

Full Application Review for Low Impact Hydropower Certification of Emeryville Hydroelectric Facility (FERC #2850)



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I. INTRODUCTION

This report reviews the application received by the Low Impact Hydropower Institute (LIHI) for Low Impact Hydropower Certification of the Emeryville Hydroelectric Facility (“Emeryville” or “Facility,”) located on RM 70 of the Oswegatchie River, in the Town of Fowler, New York. The Facility consists of a concrete capped timber and earthfill dam originally constructed in 1938, a penstock, intake structure, and powerhouse containing one horizontal axial flow turbine that generates approximately 19,000 MWh annually. A more detailed description of Project Works and Watershed is provided in the relevant sections below. The Facility is owned by KE Emeryville LLC and operated by KEI USA Power Management. Operations at the Facility are regulated by three documents: a Settlement Agreement reached in 2010, a Water Quality Certificate issued in 2011, and a 40-year FERC License issued in 2012 (expiring in 2052.) FERC approved the transfer of the 2012 license from Hampshire Paper Company to KE Emeryville LLC on December 16, 2016, and all terms are applicable to the new Owner.

KE Emeryville LLC is a wholly-owned subsidiary of 100809 Delaware Inc. and affiliated with Kruger Energy Inc. and Kruger Inc. The parent company currently owns, through its wholly-owned subsidiaries, 24 small hydropower facilities in the U.S. with a total capacity of approximately 33MW. Kruger Energy Inc. was established in 2004 as the management and operation arm of Kruger Inc., and focuses on developing and operating hydro and wind energy plants. Kruger currently owns and operates 402 MW of capacity through its wholly-owned affiliates. These affiliations give the Owner substantial experience operating hydroelectric facilities and complying with environmental regulations.

KEI submitted a complete Intake Application to LIHI on November 17, 2017. I completed the Intake Review on December 5, 2017, noting several minor deficiencies and potential issues to address in a Full Application. The Owner submitted a full Certification Application on July 5, 2018. I have conducted a review of the Application and all supporting materials, the project record on FERC e-library, and agency comments, and conclude that the Emeryville Hydroelectric Facility meets LIHI criteria. This application review for certification was conducted using the 2nd Edition Handbook that was published in March 2016.

II. PROJECT LOCATION AND SITE CHARACTERISTICS

The Facility is located on River Mile 70 of the Oswegatchie River in the Town of Fowler, New York, approximately 70 miles from the confluence with the St. Lawrence River. The Oswegatchie River basin covers a total drainage area of 1,034 square miles, and a large portion of this area is located within the Adirondack State Park. The River flows through four ecological zones¹ from the primarily mountainous central Adirondacks to the St. Lawrence Plain, characterized by hilly terrain with exposed bedrock. Water quality on the Oswegatchie is designated as Class A, and designated uses by the NY Department of Environmental Conservation (NYDEC) include supply for drinking, culinary or food processing purposes, primary and secondary contact recreation, and fishing. Fisheries consist of warmwater and coolwater species, which are listed under the fish passage criteria below.

The 132 mile-long Oswegatchie, a tributary to the St. Lawrence River, features many dams and hydroelectric facilities from its headwaters in the northwestern Adirondacks to its confluence with the St. Lawrence – the Emeryville project is the ninth upstream dam located approximately two miles downstream of the Hollow Dam (FERC #6972) and two miles upstream of the Fowler #7 Dam (FERC #6059).

¹ These are the central Adirondacks upstream of Newton Falls (LIHI #32); Western Adirondack foothills, the Transition Zone from Newton Falls to Gouverneur; and the St. Lawrence Plain from Gouverneur to the St. Lawrence River (FERC, 2011)

III. PROJECT WORKS

Project works include (1) an existing 16.7-foot-high, 185-foot-long, concrete-capped timber and earth fill gravity dam with a 176-foot-long concrete spillway equipped with 2.4-foot-high flashboards and a 4-foot-wide, 0.5-foot-deep minimum flow weir with a crest elevation of 584.2 feet National Geodetic Vertical Datum (NGVD); (2) an existing 35-acre impoundment with a normal water surface elevation of 586.6 feet NGVD; (3) an existing 140-foot-long by 30-foot-wide reinforced concrete headgate flume and intake structure equipped with four headgates and trashracks with 5-inch clear bar spacing; (4) an existing 60-foot-long by 14-foot-diameter steel penstock leading to; (5) an existing 67-foot-long by 32-foot wide concrete powerhouse containing a horizontal axial flow turbine with a rated capacity of 3,449 kilowatts (kW), a maximum hydraulic capacity of 1,470 cubic feet per second (cfs), and a net head of 32 feet, directly connected to a horizontal generator unit with a rated capacity of 3,481 kW; (6) an existing tailrace (7) an existing 80-foot-long, 23-kilovolt transmission line; and (8) appurtenant facilities. The turbine operates in a run-of-river mode and has generated an average of 18,761 MWh annually from 2012-2016. There is a 229-foot-long bypassed reach which runs under Route 22, from the Emeryville Dam to downstream of the powerhouse.



Figure 1 – Emeryville Aerial View (looking upstream)

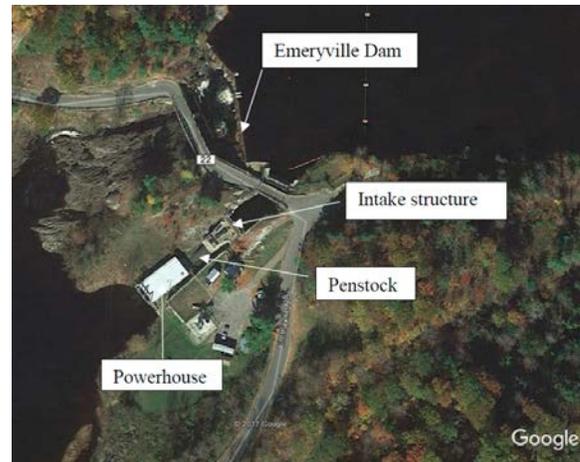


Figure 2 – Emeryville Project Works

IV. ZONES OF EFFECT

The Applicant appropriately applied three Zones of Effect. Zone 1 consists of the impoundment, stretching from the Emeryville dam at RM 70 to approximately one mile upstream at RM 69. This area contains one palustrine emergent wetland on a small island approximately 0.81 mile upstream of the dam. The riffle formed by this island is used as the upstream extent of Zone 1, and this is appropriate because the island alters the characteristics of the river at this point. Zone 2 consists of the bypassed reach which stretches from the Emeryville dam at RM 70 to approximately 229 feet downstream of the dam to the confluence with the tailrace. Zone 3 is defined by the riverine stretch from the confluence of bypassed reach and tailrace to approximately 1.25 miles downstream, where the river again starts to riffle due to a bend in the river.

V. HISTORY & REGULATORY STATUS

Hampshire Paper Company (HPC), the previous owner of the Emeryville Hydroelectric Facility, received a 30-year license to operate from 1982 to 2012. Prior to re-licensing, HPC began negotiating a Settlement Agreement with various federal, state and local stakeholders with jurisdiction over, or interest in preserving the resources of the Oswegatchie River. A draft Agreement was issued on May 12, 2009, and four

subsequent drafts were issued prior to the current Agreement which contained final terms and conditions agreed to by the US Fish and Wildlife Service (USFWS), New York Department of Environmental Conservation (NYDEC), the New York chapter of Trout Unlimited, and HPC. This Final Settlement Agreement was sent to FERC on May 13, 2010, prior to the re-license application which was filed on June 17, 2010. FERC staff published an Environmental Assessment on May 6, 2011 which found that the existing project, along with staff-recommended measures to improve resource protection, was the preferred alternative to development on the Oswegatchie River. On June 2, 2011, NYDEC issued a Water Quality Certificate with 32 conditions. After consideration of the comments filed on the Environmental Assessment and License Application, and the terms and conditions agreed to in the Settlement Agreement, FERC issued a new 40-year license on January 6, 2012. This License was subsequently transferred to the new Owner, KE Emeryville LLC, on December 16, 2016. All terms and conditions in each agreement are applicable to the new Owner, who submitted this application for LIHI Certification.

VI. COMPLIANCE WITH LIHI STANDARDS

A. Ecological Flow Regimes

Standard Applied: A1 – Not Applicable De Minimis (Zone 1)
 A2 – Agency Recommendation (Zones 2 & 3)

Per the LIHI Handbook, all impoundment zones can select A1 to pass this Criterion. Flow requirements impacting all Zones are set forth in the Stream Flow and Water Level Monitoring Plan developed pursuant to License Article 401(a). This document was developed in consultation with NYDEC and USFWS and approved by FERC on March 21, 2013. Under the Plan, the Owner is required to “install, operate and maintain stream flow and water level monitoring equipment at the project.” In compliance with this plan, the Owner maintains various measurement points in the impoundment level (Zone 1) and bypassed reach (Zone 2.) These gauges and elevation benchmarks² measure and maintain pond level elevation of the impoundment, verify the minimum flow of 20 cfs in the bypassed reach and verify water level elevation in a plunge pool below the dam. The Owner constructed a plunge pool discharge weir downstream of the dam, and that pool is calibrated to verify that water level matches 20 cfs through the weir, meeting the minimum flow requirement. The USFWS approved the Plan on December 12, 2012, and the NYDEC requested that the staff gauge and pond level sensor transducer near the powerhouse intake be regularly calibrated.

The measures implemented according to this plan provide a means to verify compliance with the instantaneous run-of-river requirement as prescribed by Condition 8 of the Water Quality Certificate, and 20 cfs minimum flow requirement as prescribed by Condition 9. These requirements are intended to protect aquatic species and enhance habitat. The Owner properly applied Standard 2, Agency Recommendation and meets LIHI criteria for the Ecological Flows standard in Zone 2.

B. Water Quality

Standard Applied: A2 – Agency Recommendation (all Zones)

The Oswegatchie River is designated as Class A waters in all areas impacted by the Facility, meeting the numeric water quality standards required for average and continuous dissolved oxygen (DO) and pH. These standards were assessed during the most recent project licensing through water quality sampling conducted from May through August 2008. The findings showed that temperature and pH were unchanged upstream

² The Owner maintains a staff gauge at the impoundment (installed each year after ice-out and removed in the late fall,) an elevation benchmark in the plunge pool, and level reference mark in the bypassed reach. The latter two measures allow for a visual confirmation of water level elevations, while the gauge allows recorded data.

and downstream of the project, and DO was about 0.2 mg/l higher in the tailrace than the impoundment. Furthermore, in the final Environmental Analysis issued for the Facility, FERC specifically excluded water quality as a potential resource to be cumulatively impacted by continued operation of the project³.

Agency Recommendations are included in the Water Quality Certificate (WQC) issued June 2, 2011 by the NYDEC. In addition to the requirements impacting flows and fish passage (discussed in relevant sections above and below,) the WQC prohibits impoundment drawdowns between October 1 through July 15 to protect hibernating amphibians and fish spawning habitat⁴. Further requirements are standard terms and conditions to protect water quality, such as sediment analysis and disposal, maintenance dredging, erosion and sediment control, etc.

I contacted the NYDEC and requested confirmation of compliance with the WQC and did not receive a response. There are no records of non-compliance on FERC e-library. The Owner appears to be in compliance with the WQC, and properly applied Standard 2, Agency Recommendation to meet LIHI criteria for the Water Quality standard in all zones.

C. *Upstream Fish Passage*

Standard Applied: C1 – Not Applicable/De Minimis (all Zones)

The Owner applied Standard C1, Not Applicable/De Minimis, contending there are no anadromous fish species in this section of the Oswegatchie River, and that they believe it cannot be concluded that the Facility is the cause of extirpation of any migratory species that may have inhabited the affected reach at one point. According to fishery surveys, there are no records of anadromous or catadromous fish species in this stretch of the Oswegatchie River (Carlson, 1992⁵). Upstream passage at the Facility is also currently blocked by the Ogdensburg dam (FERC # 9821) located downstream. Unless and until fish passage is implemented at that project, the Emeryville Project does not pose a barrier to any migratory fish that might be present in the future. The previous owner conducted fish surveys in May and August 2008, and identified the species present in table 1 below. Given that migratory fish species are not present, and it cannot be concluded that the Facility is the cause of extirpation of once-present migratory species, both conditions are met for Standard C1, Not Applicable/De Minimis, and the Owner properly selected that standard for all zones.

³ Final Environmental Analysis, page 31: “In our scoping document, we initially identified water quality and aquatic resources (including Atlantic sturgeon and American eel) as having the potential to be cumulatively affected by continued operation of the Emeryville Project. However, based on our review of the license application and agency and public comments, we have determined that only resident aquatic resources and habitat have the potential to be cumulatively affected by the continued operation of the project, in combination with other past, present, and future activities.”

⁴ With exception for dam safety inspections and flashboard installation.

⁵ Carlson, D. M. 1992. A fisheries management survey of the middle Oswegatchie River (Gouverneur to Cranberry Lake). New York State Department of Environmental Conservation, Albany, NY. September 25, 1992.

Common Name	Downstream	Upstream
Pumpkinseed	X	X
Brown bullhead	X	X
Fallfish	X	X
Creek chub	X	X
Lake chub	X	X
Longnose dace	X	X
Blacknose dace		X
Northern pike		X
Channel catfish		X
Rock bass	X	X
Smallmouth bass	X	X
Common shiner		X
Fathead minnow		X
Banded killifish		X
White sucker	X	X
Yellow perch		X
Walleye		X

Figure 3 - Fish species identified during 2008 survey

D. Downstream Fish Passage

Standard Applied: D2 – Agency Recommendation (Zones 1 & 2)
D1 – Not Applicable/De Minimis (Zone 3)

The Owner selected the Agency Recommendation standard for all zones impacting downstream fish passage. Agency recommendations for downstream fish passage are contained in the FERC license, Settlement Agreement and Water Quality Certificate. The scientific and technical basis for these recommendations is contained in the Environmental Assessment and the deliberations between agencies and NGOs that led to the Settlement Agreement and the WQC. There are three primary recommendations pertinent to this criterion:

Entrainment Protection – the Owner is required to install trashrack overlays over the powerhouse intake each year from March 15 through November 30. These overlays have one-inch spacing, which physically exclude most fish larger than nine inches from passing through the turbines. The scientific basis for this recommendation is included in the Environmental Assessment, where FERC staff concluded that this measure would prevent fish entrainment. Each year, the Owner is required to submit a record of installation and removal of the trashracks, and after five consecutive years, the parties to the Settlement Agreement will review the records and determine whether the seasonal overlays should be made permanent.

(There was some discrepancy between trashrack installation alternatives proposed by the federal and state agencies. As a result, FERC required the Owner to submit an Entrainment Protection Plan, which was approved by FERC on May 28, 2013. The plan⁶ provides more specific information on what specific work would be completed to address fish protection needs at the project, including the measures described here.)

Downstream Bypass Flume – As a condition in the FERC License, the Owner was required to construct a new bypass flume to replace a prior minimum flow weir, to provide passage of resident fish and the project minimum flow into the bypassed reach. I located the as-built construction drawings for the bypassed reach enhancements which were submitted on May 8, 2015.

Channel Excavation – the Owner further committed to making various improvements to the bypassed

⁶ <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13262128>

reach to improve fish passage effectiveness, including a deepened and expanded plunge pool and channel modifications. Specifically, the Owner committed to constructing a plunge pool weir wall across the bypassed reach to increase the pool's wetted surface area by 2,500 square feet, increasing the plunge pool depth to at least 1-foot per 4-foot vertical drop, and removal of any rocks protruding greater than 1/3rd the water depth at the minimum flow in the bypass chute. In the Order approving these measures, FERC found installation of these measures would enhance downstream fish movements at the Facility. Both NYDEC and USFWS also approved the plan. Final as-built drawings were submitted to FERC on May 8, 2015.

Based on the as-built drawings submitted to FERC, and the approval from agencies, the Owner appears to be in compliance with agency recommendations for downstream fish passage, and therefore properly selected and meets Standard D2, Agency Recommendation, for all zones.

E. Watershed and Shoreline Protection

Standard Applied: E2 – Agency Recommendation

The Owner selected Standard E2 Agency Recommendations for all zones. In addition to standard terms and conditions in the FERC License that pertain to this criterion, the project is required to develop and comply with an Invasive Species Monitoring Plan to manage terrestrial and aquatic invasive species. The pale swallow wort was identified in the project vicinity, and the Owner is responsible for eradicating the species to the best of its ability (they cannot control all growth because they do not control all land adjacent to the project and other landowners may not share the same goal.) FERC issued an order approving this plan on March 26, 2015. The Plan includes eradication measures, signage at recreation access sites informing the public about inspecting boats and preventing infestation, disposal stations for public use, staff training on identification of subject species, and proper removal and disposal of invasives, as well as proper equipment maintenance to prevent transmission of invasive species. This Plan consists of the primary recommendation that impacts shoreline and watershed management, and the Owner properly applied and is in compliance with Standard E2, Agency Recommendation for all zones.

F. Threatened and Endangered Species

Standard Applied: F2 – Agency Recommendation

The Owner provided a letter from the USFWS determining that the only federally-listed species in the project vicinity is the Northern Long-eared Bat. Based upon previous LIHI reviews of projects where Northern Long-eared bats are present, and conversations with resource agencies about this species, there is generally no threat unless tree-clearing occurs. The Environmental Assessment stated that no known nesting areas for Indiana bats occur within 36 miles of the project site, and both species of bats often nest together. The EA concluded that "relicensing the project would have no effect on the Indiana Bat." Given the co-location of these two endangered species, it is reasonable to extrapolate the same conclusion to the Northern Long-eared Bat.

Three state-threatened fish species and one plant species occur in the Oswegatchie River or in the vicinity of the Facility. The Fernald's sedge is a terrestrial plant that typically occurs in disturbed areas in dry, open meadows, hillsides and wooded borders, and therefore is not impacted by operations of the project. All three fish species – Lake Sturgeon, Eastern Sand Darter, and Mooneye – have been known to occur downstream of the project, and their extirpation from the full reach of the river cannot be attributed solely to the existence of this Facility. According to the fishery survey cited above (Carlson, 1992) there are no records of anadromous or catadromous fish species in this stretch of the Oswegatchie River. In a letter provided in the LIHI Application from October 5, 2009, the NYDEC concluded that only the Fernald's sedge occurs

within one mile of the Facility. The 2018-2024 Lake Sturgeon Recovery Plan⁷ mentions that the species was present in the Oswegatchie River mouth, but does not specify the extent to which this population extended upstream. Furthermore, the Plan states that no spawning activity has been observed even in the mouth of the river despite the presence of suitable habitat. Therefore, it is reasonable to conclude that these species do not occur in the downstream reach zone, and the Owner properly applied and meets Standard F1, Not Applicable/De Minimis for all zones.

G. *Cultural and Historic Resources Protection*

Standard Applied: G1 – Not Applicable/De Minimis

At the time of re-licensing, the Commission designated Hampshire Paper (the project’s previous owner) as its non-federal representative for purposes of conducting Section 106 consultations⁸ under the National Historic Preservation Act (NHPA). In a letter from February 2007, the State Historic Preservation Office determined that the relicensing would have “no effect” on properties in, or eligible for inclusion in the National Register of Historic Places. Furthermore, a construction permit issued by the U.S. Army Corps of Engineers in 1987 for renovations at the project stated that no registered historic properties would be impacted by the renovations. Therefore, the Owner properly selected and meets Standard G1, Not Applicable/De Minimis.

H. *Recreation*

Standard Applied: H2 – Agency Recommendation

Recreational opportunities in the vicinity include boating, fishing, sightseeing and hiking. The 970-foot vertical drop that exists between Newton Falls and Hailesboro offers significant opportunities for boaters looking to challenge the fast water in these stretches. Project recreational access is provided for small boats and canoes, including two parking areas, two boat ramps, portage trail for canoes, and a picnic area and parking area. Maintenance for these facilities is required in the 2010 Recreation Management Plan (modified in 2012) which describes responsibilities for the Owner, including operating and maintaining the aforementioned facilities. The Environmental Assessment concluded that based on recreational activity in the area, the existing facilities adequately met demand, and no significant changes were required. The Owner properly selected and meets Standard H2, Agency Recommendation for this criterion.

VII. PUBLIC COMMENTS RECEIVED

No public comments were received during the 60-day comment period.

VIII. CONCLUSIONS AND RECOMMENDATION

Based on my review of the application and supporting documentation, public records, and comments provided by resource agencies for the application, in my opinion the Emeryville Hydroelectric Facility meets the requirements for LIHI certification for one, five-year term.

⁷ https://www.dec.ny.gov/docs/fish_marine_pdf/lakesturgeonrp.pdf

⁸ “Section 106 of the National Historic Preservation Act requires federal agencies to “take into account” how its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places.” (FERC)

APPENDIX A. AGENCY COMMUNICATIONS

Given the recent FERC License and Environmental Assessment, Settlement Agreement, and Water Quality Certificate, the substantial record of comments on each of those agreements, and the lack of records of non-compliance on FERC e-library since the issuance of these agreements, I did not find that requesting substantial additional comments from resource agencies would be necessary. However, I did reach out to the NYDEC several times to determine compliance with the Water Quality Certificate. I did not receive any response.