REVIEW OF APPLICATION FOR RECERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE MAHONING CREEK HYDROELECTRIC PROJECT, LIHI #114

Prepared by Nicholas Funk

September 30, 2019

I. <u>INTRODUCTION</u>

This report summarizes the review findings of the application submitted by Mahoning Creek Hydroelectric Company, LLC a subsidiary of Cube Hydro (MCHC, Cube Hydro, or Applicant) to the Low Impact Hydropower Institute (LIHI) for recertification of the Mahoning Creek Project FERC P-12555 (Project). The Project was first Low Impact Certified by LIHI on June 18, 2014, effective November 14, 2013 as LIHI #114. The Project is located on Mahoning Creek in Armstrong County, PA, northeast of Pittsburgh, PA. The U.S. Army Corps of Engineers (USACE/Corps) own and operates the dam used by the Project.

The Project's 2014 LIHI Certificate had three conditions:

- 1. The Applicant shall cooperate and participate in any new studies of ecological flow requirements below the Mahoning Creek dam, especially those of the Sustainable Rivers Project by The Nature Conservancy and USACE. Further, within 60 days of notification of any new studies of ecological flows by others in Mahoning Creek, the applicant shall notify LIHI and submit a letter defining MCHC's commitment to participate in that study. MCHC shall report progress on the study to LIHI in its annual compliance letter.
- 2. The Applicant shall work with the USACE District office to investigate whether there is flexibility within the existing Water Control Manual to keep short-term dam releases at higher, more stable minimum levels. The applicant will report back to LIHI on progress in this topic in its annual compliance reports to LIHI. If such flexibility can be agreed to between and the Applicant, the Applicant shall implement improved minimum releases. Further, the Applicant shall provide a record of average daily flows from their powerhouse and from the Mahoning Creek dam with their annual compliance letter.
- 3. The Applicant shall contact FERC within 30 days of issuance of the certification and request final action on the Article 403 intake design, with documentation of the contact copied to LIHI within 45 days after certification. Documentation of FERC's response also copied to LIHI within 7 days of such action.

The first two conditions remain open. Status of these activities are discussed under the applicable criteria. The third condition was closed by LIHI staff in 2014 based on the annual compliance statement and condition status update report submitted by the Applicant.

There have not been any material changes at the Project during the term of the previous certification. However, there have been material changes in the LIHI criteria and certification process since the Project was last certified. This current review was made using the new 2nd Edition LIHI Certification Handbook (Revision 2.03, December 20, 2018).

Since the initial certification, the Project was recertified on June 18, 2014, effective November 14, 2013. On July 31, 2019 LIHI received a complete application for recertification of the Project.

This Stage II assessment included review of the application package, supplemental information provided by the Applicant, public records in FERC's eLibrary since LIHI last reviewed the Project for certification in 2013, and the annual compliance statements received by LIHI during the past term of certification.

II. <u>PROJECT'S GEOGRAPHIC LOCATION</u>

The Project is located in the Mahoning Creek Watershed. Mahoning Creek (Figure 1), a major tributary of the Allegheny River, originates in west-central Pennsylvania. Mahoning Creek, from its headwaters to its confluence with the Allegheny River, is approximately 62 miles long. The Project is located 23 miles upstream from the confluence with the Allegheny River.

The Project lies in the Pittsburgh Low Plateau, which consists of a smooth, undulating upland surface cut by numerous, narrow, relatively shallow valleys. The uplands are developed on rocks containing bituminous coal. The local relief on the uplands is generally less than 200 feet. Local relief between valley bottoms and upland surfaces may be as much as 600 feet. Valley sides are usually moderately steep except in the upper reaches of streams where the side slopes are fairly gentle. Elevations range from 660 to 1,700 feet.



Figure 1 – Mahoning Creek Project Geographic Location Map

III. PROJECT AND IMMEDIATE SITECHARACTERISTICS

The Mahoning Creek dam is one of 16 flood control projects in the Corps Pittsburg District providing flood protection to the lower Allegheny River Valley and the upper Ohio River. The Corps operates the dam generally in a modified run-of-river mode to augment flow during dry periods to improve downstream water quality and for domestic, industrial and recreational uses. The Corps manages the summer pool elevation at 1,097 feet mean sea level (msl) \pm 0.5 feet, and during the fall, the pool level is lowered to elevation 1,075 feet msl to provide a flood reserve.

The existing dam, reservoir, and appurtenant facilities were constructed by the Corps beginning in 1939 and became operational in 1941. The dam was designed with two conduits built into the south abutment of the dam for future hydropower development. The Corps facilities consist of: a 162-foot-high, 926-footlong dam with a 192-foot-long spillway section equipped with five 29-foot-high, 30-foot-long vertical lift gates, impounding a 5-mile-long, 280-acre reservoir with a normal pool elevation of 1,077 feet msl; and a 192-foot-wide, 950-foot-long stilling basin connected to a 180-foot-long flat crested stilling basin weir.

The Project uses the existing Corps dam and additionally consists of (Figures 2 and 3):

- a 50-foot-high intake structure attached to the upstream face of the dam, equipped with removable trash racks (with 1-inch spacing), dewatering bulkhead panels, and a vertical slide gate;
- a lining on an existing (currently plugged), 108-inch-diameter conduit through Mahoning dam monolith No. 15;
- a buried 1,090-foot-long, 120-inch-diameter penstock on the left (south) bank, bifurcating into two 110-foot-long, 96-inch-diameter penstocks;
- a powerhouse located approximately 100 feet downstream of an existing stilling basin weir containing two Kaplan turbine generator units with a total installed capacity of 6.0 MW;
- a 40-foot-wide, 150-foot-long, 10-foot-deep tailrace; and
- a 2.2-mile-long, 25-kilovolt transmission line; a 100-foot-long bridge spanning a small stream connected to a 0.5-mile-long access road.

The Project has an estimated annual generation of 18,500 megawatt-hours.



Figure 2 – Mahoning Creek Project Layout



Figure 3 – Mahoning Creek Hydroelectric Project

IV. ZONES OF EFFECTAND STANDARDS SELECTED

Three Zones of Effect (ZOEs) were designated by the Applicant and were determined to be appropriate. Their locations are shown in Figure 4.

- Zone of Effect #1 is the impoundment and defined by the Applicant as extending from the Project dam to approximately 1,000 feet upstream.
- Zone of Effect #2 is the bypassed reach located just below the Project dam and defined by the Applicant as extending from the dam past the stilling basin to where the bypassed reach waters join the Project outflow, approximately 1,150 feet downstream from the dam.
- Zone of Effect #3 is located downstream of the bypassed reach and defined by the Applicant as extending from where the bypassed reach waters join the Project outflow to approximately 2,250 feet downstream where the Mahoning Creek narrows near the Camp Run Railroad Car Bridge.



Figure 4 – Mahoning Creek Project Zone of Effects

The following tables show the Standards selected for each criterion for the three ZOEs. The review found that the standards selected are appropriate. Details of compliance with the criteria are presented in Section VII.

		Alternative Standards				
Criterion		1	2	3	4	Plus
Α	Ecological Flow Regimes	X				
В	Water Quality		X			X
С	Upstream Fish Passage	X				
D	Downstream Fish Passage		X			
Е	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection	X				
G	Cultural and Historic Resources Protection		x			X
Η	Recreational Resources	X				

ZOE #1 – Mahoning Creek Project Impoundment

ZOE #2 – Mahoning Creek Project Bypassed Reach

		Alternative Standards				
Criterion		1	2	3	4	Plus
Α	Ecological Flow Regimes		X			
В	Water Quality		X			Х
С	Upstream Fish Passage	x				
D	Downstream Fish Passage	X				
Ε	Watershed and Shoreline Protection		X			
F	Threatened and Endangered Species Protection	х				
G	Cultural and Historic Resources Protection		X			X
Η	Recreational Resources		X			

ZOE #3 – Mahoning Creek Project Downstream Reach

		Alternative Standards				
Criterion		1	2	3	4	Plus
Α	Ecological Flow Regimes	X				
B	Water Quality		X			X
С	Upstream Fish Passage	X				
D	Downstream Fish Passage	X				
Ε	Watershed and Shoreline Protection		X			
F	Threatened and Endangered Species Protection	х				
G	Cultural and Historic Resources Protection		X			X
Η	Recreational Resources	X				

V. <u>REGULATORY AND COMPLIANCE STATUS</u>

FERC License

On March 4, 2011, the Federal Energy Regulatory Commission (FERC) issued an order granting an original license to construct, operate, and maintain the Project. The FERC license was issued for a period of 50 years with an expiration date of February 28, 2061. The Applicant is required to adhere to the license articles and any mandatory terms and conditions filed by state and federal resource agencies.

Water Quality Certification

On October 30, 2009, the Applicant applied to the Pennsylvania Department of Environmental Protection (PADEP) for certification for the Mahoning Creek Project. PADEP received this request on November 2, 2009 and did not act on the application within one year. Therefore, the certification is deemed waived. However, on February 19, 2013, after issuance of the Project license, PADEP issued Water Obstruction and Encroachment Permit No. E03-451. Subject to several general and specific conditions, the permit certifies construction and operation of the Project as compliant with the federal Clean Water Act and applicable state water quality standards.

By letter dated June 6, 2017, the Applicant filed a request with PADEP to amend the Project's Water Obstruction and Encroachment Permit. The requested amendment was approved by PADEP in a letter dated September 26, 2017. The Applicant's letter request to PADEP and PADEP's response letter formally amending the Section 401 permit are included in the Applicant's September 28, 2017 FERC request to modify license Article 402¹.

Regulatory Compliance

A review of the FERC database (eLibrary) from June 1, 2014 through August 2019 found the following:

- Deviations from normal dissolved oxygen (DO) levels were reported by the Applicant to FERC as required, in June/July 2014 during the first summer season of operations; in October 2014 after a lengthy period of low inflow; briefly in August 2016; and again in October 2017. In all of these cases the Applicant took the necessary measures, increased generating and bypass flows, and initiated and coordinated with the Corps to limit non-compliance to short time periods (often less than 30 minutes), FERC did not consider any of the deviations to be violations of the Project license.
- Deviations from normal water temperature levels were reported by the Applicant in April/May 2015, December 2015, February 2016, May 2018, and January/February 2019. In all of these cases the Applicant either took the necessary measures, decreased generation, and coordinated with the Corps to limit non-compliance to short time periods; or noted that natural conditions resulted in the deviations, FERC did not consider any of the deviations to be violations of the Project license.

¹ <u>20170928-5176</u>

VI. <u>PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI</u>

The application was posted for public comment on July 31, 2019 and the notice was forwarded to agencies and stakeholders listed in the application. The deadline for submission of comments on the LIHI certification application was September 29, 2019. Feedback was received from Robert M. Anderson, Assistant Field Office Supervisor, USFWS who indicated that the agency had no comments (Appendix A).

With no material changes since the last certification and the Project's limited footprint, no additional outreach was conducted as part of this review.

VII. 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.

Assessment of Criterion Passage:

The Applicant has appropriately selected **Standard A-1**, **Not Applicable/De Minimis Effect** for ZOE #1, the impoundment, and ZOE #3, the downstream reach. The Applicant has appropriately selected **Standard A-2**, **Agency Recommendation** for ZOE #2, the bypassed reach.

During the 2014 certification of the Mahoning Creek Project, the major issue at the Project relative to LIHI certification was whether it passed the LIHI Flows criterion. With the Project being a nonfederal hydropower development at an existing federal, nonpowered dam, the Project is constrained to use dam releases that are consistent with the existing Corps operating rules. Available data at the downstream U.S. Geological Survey gage and information obtained from the Corps suggests that Mahoning Creek dam releases sometimes drop below minimum flows that would satisfy either the Tennant or New England Base Flow standards.

The Corps has worked with federal and state resource agencies, as well as the Nature Conservancy (TNC), to develop environmentally acceptable operating protocols at many of its dams nationwide. TNC and the Corps have announced that Corps reservoirs in the upper Allegheny river basin, including Mahoning Creek, would be added to their joint Sustainable Rivers Project, and that studies that could lead to improved ecological flow requirements at these reservoirs would be initiated.

The 2014 certification of the Project resulted in two conditions with regard to the flows criterion, these are listed in the **Introduction** section of this report. Both conditions are ongoing and discussed below.

In a letter from the Applicant to LIHI dated February 5, 2019, the Applicant expressed their

continued willingness to participate in any planned ecological flow study with Corps and TNC (**Condition #1**). In addition, the Applicant notes that they have had multiple discussions with the Corps about keeping short-term dam releases at higher minimum levels, with limited subdaily water level fluctuations below the powerhouse (**Condition #2**). Currently, the Corps is unable to increase minimum flows under their current Water Control Manual. The Corps position regarding this issue is detailed in the Applicant's 2016 Annual Compliance Report. As noted in the report, the Corps informed the Applicant that it is planning to work with TNC and other stakeholders to develop and implement Project-specific environmental flow prescriptions for Mahoning Creek within the next few years.

The Applicant is monitoring the status of this initiative and plans to reinitiate conversations with the Corps at the appropriate time.

The Project impoundment is still managed to meet Corps elevation targets, and flow releases are scheduled by the Corps. Article 401 of the FERC license requires continuing the run-of-release operation using flows scheduled by the Corps. The Corps water management protocols have not changed since the original certification of the Project. As a result, the Project has no effect on the flows in the downstream reach.

Minimum flow releases to the bypassed reach are specified in the Mahoning Creek Water Quality and Aquatic Life Adaptative Management Plan (AMP), see LIHI Project webpage, 2014 Certification files.² The AMP was developed by the Corps in conjunction with the Applicant and PADEP. The AMP requires minimum discharges to the bypassed reach as follows:

- 30 cfs from April 1 to June 14 and September 16 through October 31
- 60 cfs from June 15 to September 15
- 40 cfs from November 1 to March 31

Based on my review of the application, supporting documentation, and publicly available information, the Project is in compliance with flow requirements, other than the limited minor deviations, and thus continues to satisfy the Ecological Flow Regimes criterion.

The 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 appropriately selected **Standard B-2**, **Agency Recommendation**, for all ZOEs. The Applicant also selected **Standard B-PLUS** for all ZOEs.

² <u>https://lowimpacthydro.org/lihi-certificate-114-mahoning-creek-hydroelectric-project-pa/</u>

Water quality impacts are controlled by the Corps Water Quality and Aquatic Life Adaptive Management Plan (AMP). Implementation of the AMP through a water quality monitoring plan is required by Article 402 of the Project's FERC license and Special Condition F of the PADEP Water Obstruction and Encroachment Permit No. E03-451. The AMP was developed in consultation with the Corps, PADEP and the Pennsylvania Fish and Boat Commission (PAFBC). The AMP incorporates numerous resource agency recommendations and documents the scientific basis for those recommendations. In accordance with License Article 402, the Applicant submits an Annual Water Quality Summary Report³.

The AMP defines water quality requirements for dissolved oxygen (DO), temperature, and total dissolved gas (TDG) that are beyond the state water quality standards requirements. Requirements are based on worst case pre-hydropower conditions and the Corps (and presumably PADEP's) principal of non-degradation. The AMP also prescribes actions that must be taken in the event of a deviation from the standards. If water quality parameters are detected outside of ranges prescribed in the AMP, bypass flows are increased, and/or flows through the turbine reduced, until the parameters return to the prescribed ranges.

In accordance with the AMP, the Applicant operates real-time, continuous water quality monitors in the following locations:

- Mahoning Creek Lake (impoundment). The sensors are installed at a depth of 24 feet below the normal full summer pool elevation (1,097 feet msl)
- Dam stilling basin (bypassed reach)
- Downstream of hydropower outflow (downstream reach)

In 2017, the Applicant worked with the Corps, PADEP and PAFBC to make minor modifications to the AMP.⁴ The modifications were based on a review of operational and water quality data from the initial years of Project operations and were designed to allow additional hydropower generation without any additional degradation of the water quality resource. The changes are as follows:

- Remove the monthly/bi-monthly reservoir temperature standard.
- Remove the stilling basin monthly/bi-monthly temperature standard.
- Modify the downstream temperature standard to be the greater of the existing monthly/bimonthly temperature standard or the stilling basin temperature (representative of dam discharge temperatures) plus 1-degree Fahrenheit.
- Utilize 30-minute rolling averages instead of instantaneous readings to determine compliance with all water quality standards.

Based on my review of the application, supporting documentation, and publicly available information, the Project is in compliance with water quality requirements, other than the limited minor deviations, and thus continues to satisfy the Water Quality criterion.

³ 2018 Annual Water Quality Summary Report

⁴ <u>https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14695957</u>

Standard B-PLUS

Standard B-PLUS requires satisfying one of the **Standard B** criteria (i.e., Standard G-2, Agency Recommendation) and either deploying advanced technology to enhance ambient water quality or operating an adaptive management program to regularly evaluate the operation of the facility with respect to enhancing water quality. As noted above an adaptive management program is in place that exceeds regulatory requirements and water quality is monitored to ensure that the Project's water quality remains high.

Based on my review of the application, the Applicant operates the Project under an adaptive management program for water quality and thus meets the **Standard B-PLUS** classification for all ZOEs.

The 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 appropriately selected **Standard C-1**, **Not Applicable/De Minimis Effect** for all ZOEs.

There are no migratory or riverine fish passage prescriptions for Mahoning Creek nor are there any reservations of authority to prescribe passage in the existing license. The river is a headwater stream in the Ohio River basin; the Ohio River is a major branch of the Mississippi River. Mahoning Creek did not historically support migratory fish. There are no historic records of catadromous or anadromous fish movement through the Project area.

ZOE #1 is in the Project impoundment upstream of the Project dam, and therefore the ZOE does not present a barrier to upstream fish passage. Both ZOE #2 and ZOE #3 are located downstream of the Project dam where there are no anadromous or catadromous fish present.

Based on my review of the application, supporting documentation, and publicly available information, the Project has no effect on upstream fish passage and continues to satisfy the Upstream Fish Passage criterion.

The 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 appropriately selected **Standard D-2 Agency Recommendation** for ZOE #1 (the impoundment) and **Standard D-1, Not Applicable/De Minimis Effect** for ZOEs #2 (bypassed reach) and #3 (downstream reach).

Fish studies conducted by the Corps and PAFBC have documented the presence of 48 different fish species in the Project area. In the summer of 2007, the Applicant conducted fish surveys in the Project area and found a total of 39 fish species, all of which were included in the list of 48 species identified by the Corps and PAFBC studies. None of the observed species are listed as state or federally threatened or endangered, and all commonly occurred in the Ohio River watershed. In addition, there are no historic records of catadromous or anadromous fish movement through the Project area.

In FERC's Supplemental Environmental Assessment (EA) (October 20, 2010), FERC staff estimated that the passage survival of fish entrained at the Project would likely exceed 90 percent for the proposed turbines; however, staff concluded that the intake structure design, including trash racks with a 1-inch clear spacing and approach velocities of no greater than 1 foot per second, would limit entrainment and adequately protect the upstream fish community. To ensure that the intake structure was designed appropriately to protect fisheries resources, Article 403 required the Applicant to prepare an intake structure design plan in consultation with the Corps and for Commission approval (**LIHI Condition #3**). By letter dated October 19, 2012, the intake design was filed with FERC. On July 15, 2014, FERC issued an Order Approving Intake Structure Design Plan Pursuant to Article 403⁵.

Although there are no historic records of catadromous or anadromous fish movement through the Project area the Applicant agreed to ensure that the intake structure in ZOE #1 was designed appropriately to protect fishery resources. Both ZOEs #2 and #3 are downstream of the Project dam, and therefore the ZOEs do not present a barrier to downstream fish passage. In addition, minimum flows provided in the bypassed reach provide a downstream passage route.

Based on my review of the application, supporting documentation, and publicly available information, the Project continues to satisfy the Downstream Fish Passage and Protection criterion.

The Project Passes Criterion D – Downstream Fish Passage and Protection

⁵ <u>148 FERC ¶ 62,045</u>

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 appropriately selected Standard E-1, Not Applicable/De Minimis Effect for ZOE #1 and Standard E-2, Agency Recommendation for ZOE #2 and ZOE #3.

The Project boundary contains 9.88 total acres of land, 1.80 acres is owned and managed by the Corps and 8.08 acres is private. Article 404 of the FERC license required a Wetland Protection Plan that included avoidance and protection measures for wetlands located near Project construction activities. A Natural Resource and Wetland Study (Hull and Associates, 2007) was conducted by the Applicant in support of Project licensing, which identified three wetlands located outside of the construction areas that would be potentially affected by construction activities. The Wetland Protection Plan, approved by FERC Order on December 7, 2012, required various erosion control and restoration measures.

ZOE #1 is surrounded by a forested buffer managed by the Corps and over which the Applicant has no control. The Corps also controls impoundment discharge and elevation levels; thus, the Applicant has no impact on shoreline and watershed protection in ZOE #1.

The Applicant follows agency recommendations for ZOE #2 and ZOE#3. The mitigation measures required by the Wetland Protection Plan, detailed above, are applicable to ZOE #2 and ZOE #3, as these ZOEs include areas affected by construction activities. In addition, permanent protection measures for wetlands and waterways required by and identified in the Wetland Protection Plan include preservation of wooded areas along the entire length of the Project "from Mahoning Dam to the end of the access road to the west", which includes ZOE #3.

Based on my review of the application, supporting documentation, and publicly available information, the Project is in compliance with requirements and continues to satisfy the Shoreline and Watershed Protection 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:

The Applicant appropriately selected **Standard F-1**, **Not Applicable/De Minimis Effect** for all ZOEs.

As part of the licensing and permitting process, the Applicant evaluated the potential for the Project to negatively impact threatened and endangered species. A natural resource and wetland study was completed in order to determine the potential for listed species to occur in the Project area. The study included a search of the Pennsylvania Natural Diversity Inventory (PNDI) to identify known endangered species in the Project area and a review of the USFWS's Federally Listed, Proposed, and Candidate Species in Pennsylvania. In addition, a freshwater mussel and fish survey was completed. These studies indicated that the Project would have no significant impact on any threatened or endangered species.

Although there is potential Indiana bat non-hibernation habitat located at the Project, it is located across the creek from the Project site. In the FERC Environmental Assessment dated March 23, 2010, staff concluded that the Project is not likely to adversely affect the Indiana bat. The U.S. Fish and Wildlife Service (FWS) concurred with this finding by letter filed May 10, 2010. The same conclusion can be drawn about the Northern long-eared bat.

An August 29, 2019 check of FWS IPaC online mapping (<u>https://ecos.fws.gov/ipac/</u>) for the Project area shows these federally threatened species, but no critical habitats for them are present.

- Indiana bat
- Northern long-eared bat

PAFBC indicated in a letter dated April 2, 2014 to LIHI that it is unaware of any listed species affected by the Project. The Pennsylvania Natural Heritage online mapping tool (<u>http://conservationexplorer.dcnr.pa.gov/content/map</u>) was searched as part of this review on September 9, 2019, and no state-listed species were noted in the Project area.

Based on my review of the application, supporting documentation, and publicly available information, the Project has no impact on threatened or endangered species and thus continues to satisfy the Threatened and Endangered Species criterion.

The Project Passes Criterion F – Threatened and Endangered Species Protection

G. CULTURAL AND HISTORIC RESOURCE PROTECTION

Goal: The facility does not unnecessarily 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 appropriately selected **Standard G-2**, **Agency Recommendation**, for all ZOEs. The Applicant also selected **Standard G-PLUS** for all ZOEs.

License Article 406 requires the Applicant to implement a Programmatic Agreement (PA)

executed on November 16, 2010, between the Commission and the State Historic Preservation Officer (SHPO). The SHPO required the licensee to develop a Historic Properties Management Plan (HPMP) that provides for the consideration, management, and protection of both known and newly discovered historic properties during construction, operation, and maintenance of the Project. The HPMP was to be filed within one year of license issuance (by March 3, 2012) for FERC approval. The plan was approved by FERC order dated January 7, 2013.

The HPMP further requires the licensee to file annual reports with FERC and the SHPO that summarizes ground-disturbing activities performed in accordance with the HPMP. The Applicant filed its annual reports. The annual reports from 2015 to present indicate no ground-disturbing activities occurred that would be subject to the HPMP.

Based on my review of the application, supporting documentation, and publicly available information, the Project is in compliance with its requirements and continues to satisfy the Cultural and Historic Resource Protection criterion.

Standard G-PLUS

Standard G-PLUS requires satisfying one of the Standard G criteria (i.e., Standard G-2, Agency Recommendation) and showing a substantial commitment to restoring one or more significant cultural or historical resource in the vicinity beyond what is required in existing plans, such as a Historic Properties Management Plan; or by creating a significant new educational opportunity about cultural or historical resources in the area, and formally committing as a condition of its LIHI Certification that this opportunity will exist for the duration of the LIHI Certification.

Since construction of Mahoning Creek in 2013, Cube Hydro has annually conducted a paid Summer Internship Program (SIP). The program was born out of Cube Hydro's partnership with Pennsylvania State University, the user of 100% of the electricity, capacity, and Renewable Energy Certificates (RECs) produced at the Project. Since then, Cube Hydro has expanded the SIP to students from universities across the United States.

Through the SIP, Cube Hydro provides real-world experiences that cover topics such as energy project management, cultural and historic resource compliance, finance, environmental monitoring, sensors and controls of water flow to optimize electrical generation, energy economics, environmental policy and law, and sustainability. Additionally, Cube Hydro provides opportunities for tours of the Mahoning Creek Hydroelectric Project for Penn State University students (and others) as a means of connecting communities to their local sources of power, demonstrating the value of hydroelectricity, and showcasing the utilization of this unique natural resource.

Based on my review of the application, the Applicant provides significant new educational opportunities and thus meets the **Standard G-PLUS** classification for all ZOEs.

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 appropriately selected **Standard H-1**, **Not Applicable/De Minimis Effect** for ZOE #1 and Zoe #3 and **Standard H-2**, **Agency Recommendation** for ZOE #2.

After conducting the 2008 Recreation Study Report, which identified the primary desired recreational improvements at the site, including handicap accessibility and a new accessible pier, the Applicant constructed an Americans with Disabilities Act (ADA) compliant fishing pier on the north shoreline of the stilling basin in ZOE #2. Article 405 of the Project license required that the licensee develop and implement a Recreation and Aesthetics Plan (RAP). The RAP, which was approved by FERC in an order dated May 15, 2012, required the Applicant to install an interpretive display and construct the fishing pier compliant with the ADA guidelines for fishing piers. Construction of the fishing pier and installation of the interpretive display were completed on February 11, 2015.

The lands and any recreational opportunities within ZOE #1 and ZOE #3 are managed by the Corps and the Project does not impact recreational opportunities in these ZOEs.

Based on my review of the application, supporting documentation, and publicly available information, the Project is in compliance with its requirements and continues to satisfy the Recreational Resources criterion.

The Project Passes Criterion H – Recreational Resources

VIII. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION

Based on my review, I believe the Project conditionally meets the requirements of Low Impact facilities and recommend it be recertified for a ten-year period which includes an extra five years for the water quality and cultural and historic resources PLUS standards. The Certification should continue to contain Condition #1 and Condition #2 noted in Section I, slightly rewritten below, through the next certification period.

Condition 1: The facility Owner shall continue to cooperate and participate in any new studies of ecological flow requirements at the Project and provide copies of any study reports and related consultation to LIHI in annual compliance statements.

Condition 2: The facility Owner shall continue to work with USACE to investigate possible flexibility in the existing Water Control Manual to keep short-term dam releases at higher, more stable minimum levels. If such flexibility can be agreed to between USACE and the Owner, the Owner shall implement improved minimum releases.

APPENDIX A

Stakeholder Letters and Other Key Correspondence

 From:
 Anderson, Robert

 To:
 mfischer@lowimpacthydro.org

 Subject:
 Re: [EXTERNAL] FW: Pending Application: Recertification of Mahoning Creek Project, LIHI #114, PA

 Date:
 Tuesday, August 13, 2019 3:05:09 PM

Hello Ms. Fischer,

Thank you for the opportunity to review the Mahoning Creek Project in Armstrong County, PA. The Fish and Wildlife Service Pennsylvania Field Office has no comments regarding this project.

Sincerely,

Robert M. Anderson Assistant Field Office Supervisor U.S. Fish & Wildlife Service Pennsylvania Field Office 110 Radnor Rd; Suite 101 State College, PA 16801

phone: 814 234-4090 mobile: 814-883-3122 fax: 814-234-0748 www.fws.gov/northeast/pafo/index.html