

Mother Ann Lee Project - LIHI Mid-Term Review
Conducted by Maryalice Fischer
May 31, 2023

I. Introduction

The current LIHI Certificate for the [Mother Ann Lee Hydroelectric Project](#) (LIHI #24, FERC No. P-539) was issued effective August 11, 2016 and expires on August 11, 2031. The Project was first certified by LIHI in 2006 and recertified in 2012. It was recertified for the second time in 2016 under the 2nd Edition LIHI Handbook, for a 15-year term that includes PLUS awards for water quality, cultural and historic resources, and recreation.

The Project was issued a new FERC license on August 15, 2022 which expires August 1, 2062.¹ In accordance with Section 5.3.4 of the 2nd Edition LIHI Handbook, Revision 2.05², issuance of a new license constitutes a “material change” and triggers a mid-term LIHI Certification review. A new Certificate term can be granted if the Project continues to satisfy the LIHI criterion, even if the current term has not yet expired.

II. Facilities and Operations

The Project is a 2.209-MW run-of-river project located at the Kentucky River Authority (KRA) Lock and Dam 7 on the Kentucky River at river mile 117 above the Ohio River confluence, in the “Lower Subbasin” in Jessamine and Mercer counties in central Kentucky (Figures 1 and 2).

The locks and dam were constructed in 1897 by the US Army Corps of Engineers (USACE) as part of a series of 14 navigational locks and dams on the Kentucky River. The locks and dam were retired as navigational locks in 2006 although associated structures were left in place and the lock chambers were sealed. At that time USACE transferred ownership and operations of Lock and Dams 5 through 14 to a state entity, the Kentucky River Authority (KRA). Transfer of ownership of Lock and Dam 7 from the ACOE to the KRA took place in March 2006 and the Project operates under a lease and operating agreement with the KRA.

¹ <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=6CA7A823-1ACD-CA07-8F74-82A279800000>

² <https://lowimpacthydro.org/wp-content/uploads/2021/12/2nd-Edition-Handbook-Rev.-2.05-2022-01-01-1.pdf>

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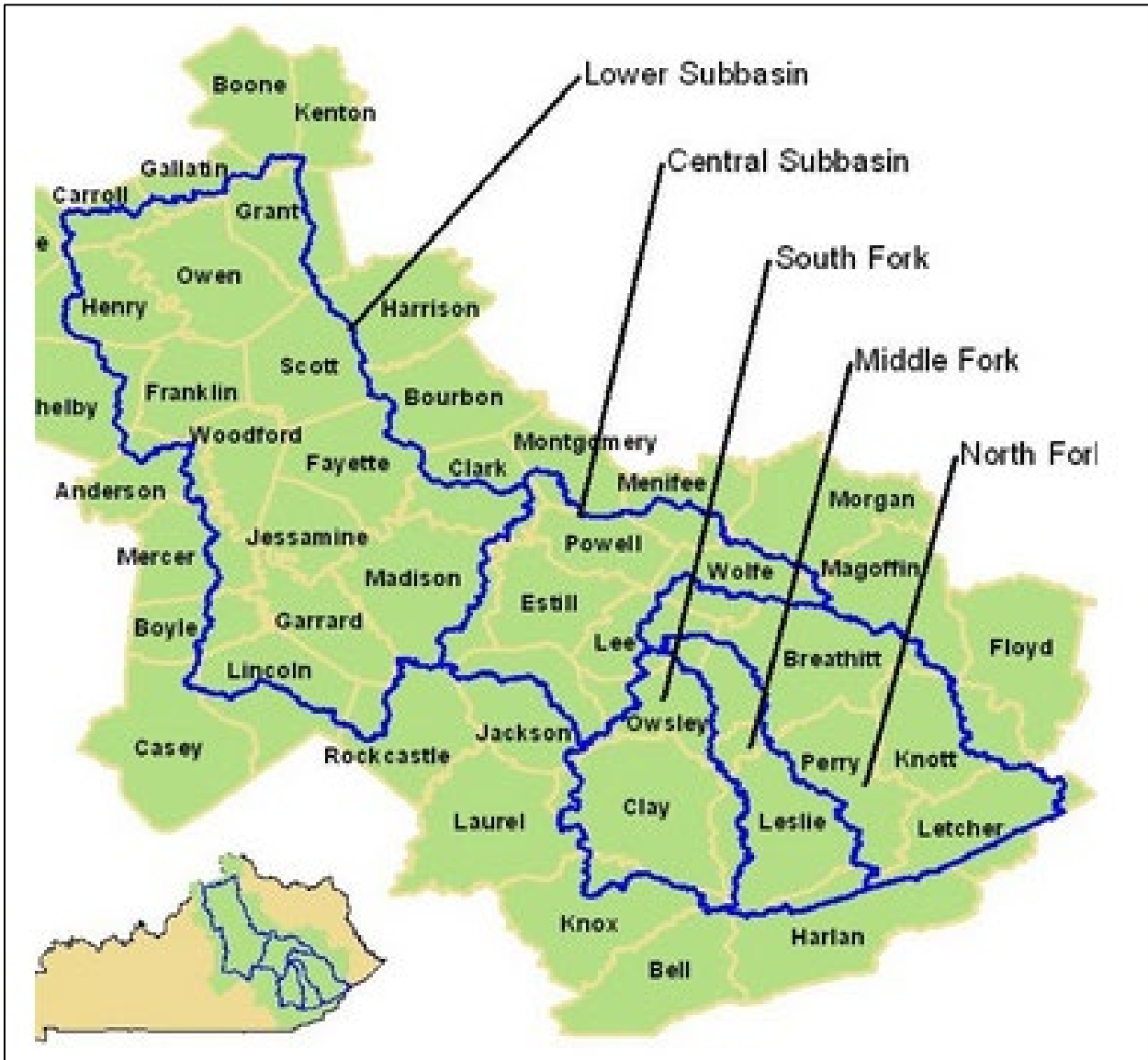


Figure 1 – Kentucky River Watershed

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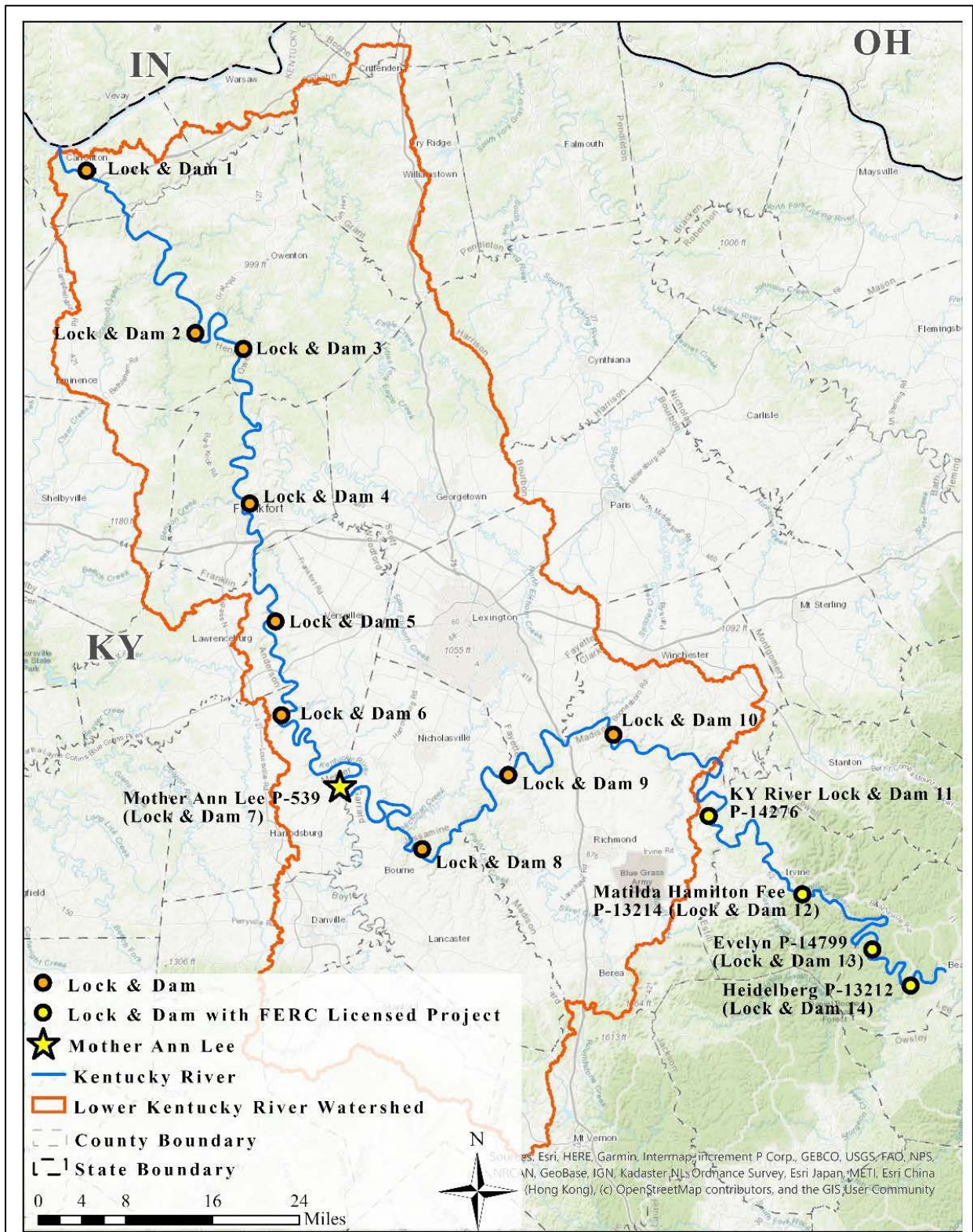


Figure 2 – Project Location

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The hydroelectric component of the Project was first installed in 1927 (the original FERC license was issued in 1926). Kentucky Utilities (KU) operated it from 1928 to 1999, when the plant became inoperable. In 2004 KU announced its intent to decommission the facility (formerly called the Lock 7 Plant) and surrender the project’s FERC license. Calls from the public and environmental groups to rehabilitate the hydroelectric plant as a source of clean energy encouraged the current owner, Lock 7 Hydro Partners, LLC (“Owner”) to purchase the facility. The then-current FERC license issued in 1992 was transferred to the current Owner on November 23, 2005 and the Project became fully operational again in 2008. The facility is adjacent to land once occupied by the Pleasant Hill Shaker Community, and upon assuming ownership the facility was renamed “Mother Ann Lee” after the founder of that religious movement.

The hydroelectric portion of the project consists of a concrete substructure, about 116 feet long, with a 36-foot-long solid concrete section and an 80-foot-long hollow dam/spillway, containing trashracks with 4-inch clear spacing, six intake gates, a forebay about 120 feet long and 100 feet wide, a superstructure/powerhouse located above the spillway, supported by hollow concrete piers containing three Kaplan turbines, a substation, and transmission line (Figure 3). Thus, downstream flow is discharged over the dam spillway and this section of the river both upstream and downstream is managed for domestic water supply, recreation, and hydroelectric power generation.

The prior FERC license was amended on January 23, 2014 to reflect an increase in installed capacity due to turbine runner replacement, and that license expired on April 30, 2022. The Owner filed a final relicense application on April 30, 2020 and FERC issued the new license on August 15, 2022.



Figure 3 – Project Facilities

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III. Scope of the Mid-Term Review

This review evaluated the Project’s continued compliance with the current LIHI criteria and standards in light of the new FERC license, new State Water Quality Certification (WQC), related permit and regulatory requirements, and other commitments that may affect the LIHI criteria.

Public notice of the draft mid-term review report was made on March 30, 2023 to LIHI email subscribers in Kentucky and agencies and stakeholders provided by the Certificate holder. This is the first LIHI mid-term review conducted under the [2022 LIHI Handbook Revision 2.05](#) and was conducted without a formal application from the Project owner. We used this experience to design a new mid-term application format for projects that require such a review under Section 5.3.4 of the Handbook. As such, the comment period was opened coincident with publishing of the draft report. The 60-day public comment period closed on May 29, 2023 and no comments were received.

This evaluation included a comparison of the prior and new FERC licenses and WQCs; and a review of documents found on the FERC eLibrary including the 2022 FERC Environmental Assessment (EA)³, agency and stakeholder relicensing comments, the lease and operating agreement with KRA, annual LIHI compliance statements submitted during the current LIHI term, and responses to reviewer questions provided by the Owner. Links are provided to key documents via footnotes herein and in [Appendix A](#) which provides a crosswalk table that compares the prior and new license and WQC requirements discussed in Section V below. Key documents are also posted in the Files section at the bottom of the [project’s LIHI webpage](#).

The new license and WQC do not impose significant changes to the facility or operations other than some recreational enhancements, but both codify aspects of the existing operation by way of new requirements for written compliance plans, monitoring, and reporting.

IV. Zones of Effect

During the 2016 LIHI recertification, a single Zone of Effect (ZoE) was selected for the Project. It included the tailrace/downstream reach which extends 20.8 miles within the Lock 6 pool to Lock and Dam 6. LIHI practice has since evolved to consider the impoundment zone even if a Project has no control over, or impacts on impoundment operations or activities, as is the case here. The impoundment (Lock 7 pool) extends 22.7 miles upstream from the dam to Lock and Dam 8 (see Figure 2). The FERC Project boundary is limited to the river channel and excludes the impoundment shorelines.

Table 1 shows the standards selected for each LIHI criterion by the Certificate holder for the downstream ZoE (originally labeled ZoE 1, now ZoE 2) and standards selected by the reviewer for the impoundment ZoE (now identified as ZoE 1). The only difference in standards between

³ <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=81C60247-7FD0-C5C6-97A6-806118800000>

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ZoEs is for water quality in the impoundment which is not controlled by the Project. Recommended changes to the previously selected standards in light of the Project’s newly imposed requirements are noted in **red** in the table.

Table 1 – Selected Standards

Zone of Effect:		1: Impoundment	2. Downstream Reach
River Mile at upper and lower extent of Zone:		RM 139.7 to RM 117	RM 117 to RM 96.2
Criterion		Standard Selected	
A	Ecological Flows	2	1 , 2
B	Water Quality	1	2 , PLUS , 2
C	Upstream Fish Passage	1	1
D	Downstream Fish Passage	1	1
E	Shoreline and Watershed Protection	1	1
F	Threatened and Endangered Species	2	1 , 2
G	Cultural and Historic Resources	2	1 , PLUS , 2 , PLUS
H	Recreational Resources	2	1 , PLUS , 2

V. 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: In the prior recertification application, the Applicant selected Standard A-1, Not Applicable/De Minimis Effect for the tailrace/downstream reach; however, this review finds that Standard A-2, Agency Recommendation is more appropriate under the new license. Impoundments can typically qualify for A-1 since this criterion is focused primarily on riverine reaches, but Standard A-2 is more appropriate in both ZoEs due to the agency recommended operational compliance plan.

Discussion: The new license did not change existing operations. The Project operates in run-of-river mode (former license articles 401, current license article 403) by maintaining the impoundment water surface elevation at or above the crest of the dam at all times. The Project ceases generation during severe drought periods as declared by the Kentucky Department of Environmental Protection (DEP) or the KRA at which time the KRA opens a bypass valve in the dam to allow water to be released from pool 7 and passed downstream for municipal water supply purposes.

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An operational compliance plan (former and current license article 403) was most recently filed with FERC on April 30, 2020 as part of the relicense application and approved in the new license. The plan describes the impoundment level monitoring systems and methods, automatic plant shutdowns if the impoundment level drops below the dam crest, corrective actions in the event of monitoring component failure, and reporting of deviations and low-flow emergency events. Flows can be verified by comparing data from the upstream [USGS gage #03284500](#) at Lock 8 with the [USGS gage #03286500](#) at Lock 7.

Article 404 of the new license allows for planned deviations up to 3 weeks at a time with state agency concurrence. Reports must be filed with FERC within 14 days of the onset of the deviation. Unplanned deviations longer than 3 hours or having an environmental impact require FERC reporting within 14 days and deviations less than 3 hours with no environmental impact require an annual report to FERC by January 31 each year.

There were no flow or impoundment level deviations reported to FERC during the current LIHI certification term and none since issuance of the new license. Based on the mid-term review, the Project does not adversely impact river flows and continues to satisfy the ecological flows criterion.

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: In the prior recertification application, the Applicant selected Standard B-2, Agency Recommendation in the downstream reach. This review finds that this standard is appropriate under the new license and WQC. Standard B-1, Not Applicable/De Minimis Effect is appropriate in the impoundment ZoE.

Discussion: The prior license did not include any articles related to water quality; however, the state WQC issued October 17, 2005 included condition T-1 which required dissolved oxygen (DO) monitoring in the tailrace from June 1 through October 31, conducted either automatically or manually. Voluntary plant shutdowns were to occur if the average of DO readings over the previous 24-hour period dropped below 5 mg/l until the average rose above 5 mg/l, or if a single reading dropped below 4 mg/l. During manual monitoring the plant would be shut down if a single reading dropped below 5 mg/l. Annual DO monitoring reports were due to the DEP at the end of each year.

The new WQC issued on July 27, 2020 incorporated minor changes which extended the monitoring period to include the month of May, required notification of low DO to the DEP within 3 days, and specified March 31 as the due date for prior year annual reports. It also included a 10-year WQC term which is unusual since they typically remain in effect for the FERC

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license term. In response to reviewer questions, the Owner indicated they had contacted the DEP to inquire about the WQC term. On May 1, 2023 DEP issued a revised WQC extending the term to the duration of the new FERC license (condition T-3 in the WQC).

Article 401 of the new FERC license is more stringent than the WQC and requires implementation of the water quality monitoring plan that had been filed on September 28, 2020 and approved in the new license. Article 401 requires continuation of the prior practice of monitoring water temperature and DO concentrations in the tailrace every 15 minutes year-round⁴ and, if low DO concentrations are measured, to shut down the turbines incrementally, or all turbines, as needed to release inflow over the spillway until outflow DO concentrations are consistent with minimum state water quality standards. Article 402 requires submittal of annual water quality monitoring reports to FERC by March 31 each year.

The current LIHI Certificate includes the following water quality condition:

Condition 1. *The facility owner shall provide LIHI with a brief annual report describing time periods when turbines are operated to increase aeration in the past year and the minimum dissolved oxygen concentrations downstream observed during those periods. This report on aeration operations shall be included with the annual compliance statement to LIHI. A copy of the letter report that has been sent in past years to the Kentucky Department of Natural Resources, Division of Water, will be sufficient to satisfy this condition.*

Annual compliance submittals during the current LIHI term show that the Project has occasionally needed to shut down turbine unit #1 under low DO conditions. The unit spins in idling mode with the wicket gates closed, which pulls significant air through the turbine and aerates the discharge into the tailrace. Based on annual reports to date, typically, DO levels recover within 15 minutes but the Project continues to idle the turbine unit until the next day even if DO levels rise enough to meet state standards. Only once since 2016 has the Project needed to shut down all three turbines (in October 2021).

Based on the mid-term review, the Project is in compliance with water quality requirements, uses adaptive management to maintain water quality standards, and therefore continues to satisfy the water quality criterion. Given that the new license and WQC require annual reporting, and such reports have been consistently submitted to LIHI, the current LIHI condition is no longer necessary.

The Project had been awarded a PLUS standard under the current LIHI certification based on the voluntary plant shutdowns. While the WQC still considers these to be “voluntary”, this practice is now specified under license article 401 and required in order for the Project to

⁴ Real-time and historical data is posted online http://www.kyhydropower.com/lock7_data.html

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ensure that state water quality standards are not affected by the Project.⁵ Therefore, the action is no longer voluntary, and the PLUS standard no longer applies.

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 populations in areas affected by the facility.*

Assessment of Criterion: In the prior recertification application, the Applicant selected Standard C-1, Not Applicable/De Minimis Effect in the downstream ZoE. This review finds that this standard is appropriate for both ZoEs under the new license.

Discussion: Based on FERC EA, there are no migratory fish in the Project vicinity. As reported in the 2016 LIHI recertification application, American eels were present historically. When the locks were in use, eels could move upstream moving through the lock chambers when boats were locked through, and it was reported that eels would move upstream to the headwaters of the Kentucky River using the lock chambers. But Locks 5 through 14 were retired and closed between 1994 and 2006⁶, and eels are no longer found upstream of Pool 4. This was confirmed by electrofishing studies conducted by the state and by anecdotal evidence from long-time fishermen. The American eel is still reported to be found up to Pool 4 even today, because Locks 1 through 4 are still in use.

There were no requirements for upstream passage under the prior license and no resource agencies filed fishway prescriptions or other fishery recommendations during the recent relicensing. The Project, which is located at Lock 7, has no adverse impact on upstream passage and therefore continues to satisfy this criterion.

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. Migratory species can successfully complete their life cycles and maintain healthy populations in the areas affected by the facility.*

Assessment of Criterion: In the prior recertification application, the Applicant selected Standard D-1, Not Applicable/De Minimis Effect in the downstream ZoE. This review finds that this

⁵ According to the FERC Environmental Assessment p. 13, low DO can occur due to releases from the thermally stratified Herrington Lake dam on the Dix River, a tributary to the Kentucky River whose confluence is 8 miles upstream of the Project.

⁶ <https://abandonedonline.net/location/kentucky-river-locks-dams/>

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standard is appropriate for both ZoEs under the new license.

Discussion: According to the FERC EA, the Kentucky River has over 70 species of fish including over 20 species of gamefish including muskellunge, white bass, sauger, walleye, largemouth bass, smallmouth bass, spotted bass, white crappie, and black crappie. Other fish species include mooneye, flathead catfish, channel catfish, smallmouth buffalo, bigmouth buffalo, freshwater drum, longnose gar, bowfin, green-sided darter, and common carp. The state also stocks the river with muskellunge, walleye, sauger, and hybrid striped bass, which may be present in and around the Project area; and rainbow trout are stocked into the tributary Dix River to provide a cool water fishery in the tailwaters of Herrington Lake below the Dix Dam hydroelectric project.

The Mother Ann Lee Project intakes have trashracks with 4-inch clear bar spacing. The maximum approach velocity is 1.2 feet per second when the Project operates at its maximum hydraulic capacity. Clamshell buckets and a drag rake are operated on an as-needed basis to remove debris from the trashracks to prevent the buildup of localized velocity hot spots. There have been no changes in this practice since the last LIHI recertification.

No resource agencies expressed concerns over fish impingement or entrainment, both of which FERC concluded would not negatively affect the local fish community. No resource agencies filed fishway prescriptions or other fish passage and protection recommendations during the recent relicensing. The Project has little to no impact on downstream fish passage and protection, and therefore continues to satisfy this criterion.

E. Shoreline and Watershed Protection

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

Assessment of Criterion: In the prior recertification application, the Applicant selected Standard E-1, Not Applicable/De Minimis Effect in the downstream ZoE. This review finds that this standard is appropriate for both ZoEs under the new license.

Discussion: According to the FERC EA, the immediate Project area is located in the Kentucky River Palisades, a unique ecosystem of steep limestone cliffs, deep gorges, and springs, with an intricate cave system. Two cave openings are large and accessible from the grassy area on the eastern side of the river. Another cave opening is small and elevated about 100 feet from the base of the cliff above the larger of the other two caves. On the western side of the river, the Project transmission line crosses a grassy area just downstream from the lock and dam and then crosses the limestone cliffs, a forested area on top of the cliff, and open fields before the point of interconnection with the distribution system. The Project maintains animal protection

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guards and electrical insulation on the energized components of the substation and manages vegetation along the transmission line corridor.

Land use around the Project on the eastern side of the river was mostly cleared of vegetation during construction of the lock and dam with a concrete esplanade and open grassland maintained by the KRA, an existing access road and parking area maintained by Jessamine County, and a small amount of riparian and early-to-mid successional forest.

There were no resource agency recommendations or license conditions related to shoreline or watershed protection under the prior license. The prior 2005 WQC required an erosion and sediment control plan during Project construction.

Article 406 of the new license requires development of an avian protection plan that was due within 120 days of the license. Upon request of the Owner, on February 7, 2023 FERC granted an extension for plan filing until August 31, 2023. In response to reviewer questions, the Owner indicated that they had hired an avian expert to develop the plan, and subsequently filed the final plan, with agency consultation, on March 20, 2023. USFWS indicated that under the plan impacts to avian species were unlikely to occur.

Based on the mid-term review, the Project continues to operate in a run-of-river mode to minimize shoreline erosion; has a small land footprint (about 15.5 acres of land); conducts minimal vegetation management; and provides some avian protection measures to minimize impacts to terrestrial habitats and species. Therefore, the Project continues to satisfy the shoreline and watershed protection criterion.

F. Threatened and Endangered Species

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

Assessment of Criterion Passage: In the prior recertification application, the Applicant selected Standard F-1, Not Applicable/De Minimis Effect in the downstream ZoE. This review finds that Standard F-2, Finding of No Negative Effect is appropriate for both ZoEs under the new license.

Discussion: According to the FERC EA, several federally listed species may occur in the Project vicinity including the endangered gray bat, Indiana bat, Northern long-eared bat⁷ all of which are also state-listed, Short's bladderpod, and running buffalo clover (since delisted). Listed mussel species include the endangered sheepsnose mussel (also state listed), clubshell, fanshell, purple cat's paw, and the threatened rabbitsfoot mussel. In addition, the state of Kentucky lists Eastern small-footed bat, 12 plant species, and insect species within one mile of the Project.

⁷ Northern long-eared bat was re-listed from threatened to endangered status on November 22, 2022.

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No suitable mussel habitat was found in the immediate Project vicinity during relicensing studies.

For Short's bladderpod, there are three known occurrences of the plant within one mile of the Project, but not within the Project boundary. Relicensing habitat surveys indicated one small rock face with limited habitat potential but no areas that included all of the species' habitat requirements. Maintenance activities are unlikely to significantly damage any existing suitable habitat. Further, non-native invasive plants are prevalent in both managed and unmanaged areas that limit available habitat for the species.

The Owner conducted surveys of suitable habitat for federally listed bat species (e.g., roost trees, cliff-line, caves, or cave-like features) within the Project area to evaluate any potential Project effects on them. The two cave openings directly adjacent to Lock and Dam 7 on the eastern side of the river were assessed and although they are large enough and contain characteristics consistent with winter bat use (e.g., unobstructed entrances, cool air temps, stable walls and ceilings, and water), no bats or signs of bat use were observed in either cave both of which are heavily used and impacted by human activities and thus unlikely to be inhabited by bats. Summer roosting habitat for Indiana bat and Northern long-eared bat was documented in the forested riparian habitat on both sides of the river within the Project boundary and suitable travel and foraging habitat was identified along the riparian zone and the grassy area along the eastern side of the river.

The US Fish and Wildlife Service indicated in a June 10, 2022 letter to FERC that the Project "may affect but is not likely to adversely affect" any federally listed species. The state of Kentucky made no recommendations related to listed species during the relicensing process.

The prior license did not include provisions for protection of listed species, but article 405 of the new license restricts non-hazardous removal of trees greater than or equal to three inches diameter at breast height to between Nov 15 and March 31 for protection of bats.

Based on the mid-term review, the Project conducts minimal vegetation management and has little need to remove trees even under the time-of-year restrictions afforded by the new license. Further, run-of-river operations and aeration during periods of low DO minimize impacts to listed mussel species if they could be present. Therefore, the Project continues to satisfy the threatened and endangered species protection criterion.

G. Cultural and Historic Resources

Goal: *The facility does not unnecessarily impact cultural or historic resources associated with the facility's lands and waters, including resources important to local indigenous populations, such as Native Americans.*

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Assessment of Criterion: In the prior recertification application, the Applicant selected Standard G-1, Not Applicable/De Minimis Effect in the downstream ZoE. This review finds that Standard G-2, Approved Plan is appropriate for both ZoEs under the new license.

Discussion: Article 404 of the prior license required consultation with the state historic preservation office (SHPO) for ground disturbing activity or newly discovered resources and filing of a Cultural Resources Management Plan if needed to protect or mitigate found resources.

Phase I archaeological and historical/architectural surveys were conducted during relicensing and one previously unrecorded archaeological resource was identified but was not recommended eligible for listing on the National Register of Historic Places. However, Lock and Dam 7 and the Mother Ann Lee Hydropower Station were determined to be eligible for listing on the National Register. The district boundary of the Shaker Village of Pleasant Hill (also known as Shakertown Historic District), a National Historic Landmark, crosses into the Project's area of potential effect at its upstream extent, but no contributing or non-contributing resources in the Shakertown Historic District are affected by the Project.

The Eastern Band of Cherokee Indians commented during relicensing that no cultural resources important to the Cherokee people would be adversely impacted by the Project but requested that work cease and the Owner consult with the tribal historic preservation office if unknown cultural resources or human remains are discovered, or if the Project's operations change. Article 408 of the new license required a Programmatic Agreement (executed on June 27, 2022) and submittal of a revised Historic Properties Management Plan (HPMP) within 120 days of license issuance to incorporate modifications requested by the SHPO. The HPMP had been originally filed on September 28, 2020. The license requires consultation with the SHPO, Cherokee Nation, Eastern Band of Cherokee Indians, and KRA during revision of the HPMP. The license further requires approval from FERC and the SHPO, before any ground-disturbing activities or other actions that could affect historic properties within the Project boundary.

In response to reviewer questions, the Owner reported they had made the requested changes to the HPMP, sent it to the consulting parties for comment, and requested an extension of time to file the plan until March 31, 2023, which FERC granted on February 7, 2023. The final plan was filed with FERC on March 20, 2023.

Based on the mid-term review, normal Project operations are unlikely to impact cultural or historic resources and the HPMP provides measures to protect resources in the event of future alterations. Therefore, the Project continues to satisfy this criterion with the recommended condition regarding filing and approval of the revised HPMP.

The current LIHI certification included a PLUS standard for implementation of significant new educational opportunities about the cultural and historical aspects of the Project. These

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included offering tours of the plant and presentations about the history of the facility, Mother Ann Lee and the Shakers, and renewable energy in general. The Owner initiated a project with a local 4th grade class to paint the generators with local fish species and taught the class about renewable energy and the history of the Project, effectively transforming the Project generator floor into a children’s art gallery (Figure 4).



Figure 4 – Painted turbines

The Owner also donated an old turbine runner from the plant for display on KRA-owned land adjacent to the Project and stated that interpretative signage about the Project and the history of Lock and Dam 7 is planned as part of the recreational improvements (discussed below).

In response to reviewer questions, the Owner reported that tours are given when requested and three had been given recently to Kentucky River Authority staff and lock tenders. Tours in the past have also been given annually to a number of classes from Centre College, which as part of its sustainability program, also buys renewable energy credits from the Project that represent approximately 30 percent of the College’s anticipated use.⁸

⁸ <https://www.centre.edu/about/college-policies-initiatives/sustainability>

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Since these measures remain in place, tours continue, and new interpretive signage is planned, the PLUS standard continues to be satisfied.

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: In the prior recertification application, the Applicant selected Standard H-1, Not Applicable/De Minimis Effect in the downstream ZoE. This review finds that Standard H-2, Agency Recommendation is appropriate for both ZoEs under the new license.

Discussion: The prior license had no requirements for recreation, although there is an existing parking area and informal fishing access downstream of the dam.

According to the FERC EA, since 2012, the National Park Service, in conjunction with the Commonwealth of Kentucky, local governments, and the Kentucky Riverkeeper (collectively the Kentucky Water Trail partners), have developed plans for improving river access for recreational boating and interpreting the ecology and cultural history of the river including at Lock and Dam 7 as part of the Kentucky River Water Trail system. Paddling and fishing are the primary activities upstream and downstream of the dam and are part of the state's Blue Water Trails system.⁹ Private boat launches located both upstream and downstream provide river access for a nominal fee. Jessamine County has developed a Kentucky River Guide that describes the history and identifies historical sites of interest along the river.¹⁰

Article 407 of the new license requires implementation of the Recreation Plan that was filed on September 28, 2020 and approved by FERC in the new license. New recreational amenities required within 2 years of the license include a 1,300-foot-long canoe portage and stairs with double handrails for transporting canoes at the upstream and downstream access points, a new parking area, safe access to a fishing and swimming area, and directional and safety signage - all on the eastern side of the river. The Owner must file with FERC documentation of the completed recreation amenities within 90 days of completion.

The current LIHI Certificate includes the following recreation condition:

Condition 2. *The facility owner shall continue to work with Jessamine County Parks and Recreation Department to make recreational enhancements to the project area. The owner shall provide a brief summary of progress in this effort annually along with the annual*

⁹ <https://fw.ky.gov/Education/Pages/Kentucky-River,-Pool-7.aspx>
and <https://fw.ky.gov/Education/Pages/Kentucky-River,-Pool-6.aspx>

¹⁰ <https://drive.google.com/file/d/1KAgpTvJNDf0G86S6YyieNk8SDbJ3EvOi/view>

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compliance statement due to LIHI. The owner shall also provide LIHI with a final report on the recreational enhancements within one month of their completion.

Annual compliance submittals during the current LIHI term demonstrate that the Owner had proactively engaged with the County over several years but made little progress on recreational improvements. The Owner initiated consultation with KRA and the Kentucky Riverkeeper to develop a plan for the recreation improvements that were incorporated into the new license.

Based on the mid-term review, the Project is implementing agency-approved recreation enhancements on a reasonable schedule that when complete, will significantly improve recreational access. Therefore, the Project continues to satisfy this criterion with the recommended condition to document completion of the required enhancements. Given that the new license requires implementation of the recreation plan, the current LIHI condition is no longer necessary. The current LIHI certification also included a PLUS standard for voluntary actions related to the condition but since recreation enhancements were unable to be implemented under that condition and are now required under license article 407, they are no longer voluntary actions, and the PLUS standard no longer applies.

VI. Conclusions and Recommendation

This review determined that the Project continues to satisfy the LIHI criteria and a new Certificate term can be granted. In addition, the Project continues to satisfy the PLUS standard for cultural and historic resource protection allowing for a 13-year term of certification. As noted above, the following condition is recommended.

Condition 1: In annual compliance submittals to LIHI, the facility Owner shall document progress made on implementation of recreation enhancements. When all enhancements are completed, the Owner shall provide a copy of the FERC submittal and subsequent FERC acknowledgement of completion.

Appendix A – License and WQC Requirements Crosswalk

Old Requirements		New Requirements	
1992 FERC License https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19920604-0461&optimized=false		2022 FERC License https://elibrary.ferc.gov/eLibrary/filedownload?fileid=6CA7A823-1ACD-CA07-8F74-82A279800000	
		Article 401	Water quality monitoring plan - filed 09/28/2020 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020A1E18-66E2-5005-8110-C31FAFC91712 Monitoring of DO and temperature must occur year-round and plan shut downs required under low DO conditions per the WQC.
		Article 402	Submit annual water quality monitoring report to FERC by 03/31 each year
Article 401	Operate in run-of-river mode within USACE (now Kentucky River Authority) determined low flow constraints. Minimize impoundment fluctuations. Temporary modifications allowed.		
Article 402	Must acquire property rights if USACE transfers ownership to non-federal entity.		
Article 403	Required flow and elevation monitoring and compliance plan.	Article 403	Operate in run-of-river mode and cease generation during low-flow restricted periods as declared by the Kentucky DEP or the Kentucky River Authority. Operations compliance monitoring plan – filed 04/30/2020. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0207DFA0-66E2-5005-8110-C31FAFC91712

Old Requirements		New Requirements	
		Article 404	Planned deviations allowed up to 3 weeks at a time with state concurrence. File reports with FERC within 14 days of onset. Unplanned deviations > 3 hours or with environmental impact require FERC reporting within 14 days. Deviations < 3 hours with no environmental impact require an annual report by 01/31 each year.
		Article 405	Restricts non-hazardous tree removal to Nov 15 – March 31 for protection of bats.
		Article 406	Avian protection plan due within 120 days of license, FERC extension until 08/31/2023 granted on 02/07/2023.
		Article 407	Recreation plan – filed 09/28/2020 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020A1E20-66E2-5005-8110-C31FAFC91712 including new amenities required within 2 years of license: canoe portage with stairs at the upstream and downstream access points, a new parking area, safe access to a fishing and swimming area, and directional and safety signage. See map https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020A1E15-66E2-5005-8110-C31FAFC91712
Article 404	SHPO consultation required for ground disturbing activity or newly discovered resources, file Cultural Resources Management Plan if needed.	Article 408	Implement programmatic agreement dated June 2022 https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220719-3044&optimized=false and file revised HPMP. Original HPMP filed 09/28/2020, FERC extension until 03/31/2023 to file revised HPMP granted on 02/07/2023. Historic resources include the lock, dam, powerhouse, and Shakertown Historic District (outside project boundary).
Article 405	Standard use and occupancy article.	Article 409	Standard use and occupancy article.

Old Requirements		New Requirements	
Standard terms and conditions	Standard articles 1-37, Form L-5 version, 1975. See license https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00C3825E-66E2-5005-8110-C31FAFC91712	Standard terms and conditions	Standard articles 1-28, Form L-3, 1975 see license https://elibrary.ferc.gov/eLibrary/filedownload?fileid=6CA7A823-1ACD-CA07-8F74-82A279800000
2005 License Transfer	https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CEEF1F-66E2-5005-8110-C31FAFC91712		
2014 License Amendment	Reflecting turbine runner replacement – SHPO stated no effect. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01D01F6F-66E2-5005-8110-C31FAFC91712		
Water Quality Certification (WQC)	Originally issued in 1973 with no conditions. No new WQC issued at the 1992 relicensing – no effect determination by state.		
2005 WQC	https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00D6C841-66E2-5005-8110-C31FAFC91712	2020 WQC	See Appendix A in license https://elibrary.ferc.gov/eLibrary/filedownload?fileid=6CA7A823-1ACD-CA07-8F74-82A279800000
Condition T-1	DO monitoring required from June – October, either automatic or manual. Voluntary plant shutdowns if average of DO readings over the previous 24-hour period drop below 5 mg/l until the average rises above 5 mg/l or if a single reading drops below 4 mg/l, and during manual monitoring shut-down if a single reading drops below 5 mg/l. Annual DO monitoring reports due at the end of each year.	Conditions S-1 and T-1	DO monitoring required May – October, either automatic or manual. Voluntary plant shutdowns if average of DO readings over the previous 24-hour period drop below 5 mg/l until the average rises above 5 mg/l or if a single reading drops below 4 mg/l, and during manual monitoring shut-down if a single reading drops below 5 mg/l. Annual DO monitoring reports due by 03/31 each year for 10 years after license issuance. Notification of low DO within 3 days.

Old Requirements		New Requirements	
Condition T-2	Adhere to previously submitted design and specifications (2005)	Condition T-2	Adhere to previously submitted design and specifications (from 2005)
Condition T-3	Required erosion and sedimentation control plan during construction	Condition T-3	(modified May 1, 2023) WQC is valid for the term of the FERC license
Conditions T-4 – T-6	Administrative conditions	Conditions T-4 - T-6 and General Conditions 1-11	Administrative conditions