

# **REVIEW OF APPLICATION FOR RE-CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE SCHOOL STREET HYDROELECTRIC FACILITY, LIHI #63**

Prepared by Patricia McIlvaine  
December 20, 2019

## **I. INTRODUCTION**

This report summarizes the review findings of the application submitted by Erie Boulevard Hydro, L.P., (Erie or Applicant) to the Low Impact Hydropower Institute (LIHI) for re-certification of the School Street Hydroelectric Project FERC P-2539, LIHI #63 (School Street or Project). Erie is a subsidiary of Brookfield Renewable Energy Group (Brookfield). The Project was initially certified by LIHI as Low Impact for a five-year term, effective November 20, 2009, and re-certified for a second five-year term effective November 20, 2014 expiring November 20, 2019, extended to January 31, 2020. This re-certification review was conducted in compliance with LIHI's Handbook, 2nd Edition, Revision 2.03: December 20, 2018.

The Project's 2014 re-certification had two conditions:

1. The facility owner shall provide LIHI with the results of the 2015 downstream bypass efficiency testing for juvenile blueback herring and continue consultation the USFWS and NYSDEC for the purpose of obtaining an updated assessment of the current fish passage effectiveness for that species at the facility. The result of Agency assessments may be: (a) that appropriate passage is being provided at the Project, (b) that effective fish passage effectiveness has not been demonstrated, or (c) that a recent decision has been made that passage at the site for juvenile herring is not needed, thus modifying the original commitments established in the Settlement Agreement and associated agency recommendations. If the 2015 testing is not found to be sufficiently effective and that downstream passage at the site is still required, then the owner shall inform LIHI of their plans to improve operations and continue testing. LIHI strongly recommends that all future testing be coordinated with the agencies to ensure they can participate in the testing. The results of the agency assessment of the 2015 studies shall be provided to LIHI within 60 days of their receipt by the Owner. Additional letters of correspondence from consultation with the USFWS and NYSDEC on these passage issues shall also be provided to LIHI within 60 days of receipt by the licensee. LIHI reserves the right to suspend its certification if the agencies do not determine that safe passage is being provided and that such passage needs have not been waived.
2. If a decision is made to pursue installation of the sixth, fish-friendly generating unit at the Project within the next five years, the facility owner shall notify LIHI within 60 days of when FERC approves such an installation. Such installation may lead to a re-evaluation of potentially affected criteria, such as fish passage requirements.

Condition #1 has not yet been satisfied. Details of the compliance status are discussed under Downstream Fish Passage. Condition #2 was eliminated in 2018 as the plan to add a sixth unit was cancelled.

## **II. RECERTIFICATION PROCESS AND MATERIAL CHANGE REVIEW**

Under the 2016 LIHI Handbook (rev 2.03, December 20, 2018), reviews are a two-phase process starting with a limited review of a completed LIHI application, focused on three questions:

- (1) Is there any missing information from the application?
- (2) Has there been a material change in the operation of the certified facility since the previous certificate term?
- (3) Has there been a change in LIHI criteria since the Certificate was issued?

In accordance with the Recertification Standards, if the only issue is that there is some missing information, a Stage II review may not be required. These standards also state that "material changes" mean non-compliance and/or new or renewed issues of concern that are relevant to LIHI's criteria. If the answer to either question (2) or (3) is "Yes", a more thorough review of the application using the LIHI criteria in effect at the time of the recertification application, and development of a complete Stage II Report, is required. As a result, all Projects currently applying for renewal must go through a full review unless their most recent certification was completed using the 2016 Handbook.

A review of the initial application, dated May 2019, resulted in a Stage I or Intake Report, dated July 1, 2019. This Stage I assessment indicated there were no "material changes" at the Project. The response to the Stage I Report was provided in the form of an updated application dated August 2019. The initial application was complete enough to be posted since only a limited amount of data was missing.

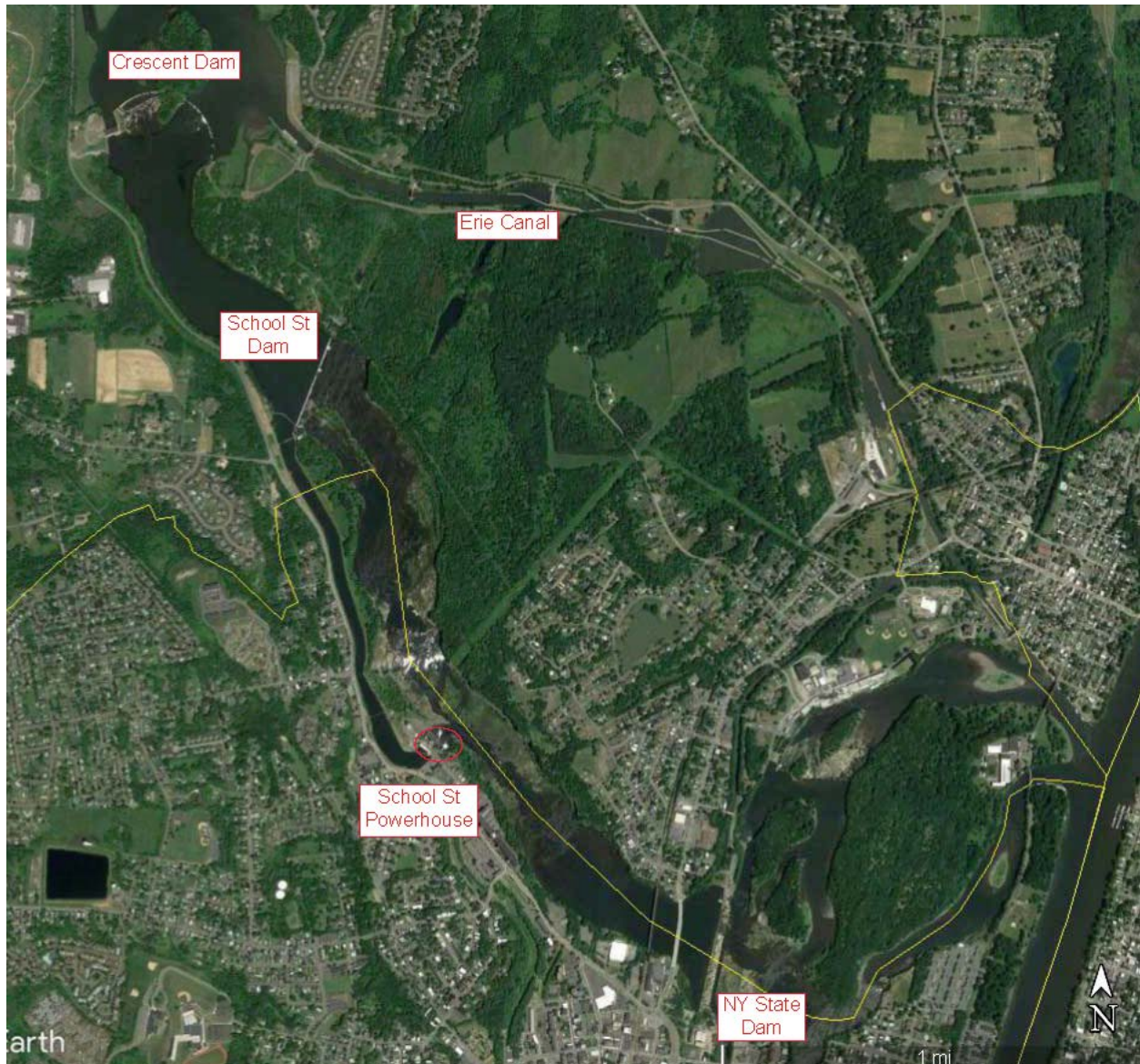
This Stage II assessment included review of the application package, communication with the Applicant's representative, supplemental information, public records in FERC's eLibrary since LIHI certification in 2014, and the annual compliance statements received by LIHI during the past term of Certification.

## **III. PROJECT'S GEOGRAPHIC LOCATION**

The School Street Project is located along the Mohawk River at the Cohoes Falls, in Cohoes, Albany County, New York, 2.5 miles upstream of the river's confluence with the Hudson River. The Mohawk River drains an area that is approximately 3,412 square miles in size. The river and its supporting canal, the Erie Canal, connect the Hudson River and port of New York with the Great Lakes at Buffalo, New York. The Cohoes Falls is reported to be from 70 to 90 feet tall, based on various website data, second only in New York to Niagara Falls. It is about 1,000 feet wide.

The lower part of the Mohawk River has five permanent dams, nine seasonal movable dams (at the canal locks), and five active hydropower facilities (including School Street). Vischer Ferry (P-4679) and Crescent (P-4678), both upstream of School Street, are owned/operated by the New

York Power Authority (NYPA). Downstream dams are the NY State Dam (P-7481) owned by NYSD Ltd Partnership, and Mohawk Paper Mills Inc (P3605), owned by Adirondack Hydro – Fourth Branch LLC. Both of these are operated by Boralex. The closest are the Crescent Project located approximately 0.8 miles upstream and the New York State Dam Project approximately 1.7 miles downstream. Figure 1 shows the location of the dams closest to the School Street Project.



**Figure 1 – Projects on the Mohawk River Near the School Street Project**

#### **IV. PROJECT AND IMMEDIATE SITE CHARACTERISTICS**

The School Street facility was constructed in 1831 and hydroelectric generation commenced in 1916, with additional generating units added in 1922 and 1925. The Project includes a 1,280-foot-long, 16-foot-high concrete-capped stone masonry gravity overflow type dam located about 4,000 feet above Cohoes Falls, that impounds a 100-acre reservoir with a normal maximum water surface

elevation of 156.1 feet U.S. Geological Survey (USGS) datum, and an adjacent 328-foot-long, 18-foot-high ice fender.

Water is diverted at the dam to a power canal, through which it is conveyed to a powerhouse just below Cohoes Falls. The canal headgate structure, or upper gatehouse, is constructed of reinforced concrete and masonry and is comprised of two major sections measuring approximately 206 feet long. The larger, easternmost portion incorporates nine vertical slide gates, each measuring 8.2 feet wide by 9.5 feet high and the smaller western portion incorporates three steel tainter gates each measuring 20 feet wide by 11 feet high. The spillway does not contain a low-level outlet; however, there is a canal gate just downstream of the upper gatehouse which is used to release minimum flow requirements to the bypass reach of the Mohawk River.

The upper gatehouse controls flow to a 4,400-foot-long, 150-foot-wide and 14-feet-deep power canal located along the west (right) bank of the river, conveying water to a 180-foot-wide bar rack structure equipped with 1-inch clear spaced trash racks. Water is then conveyed to the 152-foot-long lower gatehouse or penstock intake structure. The lower gatehouse is equipped with five steel headgates that measure 16 feet high by 21 feet wide. From the lower gatehouse, five 190-foot-long penstocks lead to the powerhouse housing five generating units with a total installed capacity of 38,800 kilowatts (kW). Downstream fish passage is provided by a fish-separation chamber and fish transport pipe which are located adjacent to the lower gate house.

The power canal, penstocks, and powerhouse bypass a reach of the Mohawk River that is over 4,500 feet long, and includes Cohoes Falls. Aquatic and aesthetic flows are provided at the dam and upper gatehouse via two PLC controlled inflatable flashboard systems and one PLC.

Figures 2 and 3 below are photographs of the dam and powerhouse, respectively. Figure 4 shows the key project features. The Project is operated as a run-of-river facility. When the Project is not operating, all flows are spilled from the dam. The Project provides a seasonal aquatic habitat minimum flow, or inflow, whichever is less, and an aesthetic flow of 500 cubic feet per second (cfs) into the Mohawk River bypassed reach.





**Figure 2 – School Street Dam and Bypass Reach**



**Figure 3 – School Street Powerhouse**

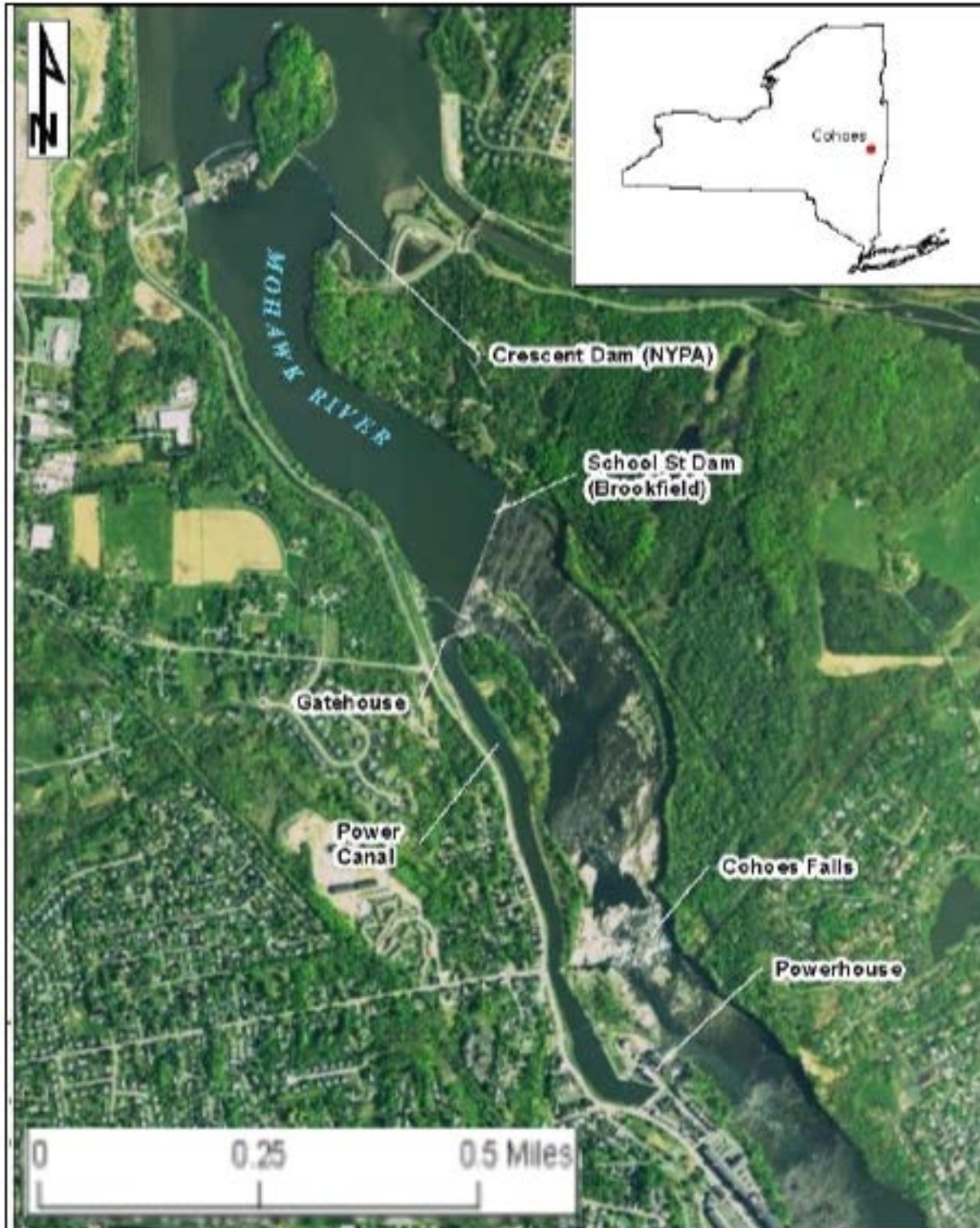


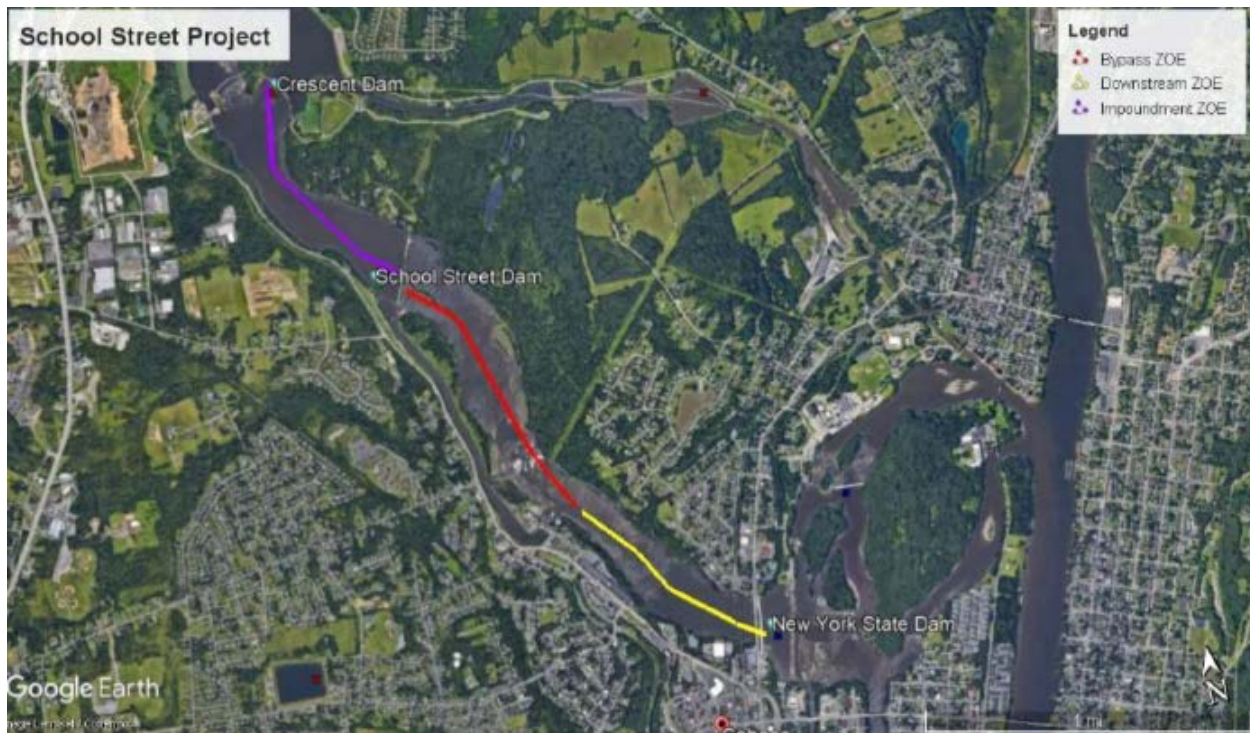
Figure 4 – Key Features of the School Street Project



## V. ZONES OF EFFECT AND STANDARDS SELECTED

Three Zones of Effect (ZOE) were appropriately designated by the Applicant. They are illustrated on Figure 5.

- ZOE #1 – Impoundment (purple)
- ZOE #2 – Bypass Reach (red)
- ZOE #3 – Tailrace and Regulated Reach (yellow)



**Figure 5 – Project Zones of Effect**

The following Tables show the selected Standards, which I believe are appropriate. Details of compliance with the criteria are presented in Section IX.

**ZOE #1 – Impoundment**

Criterion		Alternative Standards				
		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				

**ZOE #2 – Bypass Reach**

Criterion		Alternative Standards				
		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			

**ZOE #3 – Tailrace and Regulated Reach**

Criterion		Alternative Standards				
		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			



## **VI. REGULATORY AND COMPLIANCE STATUS**

The FERC issued an original license for the Project to Niagara Mohawk on June 11, 1969, with a term expiring on December 31, 1993. The licensing process for the School Street Project spanned many years. Niagara Mohawk, one of the previous owners, originally applied for a new license in 1991. On March 9, 2005, Erie Boulevard Hydropower, L.P. (Erie Boulevard), Niagara Mohawk's successor, filed a comprehensive Offer of Settlement (Settlement) with FERC. The Settlement Agreement included provisions for Project operation, increased power generation, compliance monitoring, fish passage facilities, aesthetic flows over Cohoes Falls, and recreation and cultural resource measures. The Settlement was signed by Erie Boulevard, USFWS, the National Park Service, NYSDEC, NY Power Authority, NY Rivers, NY State Conservation Council, and Rensselaer County Conservation Alliance. A new 40-year license was issued on February 15, 2007.<sup>1</sup> This license was challenged on procedural grounds by Green Island Power Authority who hoped to build a 100-megawatt hydro plant on the Mohawk River, downstream of Brookfield's School Street facility but just above the historic falls. On August 10, 2009, the U.S. Court of Appeals for the Second Circuit vacated the Commission's order issuing the 2007 license to School Street; however, the license was ultimately reinstated by FERC on April 15, 2010 and remains in effect. The license was amended on April 1, 2016 to revise the Project boundary in order to donate 3.38 acres of land as part of a larger land donation to the Hiawatha Institute to provide Indian tribes with access to the land for ceremonial purposes and to educate visitors about the cultural, spiritual and historical significance of the site.

A Water Quality Certificate (WQC) (WQ-4-0103-00027/0001) was issued by the New York Department of Environmental Conservation on October 10, 2006.<sup>2</sup> No changes to this WQC were issued as noted by Erie.

A review of the FERC database from November 20, 2014 through September 12, 2019 found one impoundment level deviation each in 2016 and 2017, although neither were determined to be license violations by FERC. My review also confirmed that no material changes in the facility design or operation have occurred since the previous LIHI review.

## **VII. PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI**

The deadline for submission of comments on the LIHI certification application was October 14, 2019. No comments were received directly by LIHI. I did not contact any agency representatives as correspondence available in FERC eLibrary clearly illustrated their position on key issues.

## **VIII. DETAILED CRITERIA REVIEW**

### **A. ECOLOGICAL FLOW REGIMES**

**Goal:** The flow regimes in riverine reaches that are affected by the facility support habitat and other conditions suitable for healthy fish and wildlife resources.

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<sup>1</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11258518>

<sup>2</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11152090>

### Assessment of Criterion Passage

The Applicant selected **Standard A-1, Not Applicable/De Minimis Effect** for the impoundment and Tailrace/Regulated Reach and **Standard A-2, Agency Recommendation** for the Bypass Reach since there are minimum flow requirements for this ZOE. Standard A-1 is appropriate for the impoundment as noted on Table B-2 of the 2018 LIHI Handbook, even though there are headpond limits at the Project. There have been no changes in requirements or in the mode of operation of the Facility since it was certified by LIHI.

In accordance with the section 3.1 of the Settlement and WQC Condition 8, the Project is operated as a run-of-river facility and limits impoundment fluctuation to 0.5-foot below the permanent dam crest elevation of 156.1 feet mean sea level (msl). NYSDEC and USFWS are notified whenever the 0.5-foot limit is exceeded for a duration of 30 minutes or longer; only drawdowns below 1.0 foot for 30 minutes or longer are reported to the FERC. Erie measures the impoundment level at the Project using impoundment remote gauging equipment upstream of the existing ice fender. The impoundment elevation is sampled and recorded every minute and an hourly average elevation is calculated and stored at the Hydro Control Center. The hourly elevation is recorded to the nearest 0.1 foot. Only two deviations have occurred since November 2014: 1) on November 1, 2016 due to the loss of SCADA communications caused by a software issue for about 2 hours; and 2) on January 10, 2018 for about three hours due to loss of flow resulting from icing problems at the upstream Crescent Project. FERC did not consider either of the impoundment elevation excursions to be license violations and no environmental issues were observed.

Regarding the bypass ZOE, when the Project is not operating, all flows are spilled from the dam. In accordance with section 3.3 of the Settlement and License Article 402, Erie provides an aesthetic flow of at least 500 cfs into the bypass reach to provide aesthetic flows over Cohoes Falls during daylight hours on weekends and Federal holidays from May 15 to October 31. In accordance with section 3.2.2 of the Settlement and WQC Condition 9, Erie also provides an aquatic habitat minimum flow, or inflow, whichever is less, into the Mohawk River bypassed reach via flow release structures on each end of the Project dam. These flow requirements differ seasonally:

Period	Cubic Feet per second (cfs)
Dec 1 to March 31	120
April 1 to April 14	135
April 15 to November 30	245

Since issuance of the 2014 LIHI Certification for the School Street Project, no minimum or aesthetic flow excursions have occurred.

The Settlement's aquatic habitat minimum flow requirements were established based on an Instream Flow Incremental Methodology (IFIM) study combined with a Delphi type exercise conducted in 2002 and 2003 among Erie, FWS, NYSDEC, and other NGO participants. The application included a detailed discussion of these studies, which is included in Appendix A. In 2016, USFWS requested a temporary increase in minimum flows to the fishway to 330 cfs for purposes of the studies, in an attempt to improve downstream fish passage via a larger attraction flow (see further discussion under Downstream Passage). In a follow-up email, Mr. Daniel Maguire P.E., Compliance Manager for Brookfield, reported the Project had been passing the 330

cfs, but that since the March 29, 2018 letter from USFWS, the Project has been passing the original licensed 132 cfs attraction flow at a minimum”, since USFWS stated “the fishway was effective for other species/life stages with a 2% attraction flow rather than a 5% attraction flow and the additional flow does not appear to help the juvenile blueback herring, the Service can concur with returning the attraction flow to 132 cfs (2%)”. (This letter can be found in Appendix D of the LIHI application.)

Based on this review and the lack of flow issues identified by any stakeholders, I believe the Project continues to satisfy this criterion.

*This Project Passes Criterion A – Ecological Flow Regimes*

**B. WATER QUALITY**

**Goal:** Water Quality is protected in waterbodies directly affected by the facility, including downstream reaches, bypassed reaches, and impoundments above dams and diversions.

**Assessment of Criterion Passage**

The Applicant selected Standard **B-2, Agency Recommendation** to pass this criterion as a WQC was issued on October 10, 2006. An email dated August 14, 2019 was provided in the application in which the Chief of the Major Project Management Unit of the NYSDEC indicated that the WQC is still valid. No changes have been issued to the WQC and no water quality concerns have been raised regarding the Project’s operations.

The 2016 State of New York 303(d) List of Impaired Waters does not identify the waters in the Project area as being impaired. However, NYSDEC lists numerous portions of the upper Mohawk River on its 2016 List of Priority Surface Waters.

Based on this information, I believe the Project has demonstrated compliance with, and continues to satisfy this criterion.

*This Project Passes Criterion B – Water Quality*

**C. UPSTREAM FISH PASSAGE**

**Goal:** The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy, sustainable fish and wildlife resources in areas affected by the facility.

**Assessment of Criterion Passage**

The Applicant has appropriately selected **Standard C-1, Not Applicable/De Minimis Effect** for all ZOE as the Cohoes Falls is a natural barrier for upstream passage by anadromous or catadromous species<sup>3</sup>. American eels are present in the Mohawk River and historically have been

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<sup>3</sup> Sean McDermott, USFWS, Northeast Regional Office Habitat Conservation Division notes on NOAA’s webpage that “Fisheries have long been an important resource on the Hudson River. Absent any manmade obstructions,



able to pass upstream through the Project area and over Cohoes Falls. FERC License Article 408 reserves the Commission's authority to require the Licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of fishways as may be prescribed by the Secretary of the Interior under Section 18 of the Federal Power Act. There are no License or WQC provisions for upstream passage for any species at this time and such passage has not been requested by any agency.

Blueback Herring have become established upstream of the Project, migrating upstream not over Cohoes Falls, but instead through the nearby Waterford Flight Canal boat locks system, and then dropping back downstream on the Mohawk River through the Project.

I believe the Project continues to satisfy this criterion at this time. If upstream passage does become a Project requirement within the next five years, Erie would be required to notify LIHI as part of the annual compliance report.

### *This Project Passes Criterion C – Upstream Fish Passage*

## **D. DOWNSTREAM FISH PASSAGE AND PROTECTION**

**Goal:** The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, the facility minimizes loss of fish from reservoirs and upstream river reaches affected by Facility operations. All migratory species are able to successfully complete their life cycles and to maintain healthy, sustainable fish and wildlife resources in the areas affected by the Facility.

### **Assessment of Criterion Passage**

The Applicant has selected with **Standard D-1, Not Applicable/De Minimis Effect** for ZOE #3, the Tailrace and Downstream Reach as there are no barriers once fish reach this ZOE and **Standard D-2, agency Recommendation** for the Impoundment (ZOE #1) and Bypass Reach (ZOE #2)

As noted above, upstream passage of anadromous species occurs via the nearby canal and not on the river itself. As a result of their presence, downstream fish passage protection measures were required via the Settlement, FERC license and the WQC and included: (1) screen the bypass flow release mechanism near the upper gatehouse (south end of dam); (2) install an angled bar rack upstream of the lower gatehouse with no more than 4-inch spacing between bars and a seasonal overlay with no greater than 1-inch spacing between bars for the period from April 15 to November 30 annually; and (3) install downstream fish passage pipe(s) and/or flumes near the angled bar rack. These fish passage measures were further developed subject to review and comment by the resource agencies and FERC approval, and were operational when first certified by LIHI in 2010.

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migrating fish were historically able to ascend up to Glen Falls, approximately 40 river miles upstream of the Federal Dam, the first dam on the river. On the Mohawk River, the first major tributary to the Hudson, migrating fish could reach Cohoes Falls, a natural barrier approximately 3 miles upstream of where the rivers come together. Under these natural conditions, the Albany, NY area was identified as important spawning grounds for alewife, blueback herring, shad, sturgeon, and other fish.

Effectiveness testing commenced in 2010 and, due to a variety of logistical reasons, was not completed until 2015. It appears that with the exception of juvenile blueback herring (jbbh), downstream passage of adult blueback herring, American eel and resident fish was determined to be effective by the USFWS<sup>4</sup>.

The testing for jbbh ran into difficulties, including lack of test specimens, difficulty in handling and tagging the specimens, and high flows in the river, and therefore was not conducted from 2010 through 2013. A hydroacoustic study in 2014 demonstrated very low use of the fishway by jbbh. The USFWS review suggested that the low effectiveness may be due to the inoperable condition of Unit 1, which is located closest to the fishway and was designed to serve as an additional attraction flow. To test this hypothesis, Brookfield repeated the testing in 2015 with Unit 1 operational. This testing showed zero use of the fishway by jbbh. In a July 20, 2016, letter to Brookfield, the USFWS concluded that the fishway was not effective at guiding and passing jbbh.

In response to a request by the USFWS in its July 2016 letter, Brookfield evaluated several options to improve passage survival, presented them in a letter dated January 30, 2017, and conducted follow-up discussions on June 14, and July 5, 2017, with USFWS and NYSDEC. Consensus was reached to conduct a 2018 desktop evaluation that included: 1) turbine passage (entrainment); and 2) passage immediately upstream of the canal gatehouse to convey jbbh into the bypass reach through an existing gate. Brookfield's assessment was that the study results indicated the favorable route of passage is entrainment through the turbines. USFWS and NYSDEC by letters dated March 29, 2018 and June 20, 2018, respectively, did not concur with the study conclusion, in part as they disagreed with several assumptions incorporated into the study, and the agencies proposed alternative options that could be investigated.

As noted in an August 16, 2019 letter to FERC, (which includes the above referenced agency comments and the 2018 study), Brookfield took the position that they felt they had satisfied their obligations of Article 401 of the FERC license and those set forth by the 2007 Effectiveness Study Plan.<sup>5</sup> On September 5, 2019 USFWS submitted a letter arguing that Article 401 had not been satisfied and suggested using a guidance system and plunge pool to provide passage or conducting balloon tag studies for spillway and turbine passage and/or evaluating why the existing fishway is not effective for jbbh.<sup>6</sup> On November 14, 2019 FERC issued a letter to Brookfield requesting additional information on Brookfield's reasons for excluding consideration of modifications to the existing fishway. A response is due from Brookfield by January 13, 2020.

In subsequent discussions between LIHI staff and Brookfield, Brookfield stated (see Appendix B) that they are committed to trying to reach a resolution with the resource agencies for the downstream passage of jbbh. Brookfield identified several potential alternatives including: 1) further empirical studies to evaluate turbine and/or spillway passage (including possible balloon tagging as suggested by USFWS); 2) installation of a guidance boom (either a physical barrier or an ultrasonic barrier) with a plunge pool as recommended by USFWS; 3) density monitoring coupled with decreased generation during peak migratory periods as is done at the downstream project; and 4) modifications to the existing passage structure. Resource agencies may suggest

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<sup>4</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15347785>

<sup>5</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15329935>

<sup>6</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15347785>

additional alternatives. As such, I recommend that a condition containing strict deadlines be imposed to ensure that sufficient progress is made toward resolution of this issue. Assuming this condition is ultimately satisfied, I believe the Project continues to conditionally satisfy this criterion.

*The Project Conditionally Passes Criterion D – Downstream Fish Passage and Protection*

**E. SHORELINE AND WATERSHED PROTECTION**

**Goal:** The Facility has demonstrated that sufficient action has been taken to protect, mitigate and enhance the condition of soils, vegetation and ecosystem functions on shoreline and watershed lands associated with the facility.

**Assessment of Criterion Passage**

The Applicant has appropriately selected **Standard E-1, Not Applicable/De Minimis Effect** to pass the Shoreline and Watershed Protection criterion for all Project ZOEs.

There has been no change in the Shoreline and Watershed Protection requirement of the Facility since it was certified by LIHI in 2014. No conservation buffer zone, watershed enhancement fund nor a shoreland management plan were required by the FERC License, Settlement Agreement nor the WQC for the School Street Project.

The application reports there are approximately 147 acres within the Project boundary, of which approximately 100 acres are impoundment. The west shoreline of the Project generally contains rural housing and industrial uses while the east shoreline is undeveloped, containing a mixture of deciduous and mixed forests, wooded and herbaceous wetlands and some pastures. No critical habitat for any federal or state endangered or threatened species has been mapped in the Project vicinity. Thus, it does not appear that Project lands include any areas of significant ecological value. Based on this review, I believe the Project continues to satisfy this criterion.

*The Project Passes Criterion E – Shoreline and Watershed Protection*

**F. THREATENED AND ENDANGERED SPECIES PROTECTION**

**Goal:** The Facility does not negatively impact federal or state-listed species.

**Assessment of Criterion Passage**

**Standard F-2, Finding of No Negative Effects** was selected for all ZOEs and sufficient data was provided to demonstrate compliance.

The application contained recent documentation from the USFWS showing that the only federally threatened species potentially in the Project area is the Northern long-eared bat, but that no critical habitat has been identified for this species. This bat is also listed as threatened by the NYSDEC, although it was not identified by the NYSDEC in their letter dated August 19, 2019 as being near the Project. A number of migratory bird species protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act were noted in the USFWS letter as possibly being



in the area, two of which, the bald eagle and short-eared owl are state-endangered and the Upland Sandpiper, which is state-threatened. A 2016 letter from the NYSDEC, New York Natural Heritage Program (Heritage Program) did not identify the Project area as Priority Habitat for any of these or other state protected species. A NYSDEC letter dated August 19, 2019, submitted to LIHI after the application, noted the presence of a bald eagle nest within one mile upstream of the Project. Two rare dragonflies, russet-tipped clubtail (*Stylurus plagiatus*) and midland clubtail (*Gomphurus fraternus*), considered “rare” in New York, were also noted as within one mile upstream of the Project.

The application noted no Project upgrades are currently planned. The need to coordinate with applicable state and federal agencies should significant clearing be required was communicated by the reviewer to Brookfield to ensure impacts to protected species would be reviewed prior to such work. It is assumed that all required agency consultations would be made prior to such activities and agency-required mitigation measures would be implemented.

Based on the above information, I believe the Project will not likely have any impact to protected species and therefore continues to satisfy this criterion. Should Project upgrades involving significant land clearing activities be undertaken during the next five years, the Applicant would be required to identify it as a “change in environmental conditions affecting the Project” as part of the annual compliance submittals to LIHI.

### *The Project Passes Criterion F – Threatened and Endangered Species Protection*

## **G. CULTURAL AND HISTORIC RESOURCE PROTECTION**

**Goal:** The Facility does not inappropriately impact cultural or historic resources that are associated with the Facility’s lands and waters, including resources important to local indigenous populations, such as Native Americans.

### **Assessment of Criterion Passage**

The Applicant has appropriately selected **Standard G-2, Agency Recommendation** to pass the Cultural and Historical Protection criterion for the Project for all ZOE.

In accordance with section 3.8 of the Settlement and License Article 403, a Historic Properties Management Plan (HPMP) was prepared in consultation with the National Park Service (NPS), the New York Office of Parks, Recreation and Historic Preservation (SHPO), and American Indian Nations. The HPMP includes consideration of: (1) continued tribal access to project land; (2) the placement of low-level diversion structures and minor channel modifications near the dam for the purpose of enhancing fish habitat; (3) preservation and rehabilitation of the Cohoes Company Dam, Upper Gatehouses, Canal, and Conboy Avenue iron bridge, which are listed as contributing elements to the Harmony Mills National Historic Landmark District<sup>7</sup> and preservation of the

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<sup>7</sup> The project area is entirely within the Harmony Mills National Historic Landmark (NHL) District; the dam, upper gatehouse, power canal, and iron bridge over the power canal at Conboy Avenue are specifically identified as contributing elements to the NHL, along with the Harmony Mills themselves and associated company-built workers’ housing. Portions of the project fall within the previously designated Harmony Mills National Register (NR)

National Register listed School Street powerhouse through continued use; and (4) protocols for consultation, monitoring, and treatment of any unidentified historic properties discovered during Project construction and operation. The plan was developed, and approved on January 23, 2008. As required in the Order, Brookfield has submitted annual reports to FERC on the HPMP status, with the latest submission on February 8, 2019. Appendix C includes a brochure outlining the Harmony Mills National Historic Landmark District.

Two issues were identified in the 2016 LIHI recertification report. The first involved confirmation of the preservation of the Conboy Avenue iron bridge, which is required by the HPMP, as it is a contributing element to the Harmony Mills National Historic Landmark (NHL) District. The approved HPMP allowed for the removal of the Conboy Avenue bridge which straddled the power canal. Reasons cited for the removal of the bridge included its poor, unsafe condition, and that the supports for the bridge, which extend laterally from the power canal wall into the body of the canal, impede the hydraulic flows through the canal. Approved canal excavation rendered the bridge's supports useless. At that time, it was to be given to the City of Cohoes. However, the City's plans changed, and they decided to no longer accept the bridge. Discussion with Daniel Maguire indicated that consultation with the National Park Service, the City of Cohoes Historic Preservation Board and other stakeholders was held in 2009, and several possibilities were identified. The commitment made at that time was that Erie would store the bridge onsite for two years while a new owner was being researched. No organization ultimately agreed to take the bridge, and Erie sold it to D.A. Collins, a civil construction group. The Applicant indicated that D.A. Collins may put the bridge on display as an example of bridge construction during that historical period, although that has not been confirmed at this time.

The second issue involved transfer of culturally sensitive lands important to local Indian Tribes which had not yet been resolved at the time of the last recertification. On August 31, 2015, Erie filed an application for amendment of the Project license in which it proposed to remove approximately 3.38 acres of land from the Project boundary to address these cultural resource desires. This change is in compliance with the intent of the HPMP. This land lies in a narrow strip along the Mohawk River, extending upstream and downstream of the Project's dam, on the east side of the river opposite the shore on which the powerhouse and related features are located. In its application, Erie stated that these lands are not necessary for the safe and effective operation of the Project, and that their removal from the Project boundary would not affect Project operations, public infrastructure, recreational use, or environmental resources. A FERC Order approving the removal of this land from the Project boundary was issued on April 1, 2016. FERC staff did not identify any historic properties or archeological resources within the APE (i.e., the 3.38 acres proposed for removal). This 3.38-acre parcel, along with just over 35 acres of other Applicant-owned land outside of the Project boundary, was transferred to the Hiaawatha Institute of Indigenous Knowledge (HIIK) and was supported by local Tribes. Supporting documentation was included in the application.

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District, and the Town of Colonie Multiple Resource Area (MRA). Unlike the NHL District, the Harmony Mills NR District is limited to properties within the City of Cohoes. For the purposes of the School Street Project, it includes the lower section of the power canal, lower gatehouse, and powerhouse. The Town of Colonie MRA includes the Cohoes Company dam, upper gatehouse, and upper portion of the power canal. The NHL nomination includes the entire waterpower system in both municipalities, but lists the lower gatehouse and School Street powerhouse as noncontributing elements because they fall outside Harmony Mills' period of national significance.

There has been no land disturbance in the past five years and Brookfield has no plans for such work in the foreseeable future, thus no new unidentified properties have been identified. I believe the Project continues to satisfy this criterion.

*The Project Passes Criterion G - Cultural and Historic Resource Protection*

## **H. RECREATIONAL RESOURCES**

**Goal:** The facility accommodates recreation activities on lands and waters controlled by the facility and provides recreational access to its associated lands and waters without fee or charge.

### **Assessment of Criterion Passage**

The Applicant has selected and demonstrated compliance with **Standard H-1, Not Applicable/De Minimis Effect** for the impoundment as there are no recreational facilities in this ZOE and **Standard H-2, Agency Recommendation** for the other two ZOEs.

There have been no changes to the recreational facility requirements for this Project since last certified by LIHI. The facilities required by Section 3.9 of the Settlement and License Article 404 required under the Recreation Management Plan, were opened in 2008, and since then, use has been monitored annually using electronic counters. All final Exhibit drawings for recreational features were finalized in March 2014. As reported in the application, the facilities are popular and in good condition and include interpretive signage and a footpath to the top of the falls with a viewing area, a canal footbridge, parking, and fishing access and viewing area at the base of the falls. To date, Erie has not received any comments or concerns related to the availability of the facilities, crowding at the site, or excessive wear and tear that would compromise public enjoyment of the facilities. The last FERC Form 80 monitoring and use report (required every 6 years) was filed in 2016 and Erie states it plans on filing one also in 2021, even though FERC, in December 2018, eliminated such requirements except for certain facilities. No FERC inspection has been conducted at the Project in the past five years based on FERC eLibrary records.

Based on my review, I believe the Project continues to meet the requirements of this criterion.

*The Project Passes Criterion H – Recreational Resources*

## **IX. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION**

Based on my review, I believe that this Project conditionally meets the requirements of a Low Impact facility and recommend it be re-certified for a five-year period with the following condition:

**Condition 1:** The Owner shall continue to seek resolution to challenges in downstream passage of juvenile blueback herring by:

- a) Contacting USFWS and NYSDEC within three months of recertification to schedule a meeting/conference call to occur within six months of recertification, pending agency



availability. The meeting purpose will be to discuss the alternatives previously identified by Brookfield and agencies, including cost estimates and pros and cons of each alternative; to discuss other potential alternatives; and if possible, to agree upon mutually preferred alternative(s) to be implemented or studied further. Questions or deficiencies in past studies identified by the agencies shall also be discussed and agreement reached on how they will be addressed in any new studies, if applicable. The Owner shall document the meeting in notes agreed to by all participants and submit a copy of all meeting materials and the notes to LIHI within one month of the meeting/call. If additional meetings are needed, the Owner shall schedule them to occur as soon as feasible to continue toward resolution of the issue.

- b) If agreement can be reached within one year of certification, the Owner shall prepare and submit to agencies, and to FERC upon agency approval, a detailed plan and schedule to complete the agreed upon study(ies) or implementation of alternative(s) as soon as feasible, which may be dependent upon the seasonal movement of juvenile herring. The Owner shall submit study report(s) for review by the resource agencies, and then promptly file them with FERC and LIHI, incorporating agency comments. If agreement on selected alternative(s) cannot be reached within one year of certification, The Owner shall document the reasons for lack of agreement and submit a plan to continue to seek resolution of the issue to LIHI.
- c) The Owner shall report quarterly to LIHI on the progress of this condition during the first two years of certification, and annually thereafter until either: 1) the Owner, USFWS, and NYSDEC agree that there is no feasible alternative to improve downstream passage for juvenile herring; or 2) a method of safe and effective downstream passage has been implemented and approved by resource agencies. LIHI reserves the right to reassess or revoke certification based on the information provided.

## **Appendix A**

### **Detailed Discussion of Minimum Flow Setting Activities**

*Excerpted from the 2019 application to LIHI made by Erie*

The Settlement's aquatic habitat minimum flow schedule is based on a Delphi type exercise conducted in 2002 and 2003 among Erie, FWS, New York DEC, and other NGO participants, the study included an evaluation of flow releases at the north and south flow release locations. Due to the morphology of the streambed, it was determined that a significant amount of riffle habitat located on the northern side of the bypassed reach could not be wetted solely by use of the south release gate, even at the highest flow releases. Therefore, the study participants determined that releases from a north location were needed to enhance the riffle habitat on the northern side of the bypassed reach. The participants found that releasing the flows discussed in Table 2 through the two release locations, in combination with the channel modifications, would maximize the wetted area in the upper portion of the bypassed reach without adversely affecting the scenic nature of Cohoes Falls.

The results of the Delphi exercise also confirm IFIM study results conducted for the same summer period. Based on the IFIM study results, benthic macroinvertebrate habitat increases dramatically as flows increase to 200 cfs, with additional minor increases at flows up to 300 cfs. Settlement participants determined the 245-cfs minimum flow under the Settlement would provide comparable benefits to flow levels recommended in the final EA for macroinvertebrates and fish during the spawning, growing, and rearing seasons. In addition to the benefits of the seasonal minimum flow provisions to fish and invertebrate habitat, the minimum flows during the summer months would provide more stable water temperatures and dissolved oxygen levels than existing conditions, because the larger volume of water would be less responsive to fluctuations due to atmospheric conditions.

During the winter period, study participants determined that the habitat for fish would change little, since most fish would be overwintering in the pools, which are relatively insensitive to changes in flows. On the other hand, some reduction in macroinvertebrate habitat would be expected as flows decrease from the summer level of 245 cfs to the winter season level of 120 cfs, because most of the reductions would occur in the shallower riffle areas. However, it is not expected that these habitat reductions would have much of an impact on the benthic resources or food supply for fish for several reasons. A flow release of 120 cfs would continue to wet the valuable riffle habitat located at the upper end of the bypassed reach along the northern shore, areas between the two large pools, and the higher gradient areas approaching Cohoes Falls. Any benthic invertebrate habitat that is desiccated during the winter period would be quickly colonized from populations upstream of the bypassed reach once flows are increased in the spring. Also, the reliance of the fish community of the bypassed reach on the benthic population as a food source would be less during the overwintering period due to slower metabolic rates and reduced feeding activity.

## **Appendix B**

### **Brookfield Email on Plans for Continuation of Downstream Fish Passage Discussions**



**From:** [Maguire, Danny](#)  
**To:** ["mfischer@lowimpacthydro.org"](mailto:mfischer@lowimpacthydro.org)  
**Subject:** School Street Recertification  
**Date:** Sunday, November 3, 2019 2:51:51 PM

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Maryalice,

I'm writing this email to summarize our conversation last week. Erie Boulevard Hydropower remains committed to working with the agencies, including the U.S. Fish and Wildlife Services to reach a resolution for the downstream fish passage at our School Street facility; especially as it pertains to the ongoing struggles with effective passage of Juvenile Blueback Herring.

We are currently evaluating the economic and operational viability of different options that may be employed. Potential options include further empirical studies to evaluate turbine passage, installation of a guidance boom (either a physical barrier or an ultrasonic barrier) with a plunge pool, density monitoring coupled with decreased generation during migratory periods, and modifications to the existing passage structure. There are many different aspects to consider, so at this point I can't tell you which path we will go down or if another more feasible option will present itself. We will aim to have a meeting with the USFWS and the NYSDEC within 6 months. The goal of the meeting will be to present our cost estimates for the various options, the pros and cons with each option in terms of risk and/or operational challenges, and our preferred solution.

Based on this, Erie still wishes to pursue recertification with the Low Impact Hydropower Institute with the understanding that a failure to work with the agencies may result in the revocation of the new certification.

Please let me know if you have any questions or concerns.

Respectfully,  
Danny

**Daniel Maguire, PE**  
Compliance Manager  
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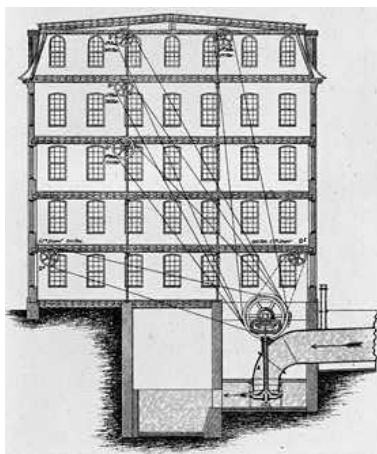
This message, including any attachments, may be privileged and may contain confidential information intended only for the person(s) named above. If you are not the intended recipient or have received this message in error, please notify the sender immediately by reply email and permanently delete the original transmission from the sender, including any attachments, without making a copy. Thank you.

## **Appendix C**

### **Description of the Harmony Mills Historic District**

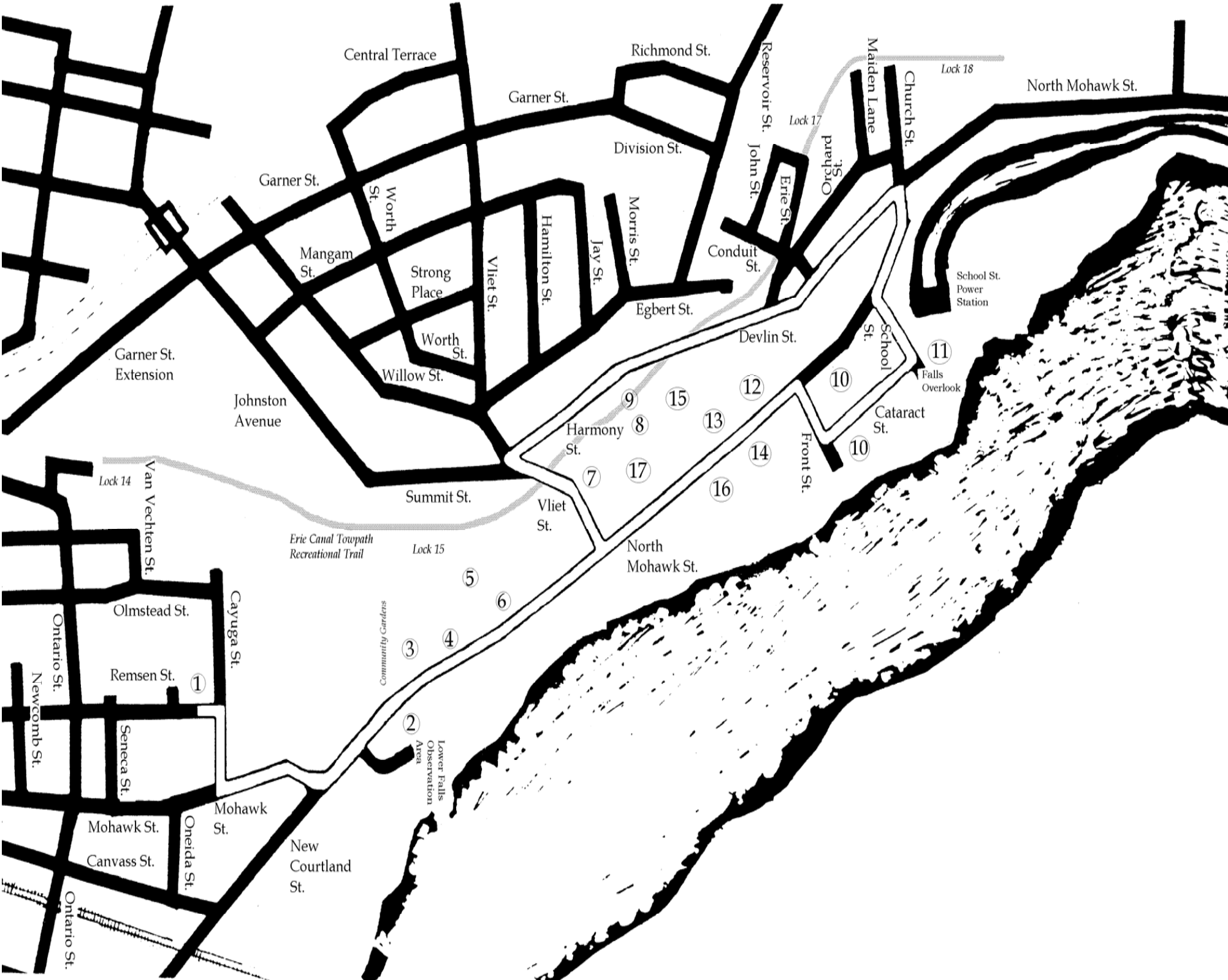
SELF GUIDED TOUR

HARMONY MILLS  
HISTORIC  
DISTRICT



Spindle City Historic  
Society

237-7999  
www.spindlecity.net



**1. Visitor’s Center/Cohoes Music Hall.** The Music Hall was constructed in 1874, and during its history featured many luminaries of the day, including Buffalo Bill Cody, John Philip Sousa, Col. Tom Thumb and his wife, and Cohoes’ own Eva Tanguay. After many years of neglect during the 20<sup>th</sup> century, the hall was carefully restored and re-opened in 1975. It has since been a venue for many dramatic and musical performances, and today is the home to the Eighth Step. The first floor is the Cohoes Visitor’s Center, home of the Spindle City Historic Society.

**2.** These buildings, constructed alongside the power canal, were probably built as worker housing, storage, and workshop space for the Cohoes Company.

**3. Fountain Place** was probably built as housing for mill supervisory level workers and their families.

**4.** This building was originally the **Van Benthuyzen paper mill**. After its purchase by the Harmony Mills Company, it was referred to as the “Bag Mill” or “Jute Mill”.

**5.** The northern end of **Harmony Mill #2** was completed in 1857. The southern section was completed in 1866. The foundation stones for the mill appear to be lock stones taken from the remains of a single chamber lock on the



original Erie Canal, which ran along the eastern side of Mill #2. The mill was damaged by fire in 1995 and subsequently demolished.

**6.** The Erie Canal, completed in 1825, first brought Cohoes to prominence as a canal town. After the canal was expanded and rerouted in the 1840s, this **remnant of the original Erie Canal** was used as a power canal for the Harmony Mills.

**7.** The **Harmony Mills Office and Sunday School** was constructed in 1854 soon after

the extension of the original Harmony Mill. Offices were located on the first floor, and the upper floor served as a meeting space for religious, social, and other company events.



**8. The original Harmony Mill**, built in 1837 by Peter Harmony, a New York City capitalist. It cost \$72,000 and contained 3,000



spindles. When the mill opened in 1837 it employed 250 – one out of every four Cohoes residents – who produced 1.5 million yards of print cloth that year. The business was sold in 1850 to Thomas Garner and Alfred Wild for \$1000. They installed Robert Johnston as

mill superintendent, beginning a 61-year period of success for the mills.

**9.** This is one of the double-chamber limestone **locks** (Lock #16) built in the 1840s as part of the expansion of the **Erie Canal**.

The single-chamber locks of the original ‘Clinton’s Ditch’ were replaced and the canal rerouted and increased in



width to seventy feet and in depth to seven feet from its original width of forty feet and depth of four feet. There were once 10 locks in the area within Cohoes city limits, numbered 9 to 18; most of these still exist. Lock 18, north of Church St., is on the National Register of Historic Places.

**10.** The Harmony Mills textile industries built and owned these brick houses and rented them to employees and their families. This **worker housing** was built with double masonry construction during the 1860s, in

the heyday of mill productivity. These sturdy brick buildings are still used as residences. More mill worker housing can be found in the blocks bounded by Vliet, Garner and Willow Streets, and on Devlin St.



**11. Cohoes Falls**, with its 70 ft. drop, is the largest cataract east of Niagara Falls. The falls propelled Cohoes to a leading position in the textile industry during the mid 19<sup>th</sup> century. Water over the falls powered the machinery of the Industrial Revolution, and is still exploited for hydroelectric power. When water is diverted for power, the falls dry and reveal the shale formations beneath. During periods of snowmelt or heavy rain, the falls are restored to a raging torrent.

**12.** Beginning in 1857, the **Cohoes Waterworks Pump House** captured Mohawk River water, diverted by power canals, into a series of reservoirs used for drinking water and fighting fires. The Pump House, still in operation, has as its foundation a lock from the original Erie Canal.

**13.** In the **Harmony Mill #1 Picker Room and Storage House**, cotton bales were stored, then picked through to remove debris and sent on to the next stage in the manufacture of cotton print cloth. This structure was also probably built atop a remnant of the original Erie Canal.

**14. Harmony Mill #3**, constructed in 1866,



became the model cotton mill in the U.S., and was frequently visited by cotton goods manufacturers from across the

country and overseas. An addition was built on Mill #3 in 1872, making it the country’s

largest complete cotton mill, at 1156 feet long, 75 feet wide, and five stories high. The building, as well as the other structures comprising the Harmony Mills complex, is a National Historic Landmark. While excavating to build the mill in 1866, the contractors dug into an ancient sinkhole that revealed the 11,000 year-old bones of a mastodon, which now stand at the entrance to the New York State Museum. The **marker** commemorating this



discovery is some 1,000 feet south of the actual site. A replica of the mastodon can also be seen in the Cohoes Library. This southern section also contains two of the original five **Boyden turbines** that powered this massive mill. The turbine room is

a National Historic Mechanical Engineering Landmark.

**15. Harmony Mill extension**, completed in 1853, was, along with the original Harmony Mill, collectively known as Harmony Mill #1.



**16.** This **Statue of Thomas Garner** is in an alcove above the entrance to Harmony Mill #3. Thomas Garner, from New York City, and Alfred Wild, of Kinderhook, formed a partnership and purchased the Harmony

Manufacturing Company in 1850. Garner bought out Wild’s share of the company in 1867.

**17. Heating Plant** for the mill complex, ca. 1911.

