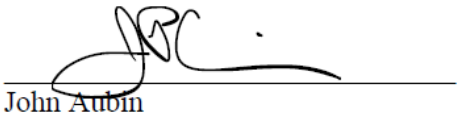
- *Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.*

Open Square is not required to development a specific recreational access or recreation monitoring plan. However, Open Square actively integrates recreation as part of its mixed-use development model. This presently includes renting space to health, fitness and physical arts tenants such as the Massachusetts Academy of Ballet. Open Square also continues to work with the City of Holyoke on the expansion of the Holyoke Canal Walk. The section of the Canal Walk connecting the first and second level canals on Lyman Street on the northern edge of Open Square is currently in the design stage. This project consists of replacing the bridge on Lyman Street over the first level canal, resetting the curb, building new concrete sidewalks and providing other Canal Walk staple amenities such as pedestrian scale lighting, trees and bike lanes.

Students of the Massachusetts Academy of Ballet at Open Square

PART IV. SWORN STATEMENT AND WAIVER

As an Authorized Representative of Open Square Properties, LLC, the Undersigned attests that the material presented in the application is true and complete. The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's Certification Program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions. The undersigned further acknowledges that if certification of the applying facility is issued, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified. The undersigned Applicant further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's Certification Program.



John Aubin
Managing Member
Open Square Properties, LLC

Date 6/5/17

PART V. CONTACTS

Table V-1. Complete contact information for the facility owner and other associated parties.

Project Owner:	
Name and Title	John Aubin, Managing Member
Company	Open Square Properties, LLC
Phone	413 537-8660
Email Address	john@opensquare.com
Mailing Address	4 Open Square Way, Suite 100 Holyoke, MA 01040
Project Operator (if different from Owner):	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
Consulting Firm / Agent for LIHI Program (if different from above):	
Name and Title	n/a
Company	
Phone	
Email Address	
Mailing Address	
Compliance Contact (responsible for LIHI Program requirements):	
Name and Title	John Aubin, Managing Member
Company	Open Square Properties, LLC
Phone	413 537-8660
Email Address	john@opensquare.com
Mailing Address	4 Open Square Way, Suite 100 Holyoke, MA 01040
Party responsible for accounts payable:	
Name and Title	John Aubin, Managing Member
Company	Open Square Properties, LLC
Phone	413 537-8660
Email Address	john@opensquare.com
Mailing Address	4 Open Square Way, Suite 100 Holyoke, MA 01040

Table V-2. Current and relevant state, federal, provincial, and tribal resource agency contacts (copy and repeat the following table as needed).

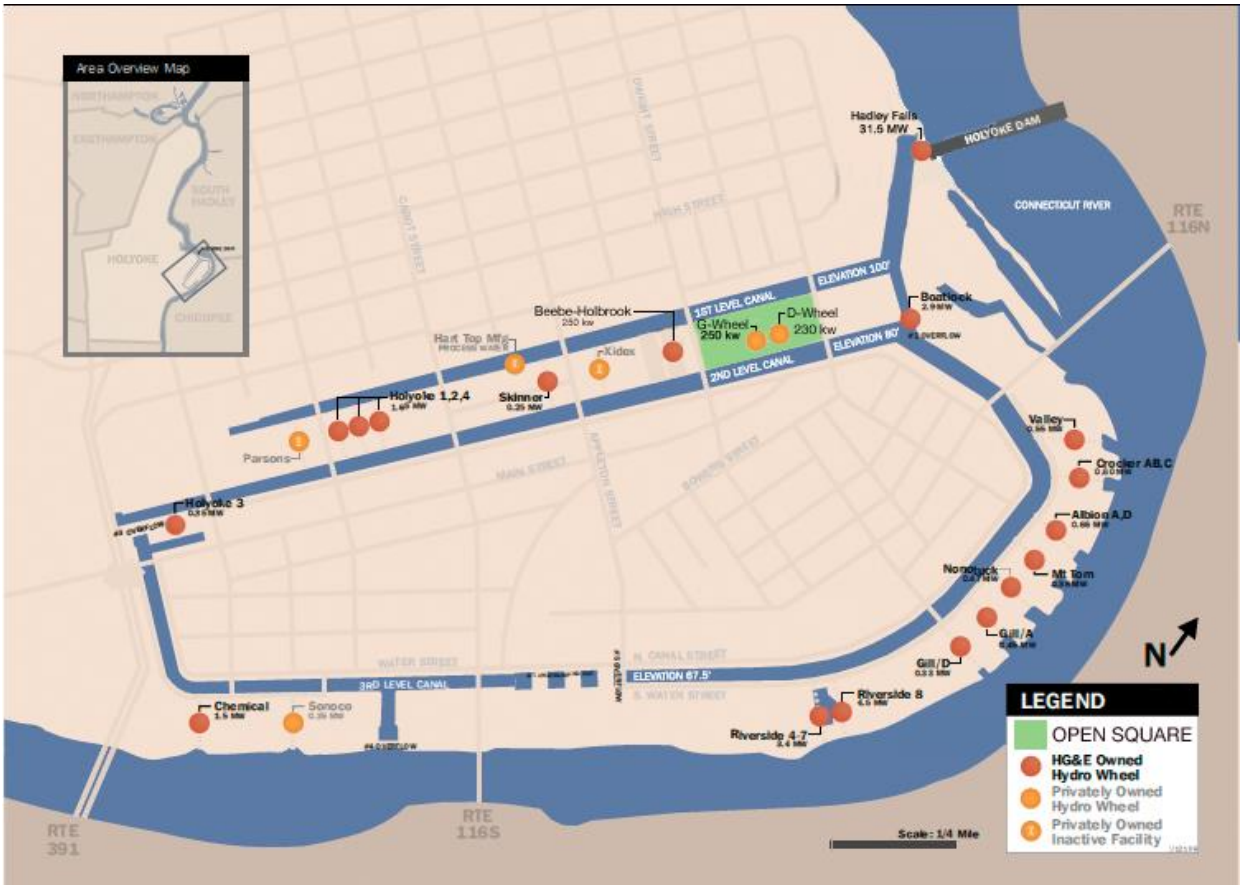
Agency Contact (Check area of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Massachusetts Division of Fisheries and Wildlife
Name and Title	Dr. Caleb Slater, Anadromous Fish Team Leader
Phone	(508) 389-6331
Email address	Caleb.Slater@state.ma.us
Mailing Address	Field Headquarters 1 Rabbit Hill Road Westborough, MA 01581

Agency Contact (Check area of responsibility: Flows __ , Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	U.S. Fish and Wildlife Service - New England Field Office
Name and Title	Mr. John Warner Energy/Hydropower Coordinator
Phone	(603) 223-2541
Email address	John_Warner@fws.gov
Mailing Address	70 Commercial Street, Suite 300 Concord, NH 03301

Agency Contact (Check area of responsibility: Flows__, Water Quality _X_, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	NPDES Massachusetts Department of Environmental Protection
Name and Title	Mr. Robert Kubit
Phone	(508) 767-2854
Email address	Robert.Kubit@state.ma.us
Mailing Address	627 Main Street Worcester, MA 01608

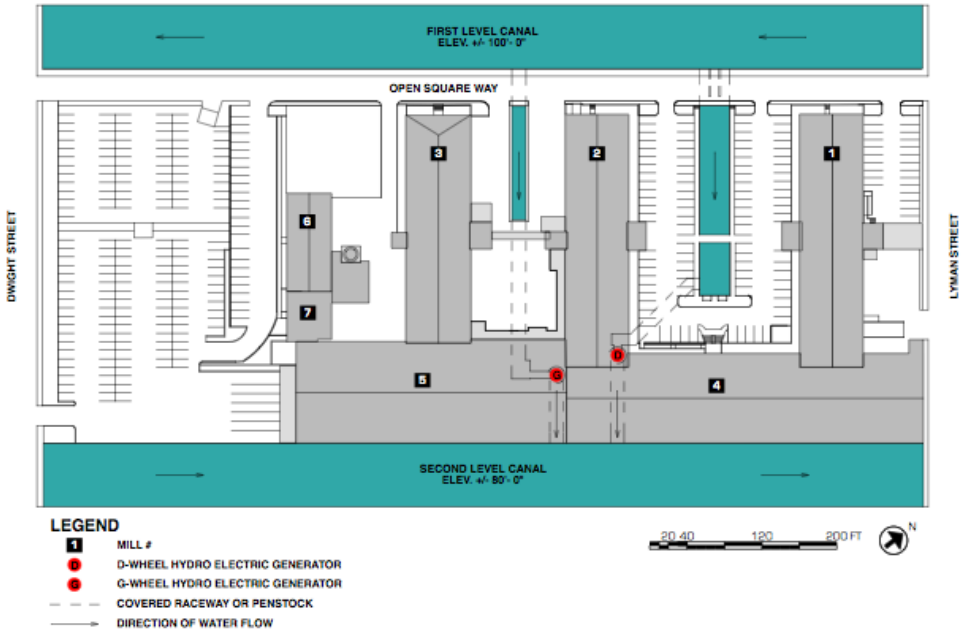
Agency Contact (Check area of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources _X_, Recreation __):	
Agency Name	The Trustees of Reservations - Connecticut River Valley Management Unit
Name and Title	Mr. Josh Knox, Superintendent
Phone	(413) 532-1660
Email address	jknox@ttor.org
Mailing Address	

FIGURE 1
OPEN SQUARE HYDRO ELECTRIC FACILITY AND HG&E HYDROPOWER SYSTEM OVERVIEW



Open Square D-Wheel and G-Wheel Stations

FIGURE 2
OPEN SQUARE SITE PLAN AND HYDRO ELECTRIC FACILITY



APPENDIX A: SUPPORTING DOCUMENTS

A-1 MADEP Category 5 Impairment

From: "Kubit, Robert (DEP)" <Robert.Kubit@MassMail.State.MA.US>
To: Sarah LaRose <SLaRose@hged.com>
Cc: Paul Ducheney <ducheney@hged.com>, "McKenna, Timothy (DEP)" <timothy.mckenna@state.ma.us>
Date: Monday, March 27, 2017 11:43AM
Subject: RE: Project No. 2004 - LIHI Application - Connecticut River Category 5 Impairment
History: This message has been forwarded.

Hi Sarah,
The Holyoke Project, FERC #2004, is not the source of Escherichia Coli, PCB in Fish Tissue or Total Suspended Solids in the area of the Connecticut River around the Holyoke Project. The Holyoke Project is not the cause of Category 5 impairments listed in the Massachusetts Integrated List of Waters for this reach of river.
Please let me know if I need to provide additional information.
Bob

Robert Kubit, P.E.
MassDEP
Division of Watershed Management
8 New Bond Street
Worcester MA 01606
Telephone: (508) 7672854
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From: Sarah LaRose [mailto:SLaRose@hged.com]
Sent: Thursday, March 23, 2017 11:42 AM
To: Kubit, Robert (DEP)
Cc: Paul Ducheney; McKenna, Timothy (DEP)
Subject: Project No. 2004 - LIHI Application - Connecticut River Category 5 Impairment

Hi Bob,
I hope that you have been doing well! I'm reaching out today because Holyoke Gas & Electric is developing its application for LIHI Recertification for Project No. 2004, and one of the Water Quality Standards requirements involves a determination relative to 303(d) impaired waters, and MADEP concurrence that the Project is not the cause of that impairment. Based on MADEP's Massachusetts Year 2014 Integrated List of Waters (which appears to be the most recent version currently available), the Connecticut River within the Holyoke Project No. 2004 boundaries is a Category 5 impaired water, and TMDL pollutants in this vicinity are: Escherichia Coli, PCB in fish tissue, and TSS. Per the LIHI requirements, can you please provide confirmation that the Holyoke Project No. 2004 is not the source of E Coli, PCB in fish tissue and TSS in this area in the CT River, and therefore not the cause of Category 5 impairment in the specified reach of the Connecticut River?

Thank you,

Sarah LaRose
Project Engineer
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