Pawtucket Hydropower, LLC
A Subsidiary of Gravity Renewables, Inc.

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February 10, 2020

Shannon Ames, Executive Director
Low Impact Hydropower Institute
329 Massachusetts Ave, Suite 2
Lexington, MA 02420
sames@lowimpacthydro.org

Re: LIHI Recertification submittal for the Pawtucket No. 2 Hydroelectric Projects (FERC Exemption P-3689-RI)

Dear Director Ames:

Pawtucket Hydropower, LLC, a wholly owned subsidiary of Gravity Renewables, Inc., (Gravity) is submitting the enclosed application to the Low Impact Hydropower Institute for Re-certification of the Pawtucket No. 2 Hydroelectric Project as low impact. The application was initially submitted to LIHI on October 23, 2019. Comments were received on the application from LIHI on December 30, 2019. The enclosed application has been revised to address the December 30, 2019 comments.

Gravity acquired the Project in 2014. A LIHI application has been filed in previous years and there have been no project changes since the previous LIHI recertification in 2014. Consistent with the LIHI condition under the previous certification, Gravity continues to work cooperatively with resource agencies on the efforts to restore fish passage to the lower Blackstone River.

If you have any questions or comments regarding the submittals, please feel free to contact me.

Best regards,

Celeste Fay
Regulatory Manager / Project Engineer
Celeste@gravityrenewables.com

Introduction

Pawtucket No. 2 Project (FERC P-3689) is an existing 1.6 MW hydropower project, located on the Blackstone River in the City of Pawtucket, RI. The Project owner, Pawtucket Hydropower, LLC, was acquired by Gravity Renewables, Inc. (Gravity) in March 2014.

The Project was issued an exemption from the Federal Energy Regulatory Commission (FERC) in 1989 for construction and operation. A water quality certificate was issued on November 10, 1992. Operations are monitored closely to ensure compliant operations are maintained.

LIHI first certified the Project as low impact in 2004 (Certificate #11) and renewed its certification in 2009 and 2014. There have been no Project changes since the initial certification. Based on the information provided herein, Gravity believes that the Project should be considered for re-certification by the Low Impact Hydropower Institute (LIHI).

Project Location

The Project is located at a natural cascade located at the head of tide in the mouth of the Blackstone River in the City of Pawtucket, Providence County, Rhode Island. The Blackstone River watershed is located in north-central Rhode Island with significant portions extending into Massachusetts, the river flows from north to south and drain into the Narragansett Bay. The Blackstone River is highly developed with numerous dams located along its length. There are no dams located downstream of the Pawtucket No. 2 Project, Main Street Dam (RM 0.3).

Figure 1. Overview Blackstone River Basin (Source: BRWA)

The following dams are located upstream of the Pawtucket No. 2 Project (RM 0.3) within the Rhode Island portion of the Blackstone River (additional dams are located upstream in the Massachusetts section of the river).

- Slater Mill (non powered) - RM 0.4
- Elizabeth Webbing (non-powered) RM 1.1
- Central Falls/Valley Falls (hydro, P-3036) RM 2.3
- Pratt Dam (non-hydro, partially breached) RM 4.3
- Ashton Dam (non-hydro) RM 6.8
- Albion Dam (non-hydro) RM 8.2
- Manville Dam (non-hydro) RM 9.9
- Thundermist Dam (hydro, P – 2972) RM 14
- Tupperware Dam (hydro, P- 3023) RM 16.1

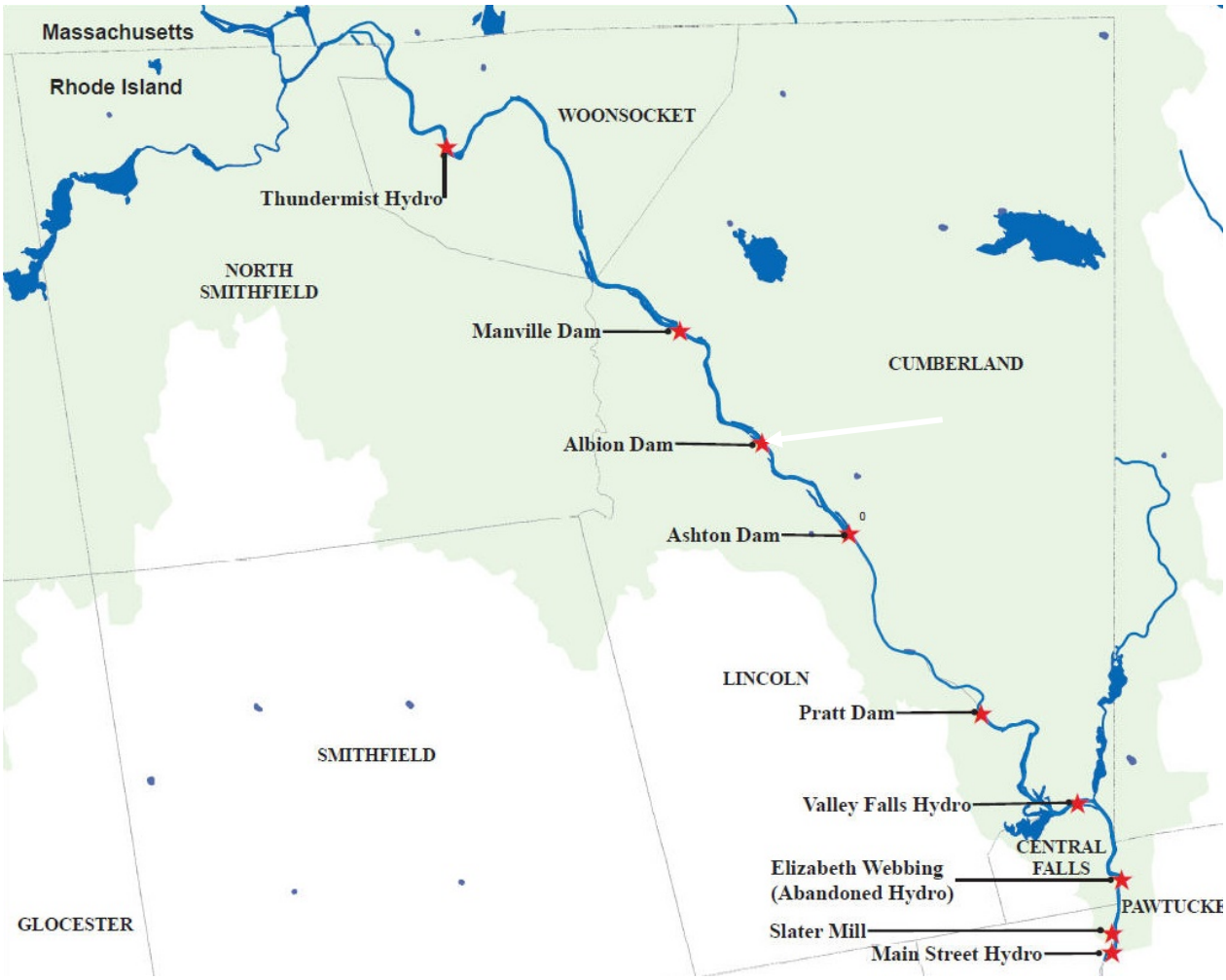


Figure 2. Blackstone River Dams within RI (source: Essex Partnership)

Project Description

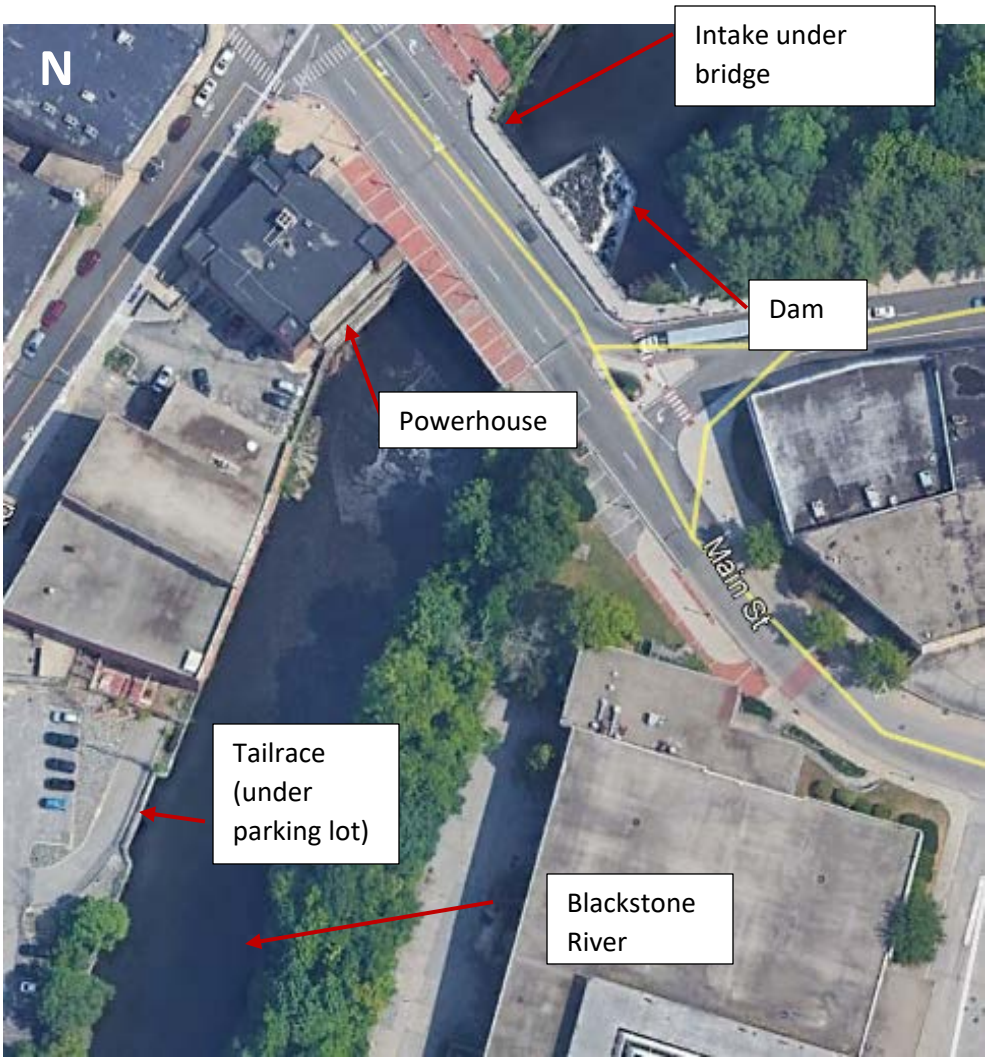


Figure 3. Overview Site Features

The Project consists of a dam, spillway, intake, tunnel, forebay, penstock, and powerhouse. The dam is constructed on top of a natural bedrock cascade and varies in height; the total length is approximately 200 ft. The dam is constructed of brick and timber with an overflow spillway section approximately 167 ft long. The maximum height of the dam is approximately 13 ft. The Project is operated in instantaneous run-of-river mode therefore, no reservoir storage is utilized for power generation.

Water enters the system through the intake structure located on the right side of the dam. From there, water is conveyed through an underground, open channel flow, brick-lined tunnel conveyance system to the forebay (about 180 ft in length). The forebay is located within the powerhouse and includes a trashrack and head gate system and includes an automatic trash rake. From the forebay, water is conveyed into two penstocks approximately 130 feet in length to deliver water to each of the two turbines. After passing through the turbines, water discharges back into the Blackstone River by way of a subsurface tailrace about 90 feet long and 45 feet wide.

The powerhouse building is approximately 90 feet long and 45 feet wide and includes 2 levels. The upper level houses the electrical equipment while the lower houses the turbines and generators. The turbines consist of two full Kaplan units with a rated capacity of 800 kW each.

Hydrology

The Blackstone River Watershed is located in south-central Massachusetts and northern Rhode Island and has a length of about 48 miles. The river has a total drainage area of about 475 square miles with about 1/3 located in Rhode Island. The river generally flows south from Worcester, MA to the Main Street Dam in Pawtucket, RI. At this point, it becomes the headwater of the Seekonk River, which is a tidal estuary that flows for approximately seven miles before combining with the Providence River, which terminates in Narragansett Bay. The Blackstone River is the second largest source of freshwater to Narragansett Bay. Based on a USGS stream stats evaluation, the project has a drainage area of 475 square miles. The average annual flow at the project is estimated at 903 cfs.

USGS Gage. 01112500 at Woonsocket was analyzed to determine the monthly and annual flows for the Project. The period of record used from the Woonsocket Gage is approximately February 1929 to April 2019 the drainages area at the gage is approximately 415 square miles the drainage area at the site is approximately 475 square miles the drainage area ratio to utilized to prorate flows from the gage to the site is 1.1.

Project Operations

The Project is operated in instantaneous run-of-river mode with no pondage or storage. Turbine flow is controlled by the project's automatic programable logic controller (PLC). A minimum flow of 50 cfs is released over the falls. The project bypass is approximately 400 feet, from the dam to the tailrace. However, the river channel downstream backwaters as a result of tidal flows to the dam so the only area actually bypassed by the Project is the face of the falls. See Photo 1.

There are no requirements in the original FERC exemption regarding requirements for impoundment inflow, outflow or ramping however, the 401 Water Quality Certificate require 50 cfs bypass flow. The project operates as run-of-river. There have been no changes in impoundments inflow, outflow or ramping requirements since the last certification.

Photo 1. Bypass Looking upstream to dam.

Table B-1. Facility Description Information for Pawtucket No. 2 Project (P-3689)

Information Type	*Variable Description*	*Response (and reference to further details)*
Name of the Facility	Facility name (use FERC project name if possible)	Pawtucket No. 2 Project (P-3689)
Location	River name (USGS proper name)	Blackstone River
	River basin name	Blackstone River
	Nearest town, county, and state	City of Pawtucket, Providence County, RI
	River mile of dam above next major river	RM 0.3
	Geographic latitude	41.8877" N
	Geographic longitude	-71.3807" W
Facility Owner	Application contact names:	Celeste Fay, Manager of Regulatory Affairs, Gravity Renewables, Inc.
	- Facility owner (individual and company names)	Pawtucket Hydropower, LLC Ted Rose, Manager
	- Operating affiliate (if different from owner)	N/A
	- Representative in LIHI certification	Celeste Fay, Manager of Regulatory Affairs, Gravity Renewables, Inc.
Regulatory Status	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates	FERC P-3689 FERC Exemption issued July 21, 1981
	FERC license type or special classification (e.g., "qualified conduit")	Exemption (5MW, or less)
	Water Quality Certificate identifier and issuance date, plus source agency name	Water Quality Certificate issued November 10, 1992 by State of Rhode and Providence Plantations See Attachment A; no permit identifier or number noted.
	Hyperlinks to key electronic records on FERC e-library website (e.g., most recent Commission Orders, WQC, ESA documents, etc.)	See Attachment A for copies of key documents.
Power Plant Character-istics	Date of initial operation (past or future for operational applications)	Project commissioned 1989
	Total name-plate capacity (MW)	1.6 MW
	Average annual generation (MWh)	4,000 MWh/yr
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	Unit 1: 800kW, Kaplan Unit 2: 800 kW, Kaplan Hydraulic operating range Units 1 & 2: 86 – 615 cfs
	Trashrack clear spacing (inches), for each trashrack	2.25"

	Modes of operation (run-of-river, peaking, pulsing, seasonal storage, etc.)	Run-of-River mode
	Dates and types of major equipment upgrades	N/A
	Dates, purpose, and type of any recent operational changes	None
	Plans, authorization, and regulatory activities for any facility upgrades	N/A
Character-istics of Dam, Diversion, or Conduit	Date of construction	Reportedly 1894
	Dam height	Approximately 13 ft (variable)
	Spillway elevation and hydraulic capacity	Spillway crest elevation 17.02 msl With 1 ft spill over crest (length 167 ft) discharge is 540 cfs. At higher elevations the spillway would discharge more.
	Tailwater elevation	Varies, tidal. • Low mean elevation -1.9 ft • High mean elevation 4.8 ft
	Length and type of all penstocks and water conveyance structures between reservoir and powerhouse	• Intake Tunnel: brick, 180 ft long • Forebay Canal: brick, 10 ft long • Penstock: steel, 130 ft long
	Dates and types of major, generation-related infrastructure improvements	N/A
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Power Generation
	Water source	Blackstone River
	Water discharge location or facility	Tailrace is about 400 ft downstream of dam
Characte-ristics of Reservoir and Watershed	Gross volume and surface area at full pool	Surface area is less than 1 acre Volume is 3 acre feet
	Maximum water surface elevation (ft. MSL)	17.02 ft
	Maximum and minimum volume and water surface elevations for designated power pool, if available	N/A
	Describe requirements related to impoundment inflow, outflow, up/down ramping and refill rate restrictions.	The only requirement in the FERC exemption or 401 Water Quality Certificate regarding requirements for impoundment inflow, outflow or ramping is a 50 cfs bypass flow. The project operates as run-of-river. There have been no changes in impoundments inflow, outflow or ramping requirements since the last certification.
	Upstream dam(s) by name, ownership, FERC number (if applicable), and river mile	• Slater Mills –RM: 0.4 (Non-powered) • Elizabeth Webbing –RM: 1.1 (Non-powered) • Central Falls– P-3036 RM 2.3

	Downstream dam(s) by name, ownership, FERC number (if applicable), and river mile	None
	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation	N/A
	Area inside FERC project boundary, where appropriate	Negligible
Hydrologic Setting	Average annual flow at the dam	903 cfs USGS Gage No. 01112500 BLACKSTONE RIVER AT WOONSTOCKET, RI
	Average monthly flows	USGS Gage No. 01112500 Drainage Area: 415 SM • January – 1,117 cfs • February – 1,157 cfs • March – 1,710 cfs • April – 1,642 cfs • May – 1,006 cfs • June – 738 cfs • July – 389 cfs • August – 352 cfs • September – 374 cfs • October – 539 cfs • November – 788 cfs • December – 1,029 cfs
	Location and name of relevant stream gauging stations above and below the facility	Upstream - USGS Gage No. 01112500 BLACKSTONE RIVER AT WOONSTOCKET, RI Period of record: February 1929 to April 2019 Prorating: 1.1
	Watershed area at the dam	475 SM
	Number of zones of effect (ZoE)	3

Designated Zones of Effect

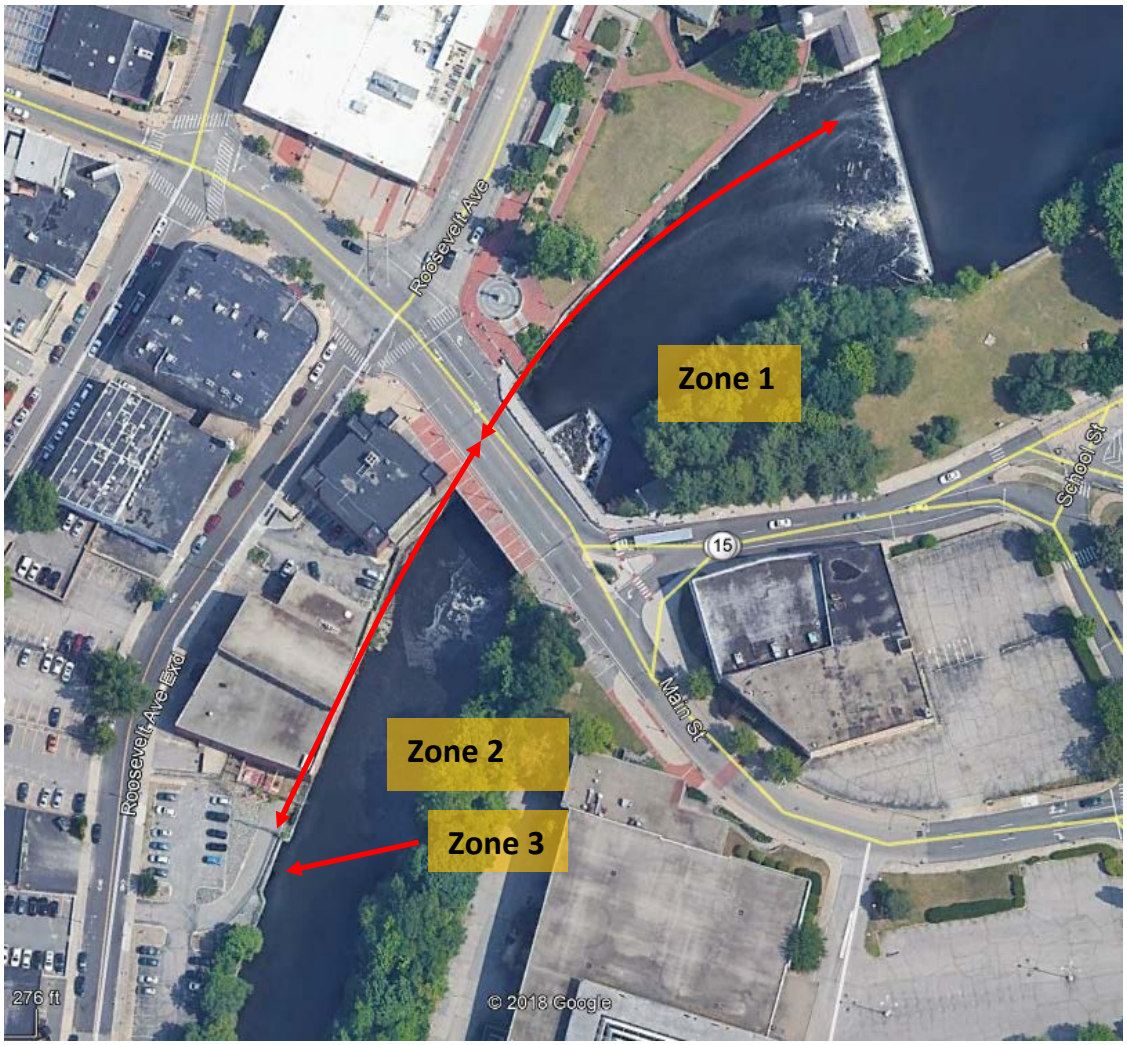


Figure 4. Overview of Project Zones

Upstream and downstream locations by river miles	• Zone 1 – Impoundment • Zone 2 – Bypass • Zone 3 – Tailrace
Type of waterbody (river, impoundment, by-passed reach, etc.)	• Zone 1 – Impoundment • Zone 2 – Bypass • Zone 3 – Tailrace
Delimiting structures	Zone 1 Impoundment • Upstream defined by Slater Mill Dam • Downstream defined by Main Street Dam Zone 2 Bypass • Upstream defined by Main Street Dam • Downstream defined by confluence with tailrace Zone 3 Tailrace (subsurface) • Upstream defined by powerhouse

		• Downstream defined by confluence with Blackstone River
	Designated uses by state water quality agency	From: *State of Rhode Island 2016 Impaired Water Report March 2018, RIDEM* The stretch of river from the Slater Mill Dam at Main Street in Pawtucket to Indian Point in Providence is classified as SB1. The following is a summary of supported uses for this area of river: • Fish and Wildlife Habitat – Not supporting due to nitrogen impairment • Fish Consumption – insufficient information • Primary Contact Recreation – Not supporting due to Fecal Coliform • Secondary Contact Recreation – Not supporting due to Fecal Coliform
Additional Contact Information	Names, addresses, phone numbers, and e-mail for local state and federal resource agencies	See Attachment B
	Names, addresses, phone numbers, and e-mail for local non-governmental stakeholders	See Attachment B
Photographs and Maps	Photographs of key features of the facility and each of the designated zones of effect	

Zone 1 – Reservoir

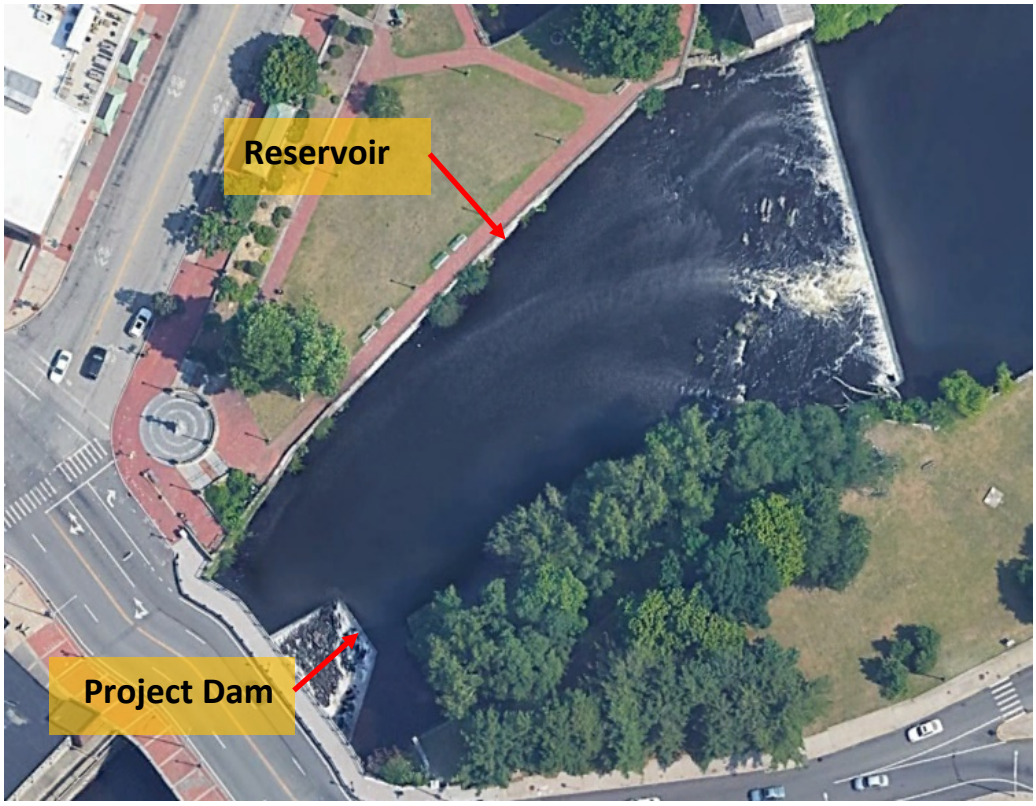


Figure 5. Overview of Zone 1 – Reservoir

Figure 6. Reservoir Looking Upstream from Intake

Zone 2 – Bypass

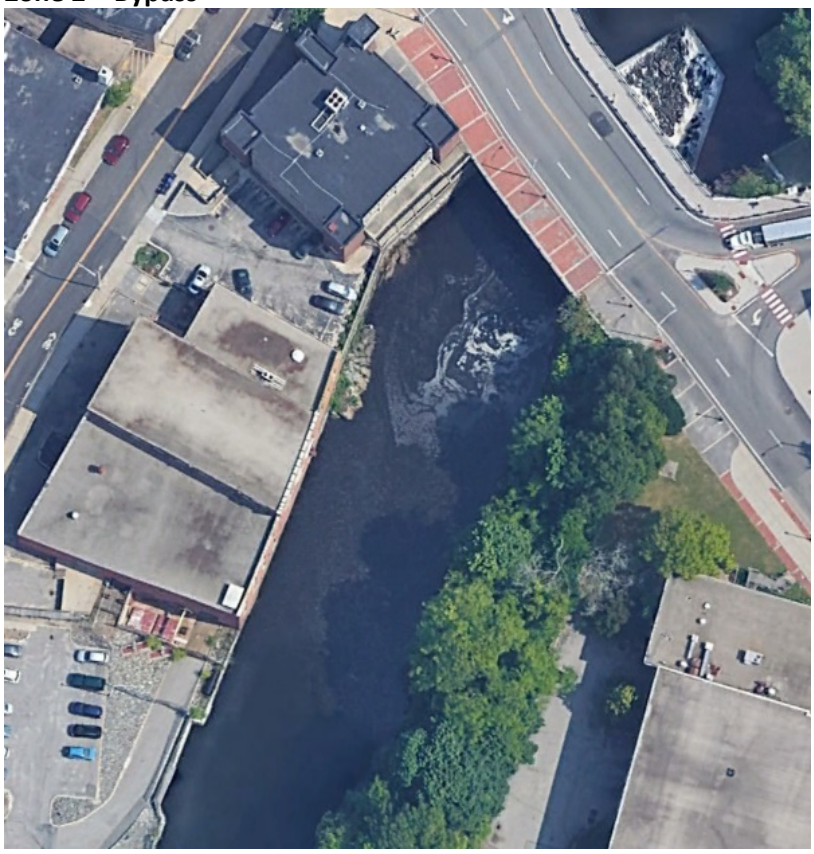


Figure 7. Overview of Zone 2 Bypass

Figure 8. Overview of Bypass Looking Downstream from Main Street Bridge

Zone 3 – Tailrace

Figure 9. Overview Zone 3 – Tailrace

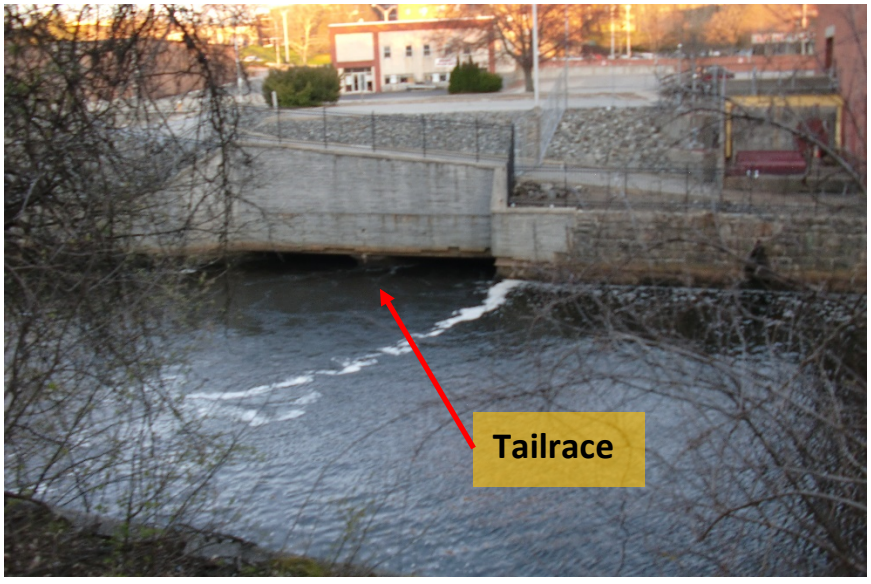


Figure 10. Tailrace looking from opposite shore.

Maps, aerial photos, and/or plan view diagrams of facility area and river basin	

Figure 11. Site Locus Map

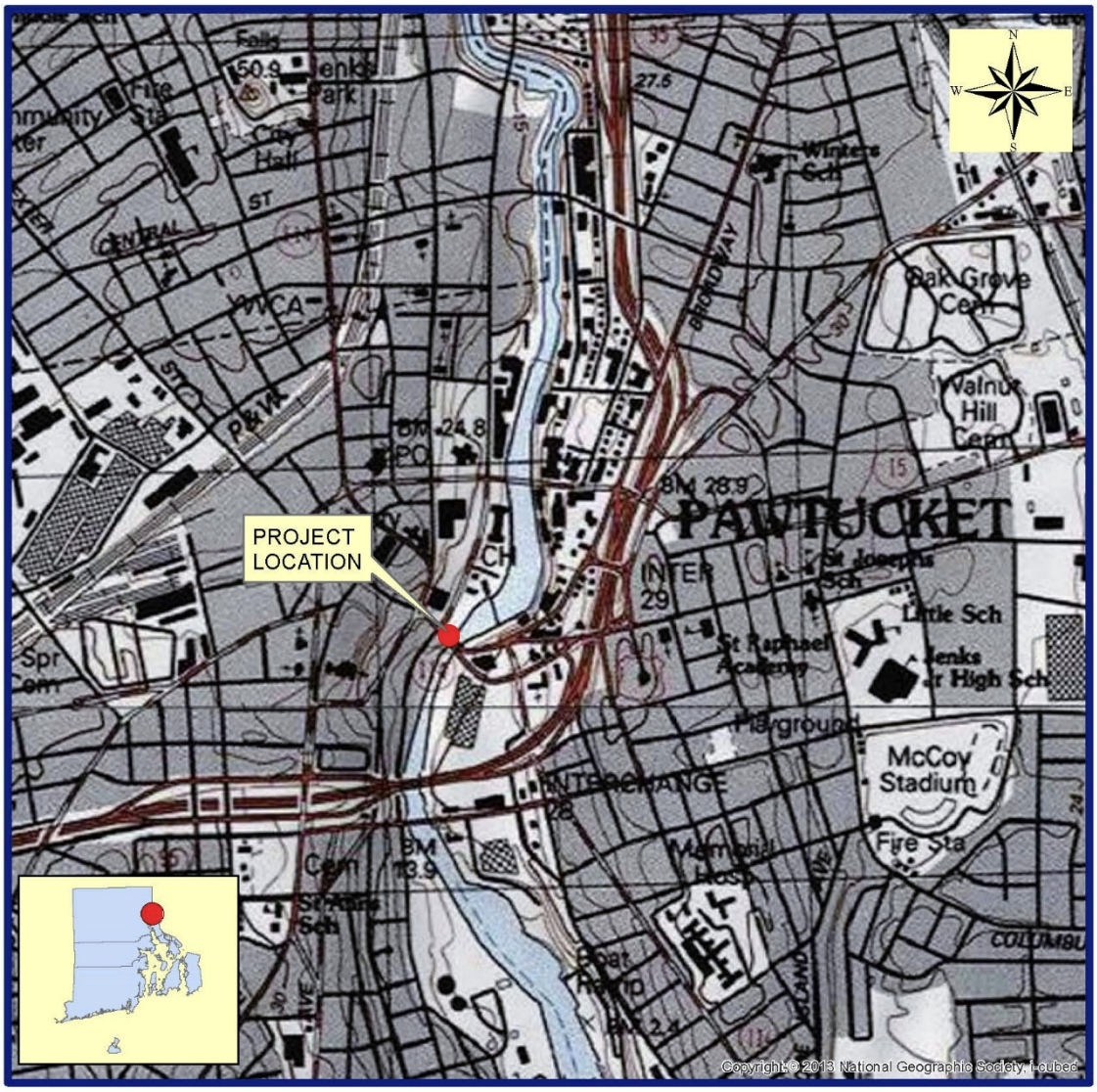


Figure 12. Site Topo Map

Table B-1.2. Matrix of Alternative Standard Template Responses for Zones 1 and 3 – Pawtucket No. 2 Project

Zone of Effect # 1: Impoundment

		Alternative Standards				
	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				

Zone of Effect # 2: Bypass

		Alternative Standards				
	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				

Zone of Effect # 3: Tailrace

		Alternative Standards				
	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				

B.2.1 Ecological Flow Standards – Pawtucket No. 2 Project

Zone of Influence #1, #2 & #3- <u>Impoundment, Bypass & Tailrace</u> Ecological Flow Standards

Zone of Influence #1 and #3 are *de minimis*, Standard 1. Zone of Effect #3 is Agency Recommendation, Standard 2. There have been no project changes since the previous LIHI certification in 2014.

The site is operated in an instantaneous run-of-river mode with reservoir maintained at elevation 17.02 ft during normal project operation. Requirements for these project operations are specified in the November 10, 1992 water quality certificate (WQC) and the FERC exemption issued on July 21, 1981.

The minimum bypass flow is specified at 50 cfs or inflow, whichever is less. The minimum hydraulic capacity of each turbine is 86 cfs, the maximum hydraulic capacity of each turbine is 615 cfs and the combined maximum hydraulic turbine capacity is 1,230 cfs. See Table 1.

Table 1. Project Flow Operations

Flow Dispatch		
River Inflow (cfs)	**Description of Operations**	
0-135	Inflow is less than the Plant's minimum operating capacity. All flows released over the spillway.	
136-1280	Min flow of 50 cfs discharged over dam. Turbines operate from minimum flow of 86 cfs to maximum combined flow of 1,230 cfs.	
1281+	Min flow of 50 cfs discharged over dam. Turbines operate from minimum flow of 86 cfs to maximum combined flow of 1,230 cfs. Any flow exceeding 1,280 cfs is discharged over spillway.	
Flow Distribution		
River Inflow (cfs)	**Primary Spillway**	**Turbine(s)**
0 - 135	0 - 135	0
136-1280	50	86-1,230
1281 +	51 +	1,230

Zone of Effect #2, bypass reach, is required by the 401 WQC to discharge 50 cfs over the dam. The total bypass reach is approximately 440 feet in length. The river channel extending from the toe of the dam to the tailrace (and continuing downstream) is tidal and continuously backwatered to the toe of the dam. See Figure 13.

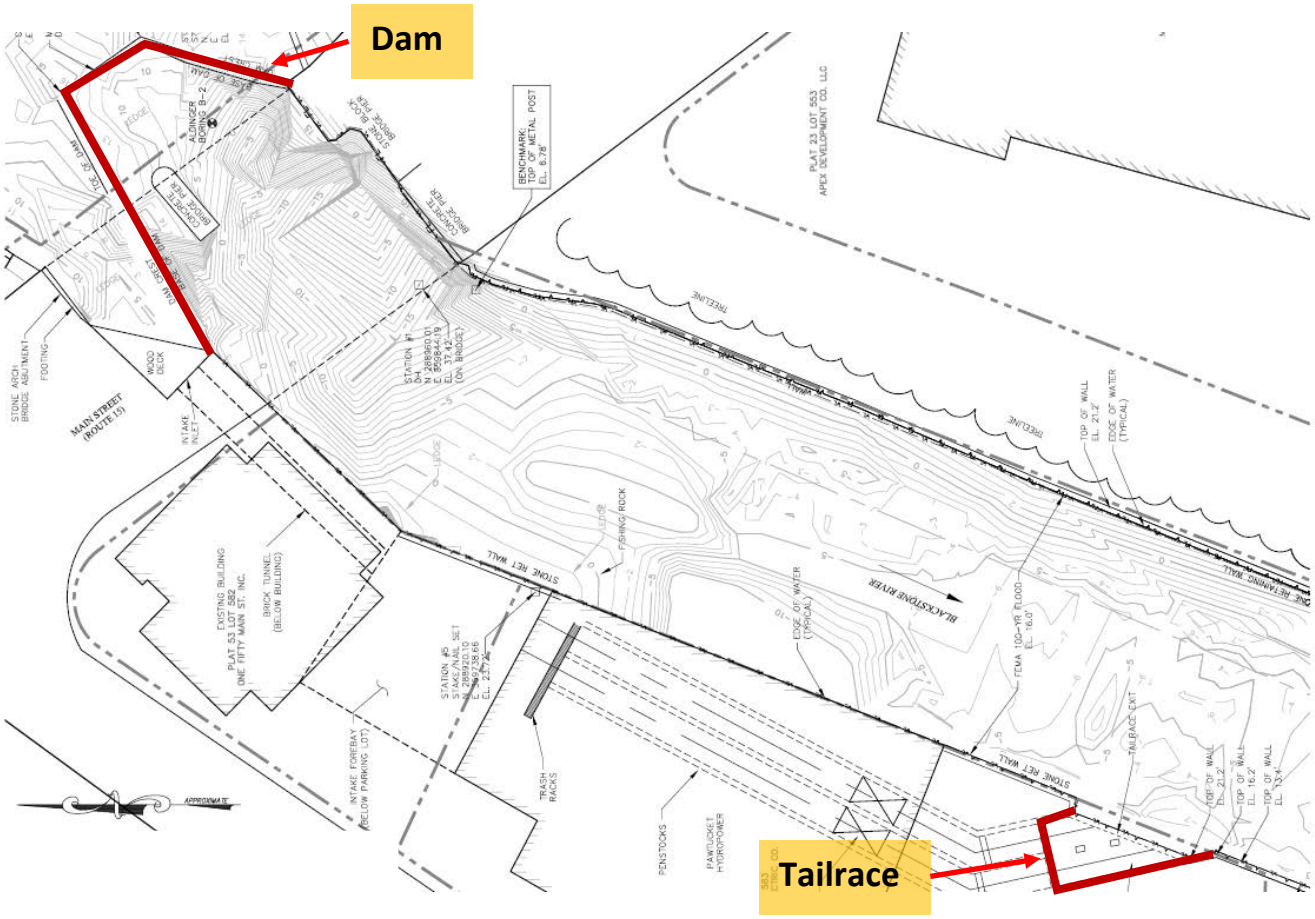


Figure 13. Topography of bypass, from dam to tailrace.

Zone of Effect #3 is Agency Recommendation, Standard 2. There have been no changes since the last certification. Since the project is operated in instantaneous run-of-river mode with all inflows equaling outflows, Zone of Effect #3 is not affected in any way by the Project since it is downstream of all Project diversions.

B.2.2 Water Quality Standards – Pawtucket No.2 Project

Zone of Effect #1, #2 and #3- Impoundment, Bypass & Tailrace Water Quality Standards

Zone of Effect #1, #2, and #3 are *de minimis effect*, Standard 1. There have been no project changes since the previous LIHI certification in 2014.

Extensive monitoring efforts have been completed on the Blackstone River to track water quality and identify areas for improvement. In March 2018, RIDEM published the State of Rhode Island Impaired Waters Report which included information on the stretch of river which the Project is located. According to the 2018 report, this stretch of river is designated as not supporting for Fish and Wildlife Habitat, Fish Consumption, Primary Contact Recreation and Secondary Contact Recreation. Additional information can be found in Table 2.

Table 2. Summary March 2018 Assessment of Blackstone River at Project Location

Use Description	Use Attainment Status	Causes/Impairment
Fish and Wildlife Habitat	Not Supporting	Cadmium, Iron, Lead, DO, Phosphorus (total)
Fish Consumption	Not Supporting	Mercury in Fish Tissue, PCB in Fish Tissue
Primary Contact Recreation	Not Supporting	Enterococcus, Fecal Coliform
Secondary Contact Recreation	Not Supporting	Enterococcus, Fecal Coliform

Since the last recertification of the Pawtucket No. 2 Project no changes have occurred which would impact water quality. The following excerpt has been taken from the 2004 LIHI Review…

> *In a February 16, 2004 letter from RIDEM they state that the facility does not have any impact on water quality in the river nor does the facility impact the R.I. 303(d) list." (pg. 5).*

The facility is not identified as the cause of any water quality impairments listed above.

B.2.3 Upstream Fish Passage Standards – Pawtucket No.2 Project

Zone of Effect #1, #2 & #3- Impoundment, Bypass & Tailrace Upstream Fish Passage Standards

Zone of Effect #1 is *de minimis*, Standard 1. Zone of Effect #2 and #3 are *Agency Recommendation*, Standard 2. There have been no project changes since the previous LIHI certification in 2014.

There have been extensive and ongoing efforts to implement fish passage at the first four dams on the Pawtucket River. These dams include Pawtucket No. 2 Dam, Slater Mill Dam, Elizabeth Webbing Dam and Central Falls Dam, respectively. Installation of fish passage at each of these dams or implementation of truck and trap facilities at these four projects would allow access to about 200 acres of historic spawning habitat for anadromous fish. Fish passage at these four dams will be collectively referred to as the *Lower Blackstone Dams.*

Fish passage installation at the Lower Blackstone Dams is complicated for several reasons. The majority of the spawning habitat is upstream of the Central Falls Project (the fourth dam). Therefore, a coordinated effort at all four lower Blackstone dams is required to provide benefits to the fishery. The Slater Mill dam is of historic significance and is a significant feature of the Blackstone River Valley National Historic Park; making new construction challenging. The Slater Mill dam and Elizabeth Webbing dams do not have hydroelectric generation and associated revenue streams that might be used to finance passage facilities. Finally, the geometric characteristics of some of the projects are challenging from a constructability perspective. Specifically, at Pawtucket No. 2, there are rock outcroppings, spillway capacity impacts, bridge foundations and vertical stone retaining walls that add complexity and require consideration.

Rhode Island has prioritized restoration of anadromous fish passage within the State (RI Executive Order 03-16). As one of the State's largest watersheds, fish passage restoration within the Blackstone River represents significant potential for providing a variety of ecological benefits as a result of restoration. Several assessments and planning studies for fish passage restoration have been completed to identify and evaluate specific measures to restore fish passage in the Blackstone (Blackstone River Watershed Reconnaissance Investigation – USACE, 1997 and Blackstone River Fisheries Restoration Plan - Narragansett Bay Estuary Program, 2002).

Building on these studies, the Rhode Island Natural Resources Conservation Service (NRCS), the Rhode Island Department of Environmental Management (RIDEM), the United States Fish and Wildlife Service (FWS), the United States Army Corps of Engineers (USACE), Pawtucket Hydropower, LLC (PH), Old Slater Mill Association (OSM), and a variety of other stakeholders worked collaboratively to design and permit Denil style fish ladders at the first two barriers on the Blackstone in 2010. Efforts in 2010 included provisions for passage at the first four dams on the river in order to provide access to valuable spawning and rearing habitat upstream of the fourth dam (Valley Falls Dam) consistent with the Phase I Restoration goals outlined in the 2002 Blackstone River Fisheries Restoration Plan.

In 2007, Pawtucket Hydropower, LLC (previous owner) entered into a fish passage Memorandum of Agreement (MOA) with RIDEM which included various Project obligations. This MOA was transferred with the Project Ownership to Gravity. There have not been any amendments to MOU since it was executed. A summary of key Project obligations include:

- *Pawtucket Hydro agrees to work with NRCS towards a mutually acceptable fishway design developed by NRCS which are compatible with continued viable operations of the hydroelectric plant.*
- *Pawtucket Hydro will contribute $100,000 to be used as a contribution to the matching funds required by NRCS*
- *Once fish passage is installed, Pawtucket Hydro will contribute annual payments to the annual operation and maintenance of the fishways.*
- *Pawtucket Hydro will provide all flows necessary to operate the fishways effectively during fish passage seasons.*
- *Pawtucket Hydro will develop an operations plan to ensure flows in the fishway are maintained within 60 days of fish passage operation notification.*
- *Pawtucket Hydro will allow representatives of DEM to enter the property on which the dam and fishway are located for monitoring*

DEM's key obligations under the MOA are summarized as follows:

- *Upon completion of the fishway DEM shall assume responsibility of the operation and maintenance of fish passage facilities.*
- *DEM covenants not to take any other administrative, judicial or other action, either alone or together with other state and/or federal agencies to obtain further funding from Pawtucket Hydro towards the design, construction or operation of the subject fish passage project, beyond the amount specifically committed to in the MOU*

Although designed and permitted in 2010, the passage facilities at the first two barriers (Main Street and Old Slater Mill Dams) were not constructed due to construction costs well in excess of available funding. Subsequently, project partners have worked to identify more economic solutions to achieving restoration goals. As a result of these investigations, the partners discovered technical flaws in the initial design which would have negatively impacted the effectiveness of the first passage facility; an impact that would have constrained the effectiveness of all upstream facilities, and by extension the accomplishment of the watershed fishery restoration goals.

In 2019, NRCS engaged a technical consultant to re-evaluate alternative approaches to provide fish passage at the Main Street and Slater Mill Dams using available funding. The 2019 re-evaluation attempted to address fish passage considering a variety of site constraints, including, but not limited to:

- Historic significance of both dams;
- Constructability, primarily associated with work under bridges and water control;
- Fish passage entrance siting and false attraction;
- Fish passage effectiveness, at individual locations and the cumulative impact as migrating fish move upstream, and;
- Cost:Benefit, providing access to habitat upstream of the Slater Mill Dam is expected to provide limited ecological benefit.

Initial reporting by the technical consultant (March 29, 2019 and April 8, 2019) indicate that the cost for implementing fish passage at the two lower most barriers would range from a low of $8-20MM, depending on the alternative. A subsequent design review meeting (July 15, 2019) removed passage facilities at the Slater Mill Dam from consideration, and identified a vertical-slot fishway as the preferred

alternative at the Main Street Dam; the cost estimate for this single passage facility was updated to $9-19MM. A copy of the meeting minutes from the July 2019 design review meeting are available as needed. There have not been any amendments to the MOU since the previous certification.

It is understood that American Shad Blue Back Hearing and alewife historically occurred in the Blackstone river. Several upstream projects on the Blackstone river are in the licensing or relicensing process. A review these relicensing documents indicates that there have been American eel identified upstream in the Blackstone River. Design alternatives for fish passage at the Pawtucket No. 2 Dam include provisions for downstream passage facilities which will are anticipated to be installed concurrently with upstream passage facilities. A schedule for this work is has not yet been determined. Gravity continues to work with stakeholders to implement fish passage.

To our knowledge, there are currently no plans or agreements in place for providing passage at the next three upstream barriers. Based on the consultant's analysis there are trade-offs associated with each alternative relative to: ability to achieve/contribute to watershed restoration goals, cost (construction and operation), effectiveness, and permitting. PH continues to actively collaborate with the fish passage partners on the on-going re-evaluation, planning and eventual implementation of an effective fish passage restoration strategy for the Project and watershed.

B.2.4 Downstream Fish Passage and Protection Standards – Pawtucket No.2 Project

Zone of Effect #1, #2 & #3- <u>Impoundment, Bypass & Tailrace</u>

Downstream Fish Passage Standards

Zone of Effect #1 is *Agency Recommendation*, Standard 1. Zones of Effect #2, and #3 are *de minimis effect,* Standard 1. There have been no project changes since the previous LIHI certification in 2014.

There are no fish passing downstream within the tailrace and fish are able to currently pass upstream and downstream within the bypass without any restriction.

The impoundment is created by the dam and includes an intake on the right abutment. At this time, there are no anadromous species upstream of the dam. However, when the upstream fish passage is constructed (see section B.2.3) modifications to the intake including downstream fish passage facilities will be included.

A review of the recent relicensing documents for the upstream Woonsocket Falls Project indicate that typical species within the Blackstone River include Blacknose Dace, Common Shiner, Fallfish, Longnose Dace, Tessellated Darter, Yellow Bullhead, Smallmouth Bass, Largemouth Bass, Pumpkinseed, and Yellow Perch, among others.

Downstream of the Pawtucket Dam, the Blackstone River converges with the tidally influenced Seekonk River and Narragansett Bay; therefore, bypass reach is brackish water (mix of fresh and salt water). No site-specific data is available for typical riverine fish species in the bypass reach. However, a study was conducted in 2018 by RIDEM and The Nature Conservancy which identified fish located in the Seekonk and Providence River through monthly sampling from May to October 2018. Species identified included silversides, mummi chogs, killifish, menhaden, tautog, winter flounder, scup, white perch, bluegill. [1]

As part of the fish passage efforts discussed in Section B.2.3, design options to install downstream fish passage have been developed. Downstream fish passage at the Main Street Dam will be installed concurrently with the upstream fish passage. Similar to the upstream fish passage, Gravity is committed to uphold all obligations outlined in the fish passage MOA. See B.2.3 for additional information.

The trashrack spacing at the project is 2.25 inches and the approach velocity is 1.0 ft/s which is significantly lower than Agency standard guidance.

[1] https://www.ecori.org/natural-resources/2018/11/2/upper-narragansett-bay-fish-survey-yields-surprising-results

B.2.5 Shoreline and Watershed Protection Standards – Pawtucket No.2 Project

Zone of Effect #1 & #3- Impoundment & Tailrace Shoreline and Watershed Protection Standards

Zone of Effect #2 and #3 have a de minimis effect on shoreline protection and watershed protection as there is shoreline. There have been no project changes since the previous LIHI certification in 2014.

Zone of Effect #1 has a de minimis effect on shoreline protection and watershed protection. There are no provisions or requirements for shoreline management in the FERC license or 401 WQC. The project operates in instantaneous run-of-river therefore causing no unnatural water surface fluctuations. It also operates in compliance with its license, all 401 requirements and all state and federal laws.

Furthermore, feedback from Agencies on previous LIHI applications for the project included the following: "There are no resource agency recommendations or license exemption conditions regarding watershed protection."

B.2.6 Threatened and Endangered Species Standards – Pawtucket No. 2 Project

Zone of Effect #1, #2 & #3- Impoundment & Tailrace Threatened and Endangered Species

Zone of Effect #1, #2 and #3 have a de minimis effect on threatened and endangered species. There have been no project changes since the previous LIHI certification in 2014.

The USFWS's Information for Planning and Consultation (IPaC)[2] online tool was utilized to complete a site-specific review of threatened and endangered species. The IPaC review identified one threatened mammal, the Northern Long-eared Bat (NLEB) (*Myotis septentrionalis*), potentially within the project area. Note that the IPaC review specified that there are no critical habitats within the project area. The full IPaC report can be found in Attachment C.

M. septentrionalis is a medium-sized bat which winters in caves and mines with other bats. During the summer they can be found roosting in colonies or singly. Summer roosting usually occurs in cavities or crevices of both live and dead trees and occasionally in caves and mines. USFWS reports that summer roosting locations appear to be flexible. Foraging occurs between dusk and dawn and primarily occurs in the understory of forested areas. The species has been in decline in large part due to the outbreak of white-nose syndrome.

Normal operations and maintenance of the project does not have an impact on the Northern Long-eared bat or potential habitat. The Project is located entirely within a highly urbanized area, there are no overhead powerlines or other landscape features that require any vegetation management that would have the potential to impact the NLEB.

On January 23, 2019 Gravity staff completed outreach to the RIDEM Program for additional information on Endangered species in the Area. A response was received from RIDEM that indicated that there was a non-location specific observation for Common Nighthawk which is a state species of concern. RIDEM also indicated that a mile downstream of the project are colonies of Salt Reedgrass (state concern) and Tall White Beard-tongue (state threatened). However, these species are not in the project area. RIDEM further indicated that the project is not of concern to these species. See Attachment A for a copy of the consultation.

During the prior LIHI certification, RIDEM commented in a March 29, 2004 letter stated that "[n]o threatened and endangered species are known to be impacted by the facility."

[2] https://ecos.fws.gov/ipac/

B.2.7 Cultural and Historic Resources Standards – Pawtucket No. 2 Project

Zone of Effect #1, #2 & #3- Impoundment & Tailrace Cultural and Historic Resources

Zone of Effect #1 is an Agency Recommendation, Standard 2. Zone of Effect #2 and #3 are *de minimis,* Standard 1. There have been no project changes since the previous LIHI certification in 2014.

There are no requirements in the exemption regarding cultural resources protection.

The Blackstone River Valley of Massachusetts and Rhode Island is the Birthplace of the American Industrial Revolution[3]. Waterpower along the Blackstone River is the foundation that holds up many of our modern New England cities. The first waterpower and manufacturing facility in the United States was commissioned in 1890 at Slater Mill (immediately upstream of the Main Street Dam) and the success at Slater Mill inspired other entrepreneurs to build more mills first in the Blackstone Valley and eventually throughout New England.

The Main Street Dam was constructed in 1894 and the reservoir (ZoE #1) extends to the toe of the Slater Mill Dam. Maintenance of the Main Street Dam and associated civil structures is key to maintaining historic structures in the Blackstone River Corridor. The date of other structure construction is unknown.

The banks of the bypass reach are highly modified/armored and consist of mill buildings forming the right bank and vertical retaining walls forming the left bank. The area is highly industrialized and has been disturbed numerous times since the 1800s.

The natural tidal tailwater backwaters to the toe of the Main Street dam so the project has no effect on the bypass reach.

The tailrace is a small subsurface structure formed under an adjacent paved area in a previously disturbed area.

Consultation with the State SHPO office was completed. The February 3, 2020 response from SHPO stated that the continued operation of the project will have no adverse effect on historic properties. See Attachment A for a copy of the SHPO consultation.

[3] https://blackstoneheritagecorridor.org/learning/history-of-the-valley/the-industrial-revolution-the-big-story/

B.2.8 Recreational Resources Standards – Pawtucket No. 2 Project

Zone of Effect #1 & #3- Impoundment & Tailrace Recreational Resources

Zone of Effect #1, Zone #2 and #3 have a de minimis effect on recreational resources. There have been no project changes since the previous LIHI certification in 2014.

There are no requirements in the exemption regarding recreation at the site.

The reservoir is very small and extends from the Main Street Dam to the Slater Mill Dam. The area is highly urbanized with retaining walls along the shoreline. The reservoir abuts the Historic Slater Mill site (part of the Blackstone River Valley National Historic Park). The Slater Mill site includes an interpretive center/museum as well as a paved walkway allowing opportunities for viewing the Slater Mill Dam and the Project reservoir. The Project intake is located under the Main Street bridge and is not visible from the park, or any of its viewing areas.

The bypass is also highly developed with tall vertical constructed walls forming the river banks. There is no safe access to the bypass from any areas within the project boundary.

The tailrace is subsurface and is not accessible under any conditions.

The project is currently in compliance with all State and Federal resource Agency recommendations in the license.

ATTACHMENT A

Gmail by Google

Celeste Fay <celeste@gravityrenewables.com>

Fwd: [EXTERNAL] : Endangered Species Review

1 message

Madison Dionne <madison@gravityrenewables.com> Tue, Jan 28, 2020 at 10:58 AM
To: Celeste Fay <celeste@gravityrenewables.com>

---------- Forwarded message ---------
From: **Jordan, Paul (DEM)** <paul.jordan@dem.ri.gov>
Date: Fri, Jan 24, 2020 at 7:30 AM
Subject: RE: [EXTERNAL] : Endangered Species Review
To: Madison Dionne <madison@gravityrenewables.com>

Madison – RI does not have a terribly formal process for disseminating information of RTE species and precious little regulation around the topic. Is this the facility just south of Slater Mill and the dam at Main St.?

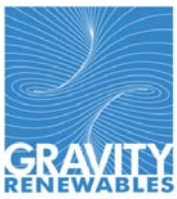
In that area I have a non-location specific observation for Common Nighthawk, listed as a species of state concern. About a mile downstream are colonies of Salt Reedgrass (state concern) and Tall White Beard-tongue (state threatened). I don't foresee any of these being an issue for your project.

Regards,

Paul

Paul Jordan
Supervising GIS Specialist
Division of Planning & Development
RI Department of Environmental Management
235 Promenade Street
Providence, RI 02908
(401)222-2776 x4315
paul.jordan@dem.ri.gov
http://www.dem.ri.gov/maps/index.php

DEM RHODE ISLAND



Madison Dionne | Regulatory Technician
Gravity Renewables Inc.
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www.gravityrenewables.com

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

HISTORICAL PRESERVATION & HERITAGE COMMISSION

Old State House 150 Benefit Street Providence, RI 02903

Telephone 401-222-2678
TTY 401-222-3700
Fax 401-222-2968
www.preservation.ri.gov

RIHPHC No. 14413
200203.01jde

3 February 2020

Via email: jon@gravityrenewables.com

Jonathan Petrillo
Director of Regional Business Development
Gravity Renewables, Inc.
360 Thames Street, Suite 4A
Newport, Rhode Island 02840

Re: Pawtucket Hydro facility recertification
Main Street Dam
Pawtucket, Rhode Island

Dear Mr. Petrillo:

The Rhode Island Historical Preservation and Heritage Commission (RIHPHC) staff has reviewed the information that you provided for the above-referenced action. Gravity Renewables is in the process of recertifying the Pawtucket Hydro facility with the Low Impact Hydropower Institute, a non-profit organization that oversees a non-governmental hydropower certification program.

The Pawtucket Hydro project utilizes water from the Blackstone River that is impounded behind the Main Street Dam, in Pawtucket. The generating equipment is contained within the Bridge Mill Power Plant, located at 25 Roosevelt Avenue in Pawtucket. The Main Street Dam is a contributing resource in the Old Slater Mill Historic Site National Historic Landmark District and the Bridge Mill Power Plant is individually listed in the National Register of Historic Places.

We understand that Pawtucket Hydro is not proposing any modifications or ground-disturbing activities as part of the recertification process. It is the RIHPHC's conclusion that the recertification and continued operation of the Pawtucket Hydro facility will have no adverse effect on historic properties.

If you have any questions, please contact RIHPHC Deputy Director Jeffrey Emidy at 401-222-4134 or jeffrey.emidy@preservation.ri.gov.

Sincerely,

FOR

J. Paul Loether
Executive Director
State Historic Preservation Officer

FUSS & O'NEILL

ALTERNATIVES EVALUATION WORKSHOP – MEETING NOTES
BLACKSTONE RIVER / MAIN STREET DAM
FISH PASSAGE RESTORATION PROJECT
2:00 PM – MONDAY, JULY 15, 2019

ATTENDEES:

Gina DeMarco, RIACD	Kristine Reed, USACE	Sue Mara, Pawtucket
Dick Went, RIACD	Greg Allen, Alden	Bryan Sojkowski, USFWS (phone)
Allen Gillespie, NRCS (phone)	Dean Audet, F&O	John O'Brien, TNC
Megan DiPrete, RIDEM	Nils Wiberg, F&O	Jeff Emidy, RIHPHC
Catherine Sparks, RIDEM	Sean Arruda, F&O	Ted Sanderson, RIHPHC
Anthony Hebert, Pawtucket	Phil Edwards, RIDEM	Marty Wencek, RIDEM
Steve Amaral, Alden	Kevin Klyberg, NPS	Lori Urso, Old Slater Mill
Jon Petrillo, Pawtucket Hydro	Dave Kurowski, Pawtucket	

DISTRIBUTION: Attendees

The following notes summarize items of discussion during an Alternatives Evaluation Workshop Meeting conducted at Fuss & O'Neill (F&O) on Monday, July 15, 2019. Copies of the sign-in sheets, meeting agenda and presentation slides are attached.

Sections underlined below reflect revised wording based on comments received from attendees through July 24.

1) After F&O welcomed all to the meeting and provided a brief introduction for attendees, F&O provided a brief overview of the major discussion items from the April 8th Stakeholder Workshop. F&O noted that it has continued its evaluation of the denil fish ladder alternative subsequent to that meeting, based on feedback and concerns expressed at that meeting, conducted consultations with FWS relative to its specific questions and concerns (including those relative to a vertical slot fishway alternative), and conducted initial discussions relative to Slater Mill Dam in a conference call with U.S. Army Corps of Engineers (USACE) staff.

2) F&O noted that the goal for this meeting would be to receive additional feedback from all parties in attendance such that a decision could be made as to the preferred fish passage design alternative for Main Street. F&O added that its contract deadline with NRCS (for design and permitting) concludes at the end of September 2019.

    a. NRCS confirmed F&O's contract deadline for design and added that NRCS was still committed to moving the project in a positive direction even if an agreement to a preferred alternative for fish passage at Main Street delays work such that a permit application cannot be submitted within the contract deadline.

3) USACE noted that its feasibility study for passage at the Slater Mill and Elizabeth Webbing Dams was nearing completion and it expected to have a draft of alternatives at each dam completed in September 2019.

a. F&O added that its intent for the Main Street Dam fish passage structure would be to design such that it could potentially be connected to USACE's Slater Mill Dam fish passage structure in the future if the USACE determines that that is the best option.

b. USACE added that it is still unclear about hydraulics conditions at the left end of the dam and needs to evaluate this further. USACE also noted that a partial breach has formed near the center of the existing dam spillway that would need to be repaired as it would create false attraction flow for any fish passage structure installed at this dam.

c. USACE also noted that its evaluation of fish passage alternatives also will consider construction of a nature-like bypass channel on the east side of the channel, and that the evaluation will account for the variation in flows/headpond levels due to periodic flow releases at the Valley Falls Dam.

4) The Old Slater Mill Dam Association noted that the breach in the dam is scheduled for repair in October 2019 and that National Grid owns 49/64ths of the Slater Mill Dam, which includes the eastern portion of the dam's spillway. Repairs to the dam are being planned in coordination with National Grid.

5) After the above discussion of the general status of the Slater Mill Dam, F&O initiated discussion regarding the two alternatives currently being considered at the Main Street Dam: a Denil fishway or a vertical slot fishway. A summary of key discussion items, corresponding to respective presentation slides, is provided below:

Aquatic Passage Criteria - Attraction, Effectiveness, Capacity

a. F&O noted that a Denil fishway would require auxiliary components at its entrance and exit to augment attraction flow, while the vertical slot fishway would likely not require such components (or require smaller and/or less complex components if determined necessary during final design). Alden noted that, for the vertical slot fishway, attraction flow requirements could likely be met by narrowing the downstream entrance channel from what is currently shown on the conceptual drawings.

b. F&O noted that the size of a Denil required to pass fish across the elevation differential between the fishway entrance and exit at the Main Street Dam would be at the upper limit of acceptability based on design guidance recommendations, whereas the size of a vertical slot fishway would be within accepted guidance for that structure type. It was also noted that the vertical slot fishway could accommodate headpond level fluctuations without additional flow controls that a Denil would require that would entail a cost and O&M burden, and thus would have a greater passage efficiency and passage capacity than a Denil fishway.

c. While a Denil (at the vertical height and length proposed) is considered suitable for the passage of river herring and alewives, it would not be as effective for passage of American shad. Alden noted that a vertical slot fishway would be more effective to pass American shad as well as other target species. USFWS noted that a vertical slot fishway

is very effective at passing American eel, whereas a Denil would require a separate eelway structure.

Alden noted that it is not clear exactly how much more efficient passage by a vertical slot fishway vs a Denil, it estimated somewhere in the magnitude of 10% better. The alternatives assessment report noted that generally, the internal passage efficiency for a Denil fishway is considered 70-80% for river herring and 60-70% for American shad, when operating within acceptable guidance recommendations and maintained/ configured properly.

d. Pawtucket Hydro questioned what the efficiency would be for the conceptual Denil fishway given the approximate 20-foot elevation differential between its entrance and exit. USFWS responded that there is a Denil at the Lowell Tannery Hydro facility in Maine that has a similar differential though passage effectiveness at this facility is very low, around 15% to 20% for river herring, however noted that passage is also affected by large fluctuations in headpond levels that result in excessive flows through the fishway.

   USFWS noted that this decreased passage efficiency could also occur if a Denil is constructed at Main Street Dam due to headwater fluctuations of approximately 3.5 feet, supporting its recommendation that a vertical slot fishway be considered more closely since it can accommodate those fluctuations without flow controls or additional O&M that would be required for a Denil.

e. Pawtucket Hydro questioned if the above-noted percentages for effective passage were internal vs external efficiencies. Alden noted that the percentages for effective passage documented in the draft evaluation matrix included in the alternatives assessment report reflect internal efficiency only (i.e., passage efficiency once a fish is within the passage structure). Alden noted that external efficiency would be impacted, for example, by the fishway entrance location or insufficient attraction flows, the quality of both of which could impact a fish's ability to find the entrance. Alden confirmed that a vertical slot fishway would have a higher internal efficiency than a Denil fishway for a configuration within a Denil's operating envelop, and further improved considering the elevation differential and headpond variations at Main Street Dam.

f. F&O noted that the reason for extending either conceptual fishway's entrance down to an area near the Pawtucket Hydro facility's turbine discharge was based on documentation in a report prepared by USGS (USACE noted that it participated in the study) stating that the majority of migrating fish were congregating immediately upstream of the discharge channel and not swimming further upstream to the base of the Main Street Dam. Positioning either structure's entrance at this location would improve the chances that fish would find the entrance and improve external efficiency of the fishway.

g. Pawtucket Hydro questioned if an alternative to locate the fishway on the western side of the channel had been evaluated, since it might improve external efficiency by fish more readily finding the fishway closer to the hydro facility discharge. F&O noted that it had evaluated layout, access, property ownership and constructability issues on that side of the river and concluded that numerous constraints resulted in disadvantages that precluded further consideration of any structure on that side of the channel.

h. Pawtucket Hydro noted that FERC will conduct a technical review of any alternative considered for the Main Street Dam. F&O noted that it had observed limited documentation of the review from the previous design in 2011/2012. Pawtucket Hydro agreed to share previous correspondence related to usage/operation flows and evaluations of the spillway's discharge capacity that would result from construction of the Denil's fishway exit.

i. Pawtucket Hydro asked about maintenance responsibilities and what specific annual costs might be. F&O noted that specific maintenance costs had not been quantified at this stage of design; RIDEM noted that it expects to maintain the structure and has familiarity with O&M costs from other similarly-sized structures that it operates/maintains. F&O noted that an O&M manual will be prepared for the selected fishway as part of subsequent design efforts.

Permitting and Regulatory Criteria

a. F&O noted that a Denil fishway would have a smaller footprint and environmental impact in comparison to a vertical slot fishway, would likely have less of an increase in water surface elevations upstream and potentially downstream of the Main Street Dam, and would have less direct impacts to the Main Street Dam's spillway.

b. F&O noted that a vertical slot fishway would have a greater potential of requiring a new Environmental Assessment (EA) study and report, whereas a reconfigured Denil as conceptualized could potentially be addressed with an EA amendment only.

   USACE noted that it is preparing an EA study/report along with its feasibility study of passage at the Slater Mill and Elizabeth Webbing Dams.

c. RIDEM (M. Wencek) noted that it would prefer any layout selected to avoid/minimize impacts to the wooded area bordering the top of the downstream river channel's eastern training wall, as well as the vegetated area along the face of the training wall between the Main Street and Slater Mill Dams. F&O noted that it had reached out to RI Coastal Resources Management Council to begin consultations for permitting of the selected alternative for the Main Street Dam, and will schedule a pre-permitting meeting once the selection is made.

Cultural Resources Criteria

a. F&O noted that a Denil fishway would have a reduced impact on viewscapes and historic/archaeological resources within the river channel in comparison to a vertical slot fishway, but more significant sound and vibration impacts due to the expected construction of the Denil's channel structure on foundation piles driven into bedrock.

b. F&O noted that consultations with external entities, including tribal representatives and RIHPHC, would be required for either alternative under Section 106 requirements.

Construction Phase Criteria

a. F&O noted that a Denil fishway would have a lower construction cost (est. $5.6M-$11M) than a vertical slot fishway (est. $9M-$19M), as well as a shorter construction duration (est. 150-180 days vs. est. 210-240 days). F&O also noted that a Denil fish ladder is specifically identified as a reimbursable NRCS restoration practice; while a vertical slot fishway is not, which could potentially limit or preclude future funding from this agency.

b. Pawtucket (S. Mara) requested more detail regarding the scale of comparison of costs for aspects of both alternatives, and noted that she preferred an alternative that maximized opportunities for community engagement.

Post-Construction Phase Criteria

a. F&O noted that a Denil fishway would have a greater O&M burden in comparison to a vertical slot fishway since a Denil requires seasonal modifications, baffle maintenance, augmented attraction flow components, and would require power at entrance/exit gates. F&O also noted that a Denil could potentially have a lower overall life-cycle cost due to its significantly lower construction cost. It was noted that life-cycle cost for both alternatives would be based on a 75-year period, which is the typical life expectancy of a fishway structure.

b. F&O noted that a Denil fishway would also have a higher risk of potentially dangerous access due to more intensive/frequent maintenance activities and a narrow access platform, and could be less adaptable to changes in headpond/tailwater elevations and river flows resulting from future climate changes or other changes within the watershed.

c. F&O noted that a Denil fishway would have a reduced impact on the Main Street Dam spillway's discharge capacity, headpond/tailwater elevations, hydropower operations and storm/flood elevations in comparison to a vertical slot fishway. F&O also noted that both structures would impact inspections and maintenance access for the Main Street Bridge, however the vertical slot fishway would have a slightly larger impact due to its increased channel width.

d. TNC commented that the preferred alternative must consider adaptability to climate change and best address performance issues/risks noted in the discussion.

Open Forum Questions/Concerns

a. Pawtucket Hydropower expressed its concern that there needs to be more assurance that fish passage at upstream dams such as Elizabeth Webbing and Valley Falls will occur before construction at Main Street Dam is initiated. USACE noted that passage at Main Street Dam is critical as construction of fishways upstream of the Main Street Dam is contingent on successful passage at Main Street Dam.

b. National Park Service (NPS) expressed concern with construction of concrete structures within the river system and note that this section of the river system is within the designated a National Park. NPS also noted that providing passage at one or two dams in the river system would not be considered successful passage. USACE agreed that passage at several dams would be required to achieve the goal of effective passage, and that it is necessary to pursue this goal on a piece by piece basis.

c. RIDEM (C. Sparks) noted that it is working with the licensees of the Valley Falls hydropower facility to develop language for its FERC license renewal, which is due for completion in 2021, such that passage at this site will also be achieved in a timely fashion.

d. Pawtucket Hydro noted that the project team should consider a trap and haul configuration for either selected alternative at Main Street Dam, on a temporary basis at the fishway exit, until fishway passage is achieved at remaining upstream sites through Valley Falls Dam. Alden concurred that this is a feasible approach on a short-term basis, provided RIDEM could undertake these operations.

e. TNC noted that Phase I of the Blackstone River Restoration Plan includes passage at Main Street Dam, Slater Mill Dam, Elizabeth Webbing Dam, and the Valley Falls Dam – and with passage being considered at Main Street, Slater Mill and Elizabeth Webbing Dams, there is good momentum moving forward so a more long-term solution should be the focus. Pawtucket Hydro suggested that that some form of settlement agreement should be developed amongst all respective parties to achieve passage at all Phase I dams.

f. Alden noted that a vertical slot fishway is the best alternative to maximize passage of American shad.

g. RIDEM (C. Sparks) noted that it would review the workshop meeting notes and presentation slides with its leadership in the coming weeks to identify its preference for the selected alternative. F&O noted that the preferred alternative would need to be selected by August 1 in order to have any chance to advance designs for the selected alternative and prepare permit application materials by the end of September.

Attachments: Alternatives Evaluation Workshop Sign-In Sheet
Alternatives Evaluation Workshop Agenda
Workshop Presentation Slides

FUSS & O'NEILL

ALTERNATIVES EVALUATION WORKSHOP SIGN-IN SHEET
MAIN STREET DAM FISH PASSAGE RESTORATION PROJECT
RHODE ISLAND ASSOCIATION OF CONSERVATION DISTRICTS
2:00 PM – MONDAY, JULY 15, 2019

NAME	AFFILIATION	TITLE	PHONE/EMAIL
Gina DeMarco	NRICD	Manager	gdemarco.nricd@gmail.com
Anthony Hebert	City of Pawtucket	Planner	ahebert@Pawtucketri.com
GREG ALLEN	ALDEN	ENGINEER	gallen@aldenlab.com
Steve Amaral	Alden	Biologist	amaral@aldenlab.com
Kristine Reed	USACE		kristine.a.reed@usace.army.mil
Megan DiPrete	RIDEM		Megan.DiPrete@dem.ri.gov
Christina Hoefsmit	RIDEM		Christina.hoefsmit@dem.ri.gov
Phil Edwards	RIDEM - FW		Phillip.Edwards@dem.ri.gov
Kevin Klyberg	NPS.	Park Ranger	Kevin_Klyberg@NPS.GOV
Steve Mara	Pawtucket	Dpg. Director	smara@pawtucketri.com

FUSS & O'NEILL

ALTERNATIVES EVALUATION WORKSHOP SIGN-IN SHEET
MAIN STREET DAM FISH PASSAGE RESTORATION PROJECT
RHODE ISLAND ASSOCIATION OF CONSERVATION DISTRICTS
2:00 PM – MONDAY, JULY 15, 2019

NAME	AFFILIATION	TITLE	PHONE/EMAIL
Dick Went	RIACD	Pres.	dwent@verizon.net
Dave Kurowski	City of Pawtucket Engineering	Chief of Project Develop.	dkurowski@pawtucketri.com
John O'Brien	TNC	—	jobrien@tnc.org
CATHERINE SPARKS	RI DEM	ASST DIR NR	catherine.sparks@dem.ri.gov
Jeff Emidy	RIHPHC	DEPUTY DIRECTOR	Jeffrey.emidy@preservation.ri.gov
Ted Sanderson	Retired RIHPHC		tedsanderson625@gmail.com
Marty Wencek	RIDEM	Wetlands	martha.wencek@dem.ri.gov
Lori Urso	Old Slater Mill Assn.	Exec Director	on file
SEAN ARRUDA	F&O	CIVIL ENGINEER	sarruda@fando.com
DEAN AUDET	F&O		daudet@fando.com
NILS WIBERG	F&O	PROJECT MGR.	nwiberg@fando.com

FUSS & O'NEILL

ALTERNATIVES EVALUATION WORKSHOP SIGN-IN SHEET
MAIN STREET DAM FISH PASSAGE RESTORATION PROJECT
RHODE ISLAND ASSOCIATION OF CONSERVATION DISTRICTS
2:00 PM – MONDAY, JULY 15, 2019

NAME	AFFILIATION	TITLE	PHONE/EMAIL
Jon Petrillo	Pawtucket Hydropower, LLC		jon@gravityrenewables.com 203.623.4637

FUSS & O'NEILL

ALTERNATIVES EVALUATION WORKSHOP AGENDA
MAIN STREET DAM FISH PASSAGE RESTORATION PROJECT
RHODE ISLAND ASSOCIATION OF CONSERVATION DISTRICTS
2:00 PM – MONDAY, JULY 15, 2019

1) Welcome and Introductions (5 mins)

2) Alternatives Evaluation Overview and Status (10 mins)

   a. April 8 Stakeholder Workshop

   b. Slater Mill Dam Status
      i. U.S. Army Corps of Engineers Project Lead
      ii. Denil Fish Ladder - Separate or Connected to Main Street Structure

   c. Main Street Dam Status
      i. Continued Evaluation Denil Fish Ladder and Vertical Slot Fishway Alternatives
      ii. Schedule Target – Submit Permit Applications by September 30

3) Main Street Dam Fish Passage Evaluation (15 min)

   Alternative 1: Denil Fish Ladder

   Alternative 2: Vertical Slot Fishway

4) Open Forum Review and Discussion (30 mins)

5) Recap and Next Steps (10 mins)

Main Street Dam
Fish Passage Restoration Project
Alternatives Evaluation Workshop

Rhode Island Association of Conservation Districts

Natural Resources Conservation Service

Rhode Island Dept. of Environmental Management

The Nature Conservancy

July 15, 2019

FUSS & O'NEILL

Workshop Goals and Agenda

- Welcome and Introductions
- Alternatives Evaluation Overview and Status
  - April 8 Stakeholder Workshop
  - Slater Mill Dam Status
  - Main Street Dam Status
- Main Street Dam Fish Passage – Evaluation of Two Alternatives
  - Denil Fish Ladder
  - Vertical Slot Fishway
- Open Forum Review and Discussion
- Recap and Next Steps

Alternatives Evaluation Overview and Status

- April 8 Stakeholder Workshop
  - Feedback Received and Evaluated
- Slater Mill Dam Status
  - U.S. Army Corps to Lead Design, Permitting & Construction
  - Evaluating Alternatives to Construct Denil Fish Ladder
    - Separate Structure (at/around Slater Mill Dam Spillway)
    - Connected to Main Street Fish Passage Structure
- Main Street Dam Status
  - Continued Alternatives Evaluation: Denil vs. Vertical Slot Fishway
  - Hydraulic Analysis for Potential Connected Slater Mill Dam Fishway
  - Schedule Target for Permit Applications: September 30, 2019

FUSS & O'NEILL

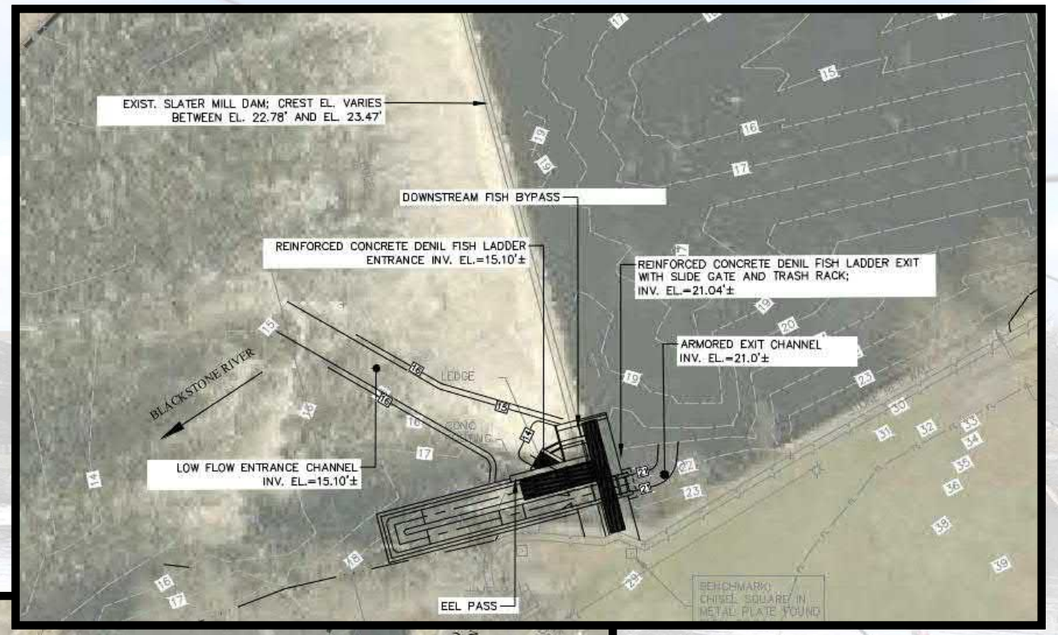
Slater Mill Dam Status

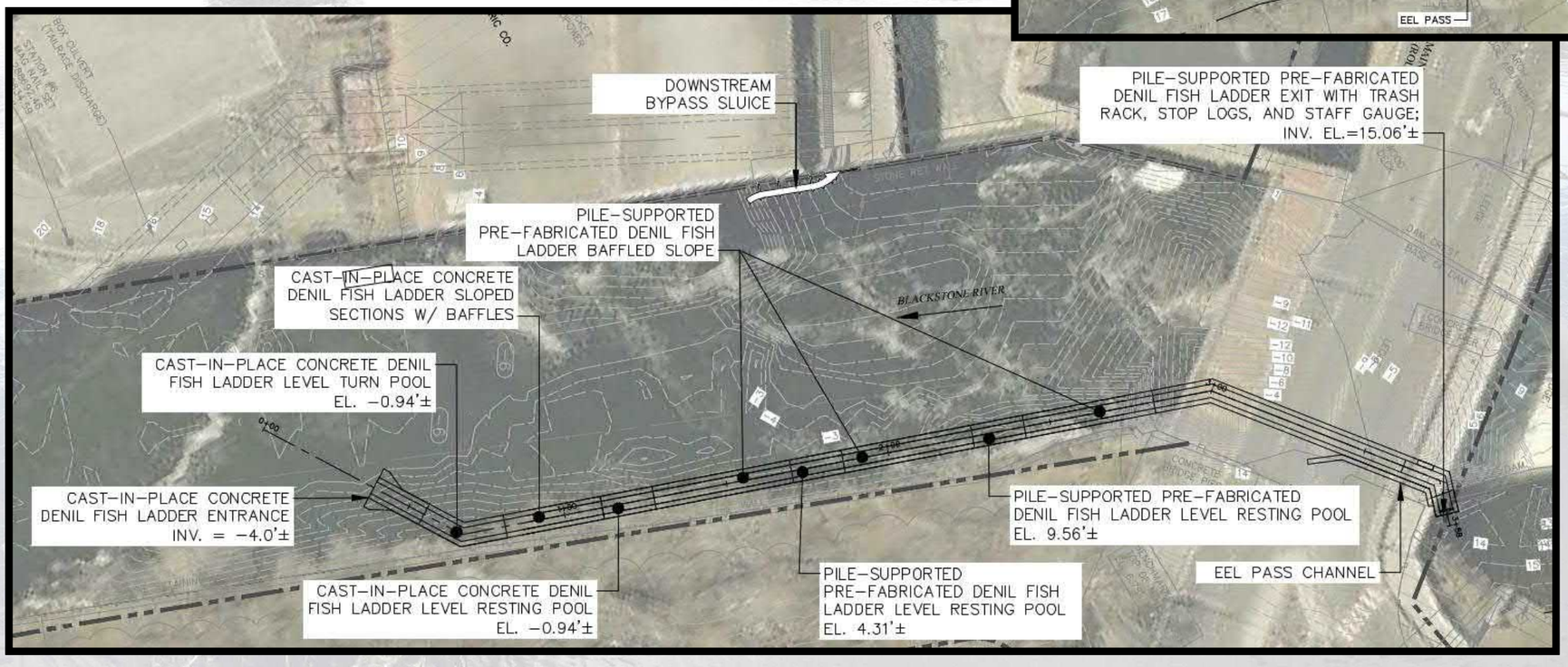
- Slater Mill Dam Status
  - U.S. Army Corps to Lead Design, Permitting & Construction at Elizabeth Webbing and Slater Mill Dams
    - Currently Working on Feasibility Study
    - Evaluating Condition of Slater Mill Dam Spillway
    - National Park Service / Blackstone River Valley National Heritage Corridor Coordination
    - Likely Longer Development Timeline vs Main Street Dam
  - Coordinate Design of Main Street Dam Fish Passage Structure to Accommodate Range of Potential Slater Mill Dam Structure Configurations

Main Street Dam - Denil Fish Ladder Layout

Denil Fish Ladder Alternatives – Separate MSD/SMD Structures

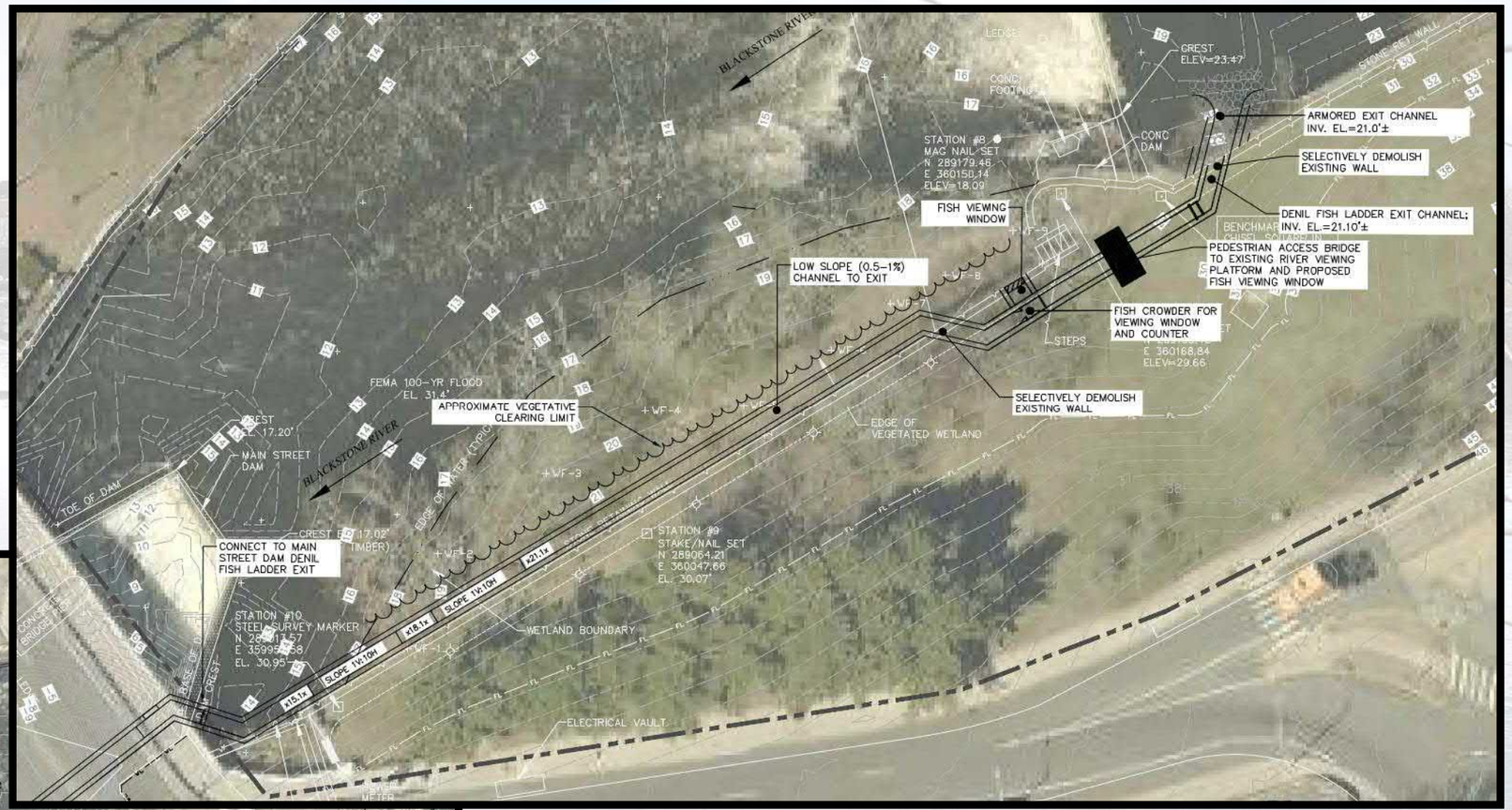
- Upper Range of Acceptable Structure Height for Effective and Timely Passage
- Known Operation and Maintenance Requirements

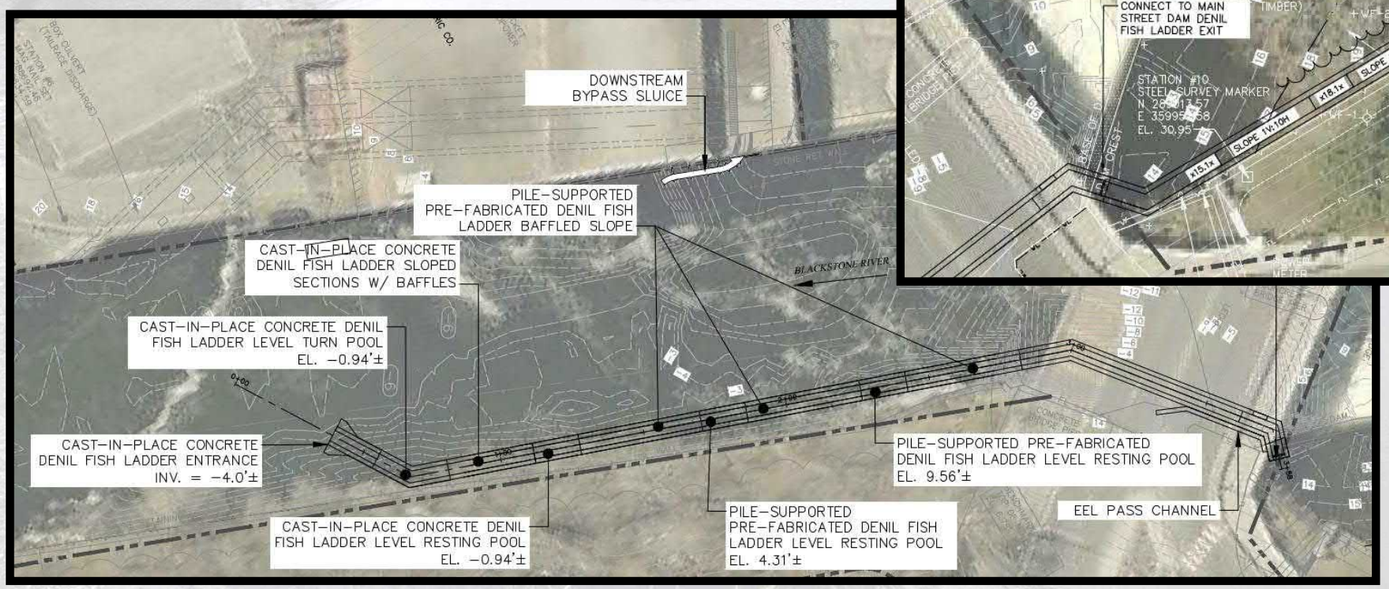




Denil Fish Ladder Alternatives – Connected MSD/SMD Structures

- Potentially Improved Fish Passage vs. Separate Denil Fish Ladders
- May Require Augmentation of Flow from Main Street Dam Impoundment





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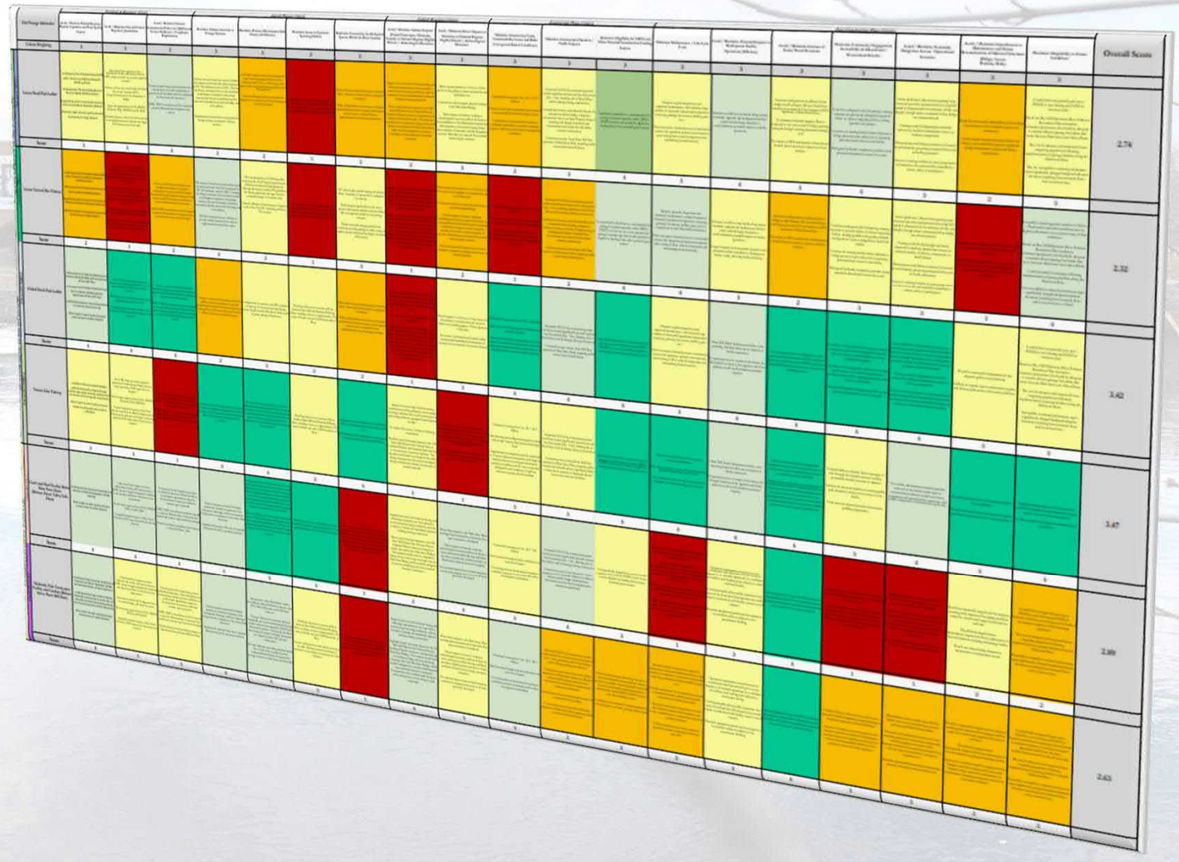
Vertical Slot Fishway

- Improved Performance vs Denil at Sites with:
  - Large Variations in Headpond and Tailwater Elevations
  - Significant HP/TW Elevation Difference

Alternatives Evaluation Criteria

- Fish Passage Attraction, Effectiveness, Capacity
- Wetland Impacts
- Permitting & Regulatory Barriers
- Historical & Cultural Resource Impacts
- Construction Costs, Impacts & Risks
- Operation & Maintenance / Life-Cycle Costs
- Community Engagement Benefits
- Adaptability to Future Conditions



FUSS & O'NEILL

Aquatic Passage Criteria - Attraction, Effectiveness, Capacity

Criteria	Denil Fish Ladder	Vertical Slot Fishway
Attraction Flow	Requires Auxiliary Components at Entrance and Exit to Augment Attraction Flow	No or Reduced Need for Augmentation of Attraction Flow
Vertical Height / Length	At Upper Limit for Denil Fish Ladder Design Guidance	Several Structures Constructed and Performing Acceptably with Similar or Larger Height / Length
Internal Efficiency (i.e., once fish are within the structure)	Estimated 70 – 80% for Herring and 60-70% for Shad for Structures Within Height/Length Guidance	Higher Internal Efficiency vs. Denil Fish Ladder, particularly for Higher/Longer Structures
River Continuity / Connectivity for Other Aquatic Species	Limited Connectivity	Improved Connectivity vs. Denil Fish Ladder
Overall Passage Capacity	Limited Capacity	Higher Passage Capacity vs. Denil Fish Ladder

Permitting and Regulatory Criteria

Criteria	Denil Fish Ladder	Vertical Slot Fishway
Wetland/Aquatic Resource Impacts	Smaller Footprint / Reduced Impact Portions of Structure Constructed on Elevated Piles to Reduce Impacts to Benthic Habitat	Larger Footprint / Increased Impact Entire Structure Constructed on River Channel Bottom
Floodplain / Base Flood Elevation Impacts	Will Cause Minor Increase in Base Flood Elevation Immediately Downstream of Main Street Dam Spillway	Will Result in Larger Increase in Base Flood Elevation vs. Denil Fish Ladder
Spillway/Bridge Hydraulic Capacity	Limited Reduction of Spillway Crest Length and Obstruction of Bridge Opening	Larger Reduction of Spillway Crest Length and Obstruction of Bridge Opening; Greater Potential to Entrain Debris
NEPA Compliance	Potentially Eligible for Amendment to Previous Environmental Assessment	Greater Potential to Require New Environmental Assessment

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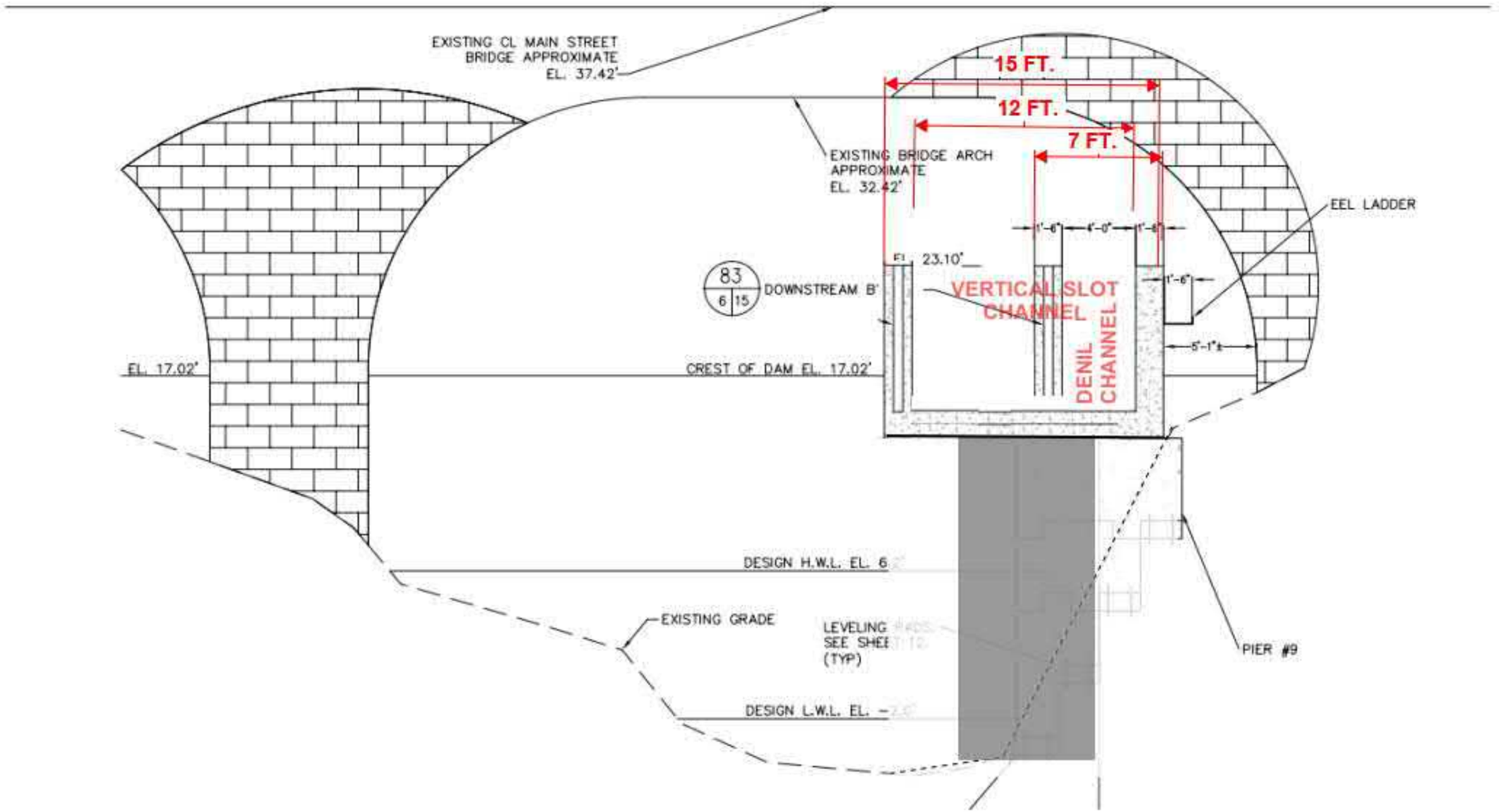
Denil and Vertical Slot Fishways Within Main Street Bridge Opening



Cultural Resources Criteria

Criteria	Denil Fish Ladder	Vertical Slot Fishway
Avoid/Minimize Indirect (Non-Physical) Impacts to National Register Eligible Historic/ Archaeological Resources (Viewscapes, Vibrations, Sounds)	Smaller Viewscape Impact Larger Sound and Vibration Impact Due to Construction of Foundation Piles	Larger Viewscape Impact Smaller Sound/Vibration Impact
Avoid/Minimize Direct (Physical) Impacts to National Register Eligible Historic/Archaeological Resources	Smaller Potential to Impact Historic/Archaeological Resources within River Channel Equivalent Potential for Impacts Due to Temporary Construction Access Along Top of Downstream Training Wall	Larger Potential to Impact Historic/Archaeological Resources within River Channel Equivalent Potential for Impacts Due to Temporary Construction Access Along Top of Downstream Training Wall

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Construction Phase Criteria

Criteria	Denil Fish Ladder	Vertical Slot Fishway
Minimize Construction Costs, Constructability Issues and Risks	Smaller Construction Cost (Est. $5.6M - $11M) Higher Risk Exposure Due to Potential Variability of Pile Foundation Conditions and Vibration Impacts to Adjacent Structures Reduced Control of Water Cost/Risk Due to Pile Foundations	Higher Construction Cost (Est. $9M - $19M) Lower Risk Exposure Due to Conventional Foundation Type Increased Control of Water Cost/Risk Due to Conventional Foundation
Minimize Construction Duration and Traffic Impacts	Shorter Construction Duration (Est. 150-180 Days) Reduced Potential for Traffic Impacts	Longer Construction Duration (Est. 210-240 Days) Increased Potential for Traffic Impacts
Maximize Eligibility for NRCS and Other Potential Construction Funding Sources	Specifically Identified as a Reimbursable NRCS Restoration Practice	Not Identified as a Reimbursable NRCS Restoration Practice

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Post-Construction Phase Criteria

Criteria	Denil Fish Ladder	Vertical Slot Fishway
Minimize Operation & Maintenance / Life-Cycle Costs	Increased O&M Burden Due to Seasonal Modifications, Flow Regulation, Augmented Attraction Flow Component, Baffles, Power Required for Entrance/Exit Gates Potentially Lower Life-Cycle Cost Due to Lower Construction Cost	Reduced O&M Burden Due to No Baffles, Self-Regulating Flow, No/Minor Augmented Attraction Flow No Electricity Required for Gates Potentially Higher Life-Cycle Costs Due to Higher Construction Cost
Avoid/Minimize Potentially Dangerous Access/Operational Scenarios	Higher Risk Due to More Intensive/Frequent Activities with Narrow Access Platform and Elongated Structural Layout	Lower Risk Due to Wider Structure with Integral Platform
Avoid/Minimize Potential Impacts to Hydropower Facility Operations	Reduced Potential to Impact Spillway Capacity and/or Headpond/Tailwater Elevations	Increased Potential to Impact Spillway Capacity and/or Headpond/Tailwater Elevations

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Post-Construction Phase Criteria

Criteria	Denil Fish Ladder	Vertical Slot Fishway
Avoid/Minimize Potential Impacts to Storm/Flood Elevations	Reduced Potential to Impact Storm/Flood Elevations	Increased Potential to Impact Storm/Flood Elevations
Maximize Opportunities for Community Engagement. Accessibility and Educational/ Recreational Benefits	Equivalent Potential to Provide Community Benefit Opportunities	Equivalent Potential to Provide Community Benefit Opportunities
Avoid/Minimize Impediments to Inspection/Maintenance/ Reconstruction of Adjacent Structures (Spillway, Bridge, etc.)	Reduced Impact to Access for Inspections, Maintenance and Reconstruction of Spillway and Bridge	Increased Impact to Access for Inspections, Maintenance and Reconstruction of Spillway and Bridge
Maximize Adaptability to Potential Future Conditions - Increased Precipitation/Flows/ Headpond Elevations - Increased Tidal Elevations Due to Sea Level Rise	Limited Adaptability (or Greater Cost to Adapt to) Changed/ Increased Flows and Headpond/ Tailwater Elevations	More Adaptable to Changed/ Increased Flows and Headpond/ Tailwater Elevations

Open Forum Review and Discussion

- Questions & Answers
- Comments, Concerns, Preferences
- Workshop Recap
- Next Steps

Thank you!

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

INTER-OFFICE MEMO

TO: Todd Bryan, Principal Natural Resources Specialist DATE: 10 Novem
Division of Land Resources
DEPT: Environmental Management

FROM: James W. Fester, Chief
Division of Water Resources
DEPT: Environmental Management

SUBJECT: Application of Blackstone Valley Electric to rehabilitate the Pawtucket #2 Hydroelectric power generating facility at the Main Street Dam, Pawtucket, Rhode Island.

We have reviewed the subject application and the Pawtucket No. 2 Hydro electric Reactivation study prepared for E UA Service Corporation. Th Blackstone River is classified C. It is noted that the applicant prop to maintain a minimum discharge of 50 cfs instead of the 7Q10 figure roughly 115 cfs. Two factors mitigate this low flow condition:

1. The short distance between the dam and the tailrace from the generating facility.

2. The tidal nature of the river below the dam.

It is our opinion that said project will not violate applicable water quality criteria for the area, provided that the material to be used for fill is clean, free of matter which could cause pollution of the waters of the State, proper procedures are followed to prevent excess turbidity in the stream during construction and that the banks are stabilized at the end of construction to prevent erosion and sediment

This is the State's water quality certification for this project.

JWF:PHA:sjc

cc: Donald W. France, EUA Service Corporation
Victor Bell

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL
To Terry Walsh From M.
Dept/Agency RIDEM Phone # 413
Fax # 401-222-6177 Fax #
NSN 7540-01-317-7368 5099-101 GENERA

16 FERC ¶ 62,076

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Blackstone Valley Electric Co.) Project No. 3689-000

ORDER GRANTING EXEMPTION FROM LICENSING OF A SMALL HYDROELECTRIC PROJECT OF 5 MEGAWATTS OR LESS

(Issued: July 21, 1981)

The Applicant 1/ filed an application for exemption from all or part of Part I of the Federal Power Act pursuant to 18 C.F.R. Part 4 SUBPART K (1980) implementing in part Section 408 of the Energy Security Act (Act) of 1980 for a project as described in the attached public notice. 2/ 3/

Notice of the application was published in accordance with Section 408 of the Act and the Commission's regulations and comments were requested from interested Federal and State agencies including the U. S. Fish and Wildlife Service and the State Fish and Wildlife Agency. All comments, protests and petitions to intervene that were filed have been considered. No agency has any objection relevant to issuance of this exemption.

Standard Article 2 included in this exemption, requires compliance with any terms and conditions that Federal or State fish and wildlife agencies have determined appropriate to prevent loss of, or damage to, fish and wildlife resources. The terms and conditions referred to in Article 2 are contained in any letters of comment by these agencies which have been forwarded to the Applicant in conjunction with this exemption.

Should the Applicant contest any terms or conditions that were proposed by Federal or State agencies in their letters of comment as being outside the scope of Article 2, the Commission shall determine whether the disputed terms or conditions are outside the scope of Article 2.

1/ Blackstone Valley Electric Co., Project No. 3689, filed December 4, 1980.

2/ Pub. Law 96-294, 94 Stat. 611. Section 408 of the ESA amends inter alia, Sections 405 and 408 of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. §§2705 and 2708).

3/ Authority to act on this matter is delegated to the Director, Office of Electric Power Regulation under 18 C.F.R. §375.308 (1980), as amended by 46 Fed. Reg. 14119 (1981).

It is ordered that:

(A) Pawtucket No. 2 Project No. 3689 as described and designated in the Blackstone Valley Electric Co.'s application filed on December 4, 1980, is exempted from all of the requirements of Part I of the Federal Power Act, including licensing, subject to the standard articles in §4.106 of the Commission's regulations, 18 C.F.R. §4.106 45 Fed. Reg. 76115 (November 18, 1980).

(B) This order is final unless a petition appealing it to the Commission is filed within 30 days from the date of its issuance, as provided in Section 1.7(d) of the Commission's regulations, 18 C.F.R. 1.7(d)(1979), as amended, 44 Fed. Reg. 46449 (1979). The filing of a petition appealing this order to the Commission or an application for rehearing as provided in Section 313(a) of the Act does not operate as a stay of the effective date of this order, except as specifically ordered by the Commission.

(S E A L)

Robert E. Cackowski

for William W. Lindsay
Director, Office of Electric
Power Regulation

ATTACHMENT B

B.4 Contacts Forms

All applications for LIHI Certification must include complete contact information.

A. Applicant-related contacts

Facility Owner:	
Name and Title	Ted Rose, Manager
Company	Hitchcock Hydro, LLC c/o Gravity Renewables, Inc.
Phone	303-440-3378
Email Address	ted@gravityrenewables.com
Mailing Address	1401 Walnut Street, Suite 420, Boulder, CO 80302
Facility Operator (if different from Owner):	
Name and Title	Same
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	Celeste N. Fay, Regulatory Manager
Company	Gravity Renewables, Inc.
Phone	413-262-9466
Email Address	celeste@gravityrenewables.com
Mailing Address	1401 Walnut Street, Suite 420, Boulder, CO 80302
Party responsible for accounts payable:	
Name and Title	Megan Oaks, Accounting Manager
Company	Gravity Renewables
Phone	303-440-3380
Email Address	megan@gravityrenewables.com
Mailing Address	1401 Walnut Street, Suite 420, Boulder, CO 80302

B. Current and relevant state, federal, and tribal resource agency contacts with knowledge of the facility (copy and repeat the following table as needed).

Agency Contact (Check areas of responsibility: Flows__, Water Quality _X_, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	RIDEM
Name and Title	Mr. Eric Beck, Administrator Groundwater and Wetlands Protection
Phone	(401) 222-4700 Ext. 7700
Email address	Eric.beck@DEM.ri.gov
Mailing Address	235 Promenade St. Providence, RI 02908
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	USFWS
Name and Title	Melissa Grader, Fish and Wildlife Biologist
Phone	413-548-8002 X124
Email address	Melissa_Grader@fws.gov
Mailing Address	
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources _X_, Recreation __):	
Agency Name	State of Rhode Island and Providence Plantations Historical Preservation and Heritage Commission
Name and Title	Jeffrey D. Emidy, Deputy Director
Phone	401-222-4134
Email address	Jeffrey.Emidy@preservation.ri.gov
Mailing Address	150 Benefit Street, Providence, Rhode Island 02903
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	National Park Service
Name and Title	Kevin Mendik, Program Manager
Phone	617-223-5299
Email address	Kevin.mendik@nps.gov
Mailing Address	15 State Street, 10th Floor, Boston, MA 02109
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	
Name and Title	
Phone	
Email address	
Mailing Address	

C. Current stakeholder contacts that are actively engaged with the facility (copy and repeat the following table as needed).

None

ATTACHMENT C

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2019-SLI-1583
Event Code: 05E1NE00-2019-E-03833
Project Name: Pawtucket Hydropower

May 01, 2019

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2019-SLI-1583

Event Code: 05E1NE00-2019-E-03833

Project Name: Pawtucket Hydropower

Project Type: POWER GENERATION

Project Description: Existing Hydroelectric Operations - No Project Changes Proposed. Presence of any endangered species within the project area is required for Low Impact Hydropower Institute Certification

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.87628753998639N71.3834725158093W

Counties: Providence, RI

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.