

# REVIEW OF APPLICATION FOR LIHI CERTIFICATION OF THE WHITE RIVER HYDROELECTRIC PROJECT

White River Lock and Dam No. 1 (FERC No. 4204)

White River Lock and Dam No. 2 (FERC No. 4660)

"Shelby M. Knight" Lock and Dam No. 3 (FERC No. 4659)

White River, Independence County (LD1 and LD2) and Stone County (LD3), Arkansas

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### FINAL REVIEW OF APPLICATION FOR LIHI CERTIFICATION OF THE WHITE RIVER HYDROELECTRIC PROJECT

This report provides final review findings and recommendations related to the certification application submitted to the Low Impact Hydropower Institute (LIHI) by ACA Financial Guaranty Corporation on behalf of Independence County, AR and the City of Batesville, AR (Applicant) for certification of the 12.5 MW White River Hydroelectric Project (Project). The final certification application was filed on April 26, 2021 and is subject to review under the current 2<sup>nd</sup> edition LIHI Handbook (Revision 2.04, April 1, 2020).

### I. INTRODUCTION

The White River Hydroelectric Project (Project) reviewed under this application includes three separate FERC Projects - the White River Lock and Dam No. 1, Lock and Dam No. 2 and the "Shelby M. Knight" Lock and Dam No. 3 Hydroelectric Projects (referred throughout this report as LD1, LD2, LD3, or Project respectively). The Project is located on the White River in Independence County (LD1 and LD2) and Stone County (LD3) in north central Arkansas.

The Projects are located at existing and no longer used US Army Corps of Engineers (USACE) locks and dams on the 722-mile-long White River.

The White River Lock and Dam No. 1 (LD1) was built by the USACE between 1900 and 1904 for navigational purposes. This project received inactive status on June 30, 1952 and on July 1, 1952, LD1 was sold to the City of Batesville, Arkansas<sup>1</sup>.

The White River Lock and Dam No. 2 (LD2) was built by USACE in 1905 for navigational purposes. In 1952, the USACE navigational project was determined non-economical and LD2 was sold to Arkansas Light and Power Company<sup>2</sup>.

The White River Lock and Dam No. 3 (LD3) was built by USACE between 1905 and 1908 for navigational purposes. In 1952, the USACE navigational project became inactive and in 1960 was sold to Arkansas College, Batesville, Arkansas<sup>3</sup>.

<sup>&</sup>lt;sup>1</sup> <u>FERC Order Issuing Unconstructed License (Major) Project No 4204-002</u> (White River Lock and Dam No 1 Hydroelectric Project) issued February 28, 1986. Hereinafter referred to as "LD1 FERC Order".

 <sup>&</sup>lt;sup>2</sup> <u>FERC Order Issuing License (Major) Project 4660-001</u> (White River Lock and Dam No 2
 Hydroelectric Project issues November 8, 1985. Hereinafter referred to as "LD2 FERC Order".

<sup>&</sup>lt;sup>3</sup> <u>FERC Order Issuing Unconstructed License (Major) Project No. 4659-002</u> (White River Lock and Dam No 3 Hydroelectric Project) issues February 28, 1986. Hereinafter referred to as "LD3 FERC Order"

### II. PROJECT LOCATION AND SITE CHARACTERISTICS

The Project is located on the White River in Independence County (LD1 and LD2) and Stone Country (LD3) in north central Arkansas. The river begins in northwestern Arkansas in the Boston Mountains and flows east toward Fayetteville where it then turns north. The river enters Missouri near Eureka Springs. It then flows southeast back into Arkansas past Bull Shoals, Mountain Home, and Calico Rock.

At Batesville, the second section of the river, known as the Lower White, begins. From Batesville, the river flows south for another 295 miles through the Arkansas Delta region before emptying into the Mississippi River. The White River is a major tributary of the Mississippi River (Figure 1) and has a drainage basin of 27,765 square miles. The river passes multiple lakes created by eight USACE dams. The USACE Bull Shoals Dam is located approximately 99 miles upstream of LD3.

LD1 is located in Batesville, AR at river mile (RM) 299.2, LD2 is about 8 miles upstream at RM 308.3, and LD3 is another 12 miles upstream at RM 320.2.

LD1 consists of a 660-foot-long, 27.6-foot-high dam that creates an impoundment with approximately 12,500 acre-feet of storage and a surface area of 773 acres. The powerhouse contains a single vertical Kaplan generating unit with a capacity of 4.3 MW (FERC authorized at 3.9 MW) and a design flow of 3,180 cubic feet per second (cfs) and estimated annual generation of 17,200 MWh. An open-flume tailrace conveys water back to the river about 280 feet downstream of the dam. The Project boundary encompasses the high-water mark and about 25 acres of land around Project structures.



Figure 1: LD1

LD2 includes a concrete and timber crib dam approximately 658 feet long and 29 feet high with an integral navigation lock approximately 175 feet long and 36 feet wide on the right side of the dam. A multi-level intake flume, approximately 120 feet long and 100 feet wide is located within the lock structure. The dam creates an impoundment with approximately 8,581 acre-feet of storage capacity and a surface area of approximately 1,072 acres at maximum pool elevation of 260.2 ft (msl). The powerhouse contains a single vertical Kaplan generating unit with a capacity



Figure 2: LD2

of 3.9 MW (FERC authorized at 3.5 MW) and a design flow of 3,180 cfs. The average annual generation is approximately 15,400 MWh. An open flume tailrace, approximately 120 feet long conveys water back to the river. The Project boundary encompasses the high-water mark and about 10 acres of land around Project structures.

The LD3 Project includes a concrete and timber crib dam approximately 750 feet long and 21 feet high with a 3-foot-high concrete cap added in 2010 that raised the dam height to a spillway crest elevation of 275.5 feet (NGVD). The dam creates an impoundment with approximately 10,242 acre-feet of storage capacity and a surface area of 787 acres. The powerhouse contains a single vertical Kaplan generating unit rated at 4.3 MW (FERC authorized at 3.9 MW) with a design flow of 3,163



Figure 3: LD3

cubic feet per second (cfs). The average annual generation is approximately 18,700 MWh. An open-flume tailrace returns flow to the river 300 feet downstream of the dam. The Project boundary encompasses the high-water mark and about 42 acres of land around Project structures.

In total, there are eight dams along the White River, including the Bull Shoals Dam which created the water source for the White River and Project area.



Figure 1. White River Hydroelectric Project Location and Watershed



Figure 2. White River Lock and Dams

#### III. REGULATORY AND COMPLIANCE STATUS

The Projects were originally licensed by the Federal Energy Regulatory Commission (FERC) prior to construction November 8, 1985 (LD2) and February 28, 1986 (LD1, LD3).

An Order Amending License and Revising Annual Charges under Article 29 was issued by FERC on August 29, 2001 (LD2) and September 10, 2001 (LD1 and LD3). This Amending order was specific to Article 29 requirements with revisions in generating units and total capacity of the Project.

Orders Amending Licenses for LD1,<sup>4</sup> LD2,<sup>5</sup> LD3<sup>6</sup> were issued on November 13, 2002 amending the project licenses to change the route of the authorized transmission line.

### IV. PUBLIC COMMENTS RECEIVED OR SOLICITED BY LIHI

The application was publicly noticed on April 27, 2021 and notice of the application was forwarded to resource agency and stakeholder representatives listed in the application. The 60-day comment period ended June 26, 2021. No public comments were received by LIHI during the comment period. Outreach was received from one stakeholder agency, the Osage Nation Historic Preservation Office, with a request for clarifications and additional information. These clarifications were provided by LIHI along with available public information regarding their request for previous cultural resources survey reports. No additional comments were received.

### V. ZONES OF EFFECT

The Applicant delineated the Project into six Zones of Effect (ZoEs):

- Zone 1 is the impoundment extending upstream from the LD3 Dam (upstream limit at Lafferty Creek),
- Zone 2 is the tailrace/downstream zone extending downstream from the LD3 dam (downstream limit at Glenn Creek,
- Zone 3 is the impoundment extending upstream from LD2 Dam (upstream limit at Betsey Gill Creek),
- Zone 4 is the tailrace/downstream zone extending downstream from the LD2 dam (downstream limit at Rocky Branch),
- Zone 5 is the impoundment extending upstream from LD1 Dam, (upstream limit at Poke Bayou)
- Zone 6 is the tailrace/downstream zone extending downstream from the LD1 dam (downstream limit at narrowing and bend in river approximately 1.3 miles downstream).

The Applicant selected the standards shown in the tables below. The reviewer agrees with the selected standards.

<sup>&</sup>lt;sup>4</sup> <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9591778</u>

<sup>&</sup>lt;sup>5</sup> https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9591780

<sup>&</sup>lt;sup>6</sup> <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9591779</u>



Figure 3a. White River Hydroelectric LD3 Zones of Effect



Figure 3b. White River Hydroelectric LD2 Zones of Effect



Figure 3c. White River Hydroelectric LD1 Zones of Effect

### Zone of Effect # 1: LD3 Impoundment Zone

CRITERION		ALTERNATIVE STANDARDS					
		1	2	3	4	PLUS	
Α	Ecological Flow Regimes	✓					
В	Water Quality			✓			
С	Upstream Fish Passage	✓					
D	Downstream Fish Passage		✓				
Е	Watershed and Shoreline Protection	✓					
F	Threatened and Endangered Species Protection		✓				
G	Cultural and Historic Resources Protection		✓				
Η	Recreational Resources			$\checkmark$			

## Zone of Effect # 2: LD3 Tailrace/Downstream Zone

CRITERION		ALTERNATIVE STANDARDS				
		1	2	3	4	Plus
А	Ecological Flow Regimes	~				
В	Water Quality			✓		
С	Upstream Fish Passage		✓			
D	Downstream Fish Passage	$\checkmark$				
Е	Watershed and Shoreline Protection	~				
F	Threatened and Endangered Species Protection		✓			
G	Cultural and Historic Resources Protection		✓			
Н	Recreational Resources			✓		

### Zone of Effect # 3: LD2 Impoundment Zone

CRITERION		A S	LTERN FANDA	ATIVI RDS	C	
		1	2	3	4	PLUS
А	Ecological Flow Regimes	✓				
В	Water Quality			√		
С	Upstream Fish Passage	✓				
D	Downstream Fish Passage		✓			
Е	Watershed and Shoreline Protection	✓				
F	Threatened and Endangered Species Protection		✓			
G	Cultural and Historic Resources Protection		✓			
Η	Recreational Resources			✓		

### Zone of Effect # 4: LD2 Tailrace/Downstream Zone

CRITERION		ALTERNATIVE STANDARDS				
		1	2	3	4	Plus
Α	Ecological Flow Regimes	~				
В	Water Quality			✓		
С	Upstream Fish Passage		$\checkmark$			
D	Downstream Fish Passage	✓				
Е	Watershed and Shoreline Protection	✓				
F	Threatened and Endangered Species Protection		$\checkmark$			
G	Cultural and Historic Resources Protection		√			
Н	Recreational Resources			✓		

### Zone of Effect # 5: LD1 Impoundment Zone

CRITERION		ALTERNATIVE STANDARDS				
		1	2	3	4	PLUS
А	Ecological Flow Regimes	$\checkmark$				
В	Water Quality			✓		
С	Upstream Fish Passage	✓				
D	Downstream Fish Passage		✓			
Е	Watershed and Shoreline Protection	~				
F	Threatened and Endangered Species Protection		✓			
G	Cultural and Historic Resources Protection		✓			
Н	Recreational Resources			✓		

### Zone of Effect # 6: LD1 Tailrace/Downstream Zone

CRITERION		ALTERNATIVE STANDARDS				
		1	2	3	4	Plus
А	Ecological Flow Regimes	✓				
В	Water Quality			√		
С	Upstream Fish Passage		✓			
D	Downstream Fish Passage	✓				
Е	Watershed and Shoreline Protection	✓				
F	Threatened and Endangered Species Protection		✓			
G	Cultural and Historic Resources Protection		✓			
Н	Recreational Resources			~		

#### VI. 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:** The Applicant selected Standard A-1, Not Applicable/De Minimis Effect for all six ZOEs.

**Discussion:** The project is operated in an instantaneous run-of-river mode. Inflows for LD1, LD2 and LD3 are dependent on the outflow from the upstream USACE dams at Bull Shoals on the White River and from Norfolk Lake on the North Fork River along with other tributaries. Discharges and lake levels within the White River are managed by USACE under the White River Water Control Plan<sup>7</sup>. USACE owns six dams within the basin and operates the system to reduce the frequency and severity of flooding, provide water supply, hydroelectric generation, and to provide the minimum environmental flows.

There are no spillway gates at any of the dams. Plant flow capacities are low in comparison to river flow and the Applicant has indicated the impoundment levels rarely drop to or below the tops of the spillways. Run-of-river operation and flows are monitored from the USGS gage along the White River at Batesville, AR (gage 070610000). No deviations have been reported to FERC since issuance based on review of the FERC eLibrary.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project is in compliance with flow requirements due to its run-of-river operation and low flow capacities in comparison to normal river flow, and therefore satisfies the ecological flow regimes 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:** The Applicant selected Standard B-3, Site Specific Monitoring Studies for all six ZoEs.

### Discussion:

The Project area is included in the Arkansas 2016 Impaired Water Report<sup>8</sup> under segment 4F – White River from Mouth of Black River to Mouth of Buffalo River. From the Impaired Water

<sup>&</sup>lt;sup>7</sup> <u>https://www.swl-wc.usace.army.mil/pages/docs/White\_River\_Master\_Manual.pdf</u>

<sup>&</sup>lt;sup>8</sup> <u>https://www.adeq.state.ar.us/water/planning/integrated/303d/pdfs/2016/final-2016-305b-report.pdf</u>

Report "Waters within this segment have been designated for fish and wildlife propagation, primary and secondary contact recreation, and domestic, agricultural, and industrial water supply uses. Kayaking, canoeing, wade fishing, and primary contact recreation activities are prevalent in the waters of this segment." Page A-225 of this report notes that a stream segment of the North Fork River, below Lake Norfolk, was listed as impaired due to dissolved oxygen concentrations. The cause was reported as the USACE hydropower facility at the dam. In 2009 a TMDL was developed and operational changes "have been implemented and funded by the hydropower facility to address the issue". The waters within the Project reach are not listed as impaired.

Water Quality Certificates (WQCs) were issued for each Project in 1983. Only the LD3 WQC was available and provided by the Applicant. It contains a single condition stating that no water storage is allowed (see Appendix A of the LIHI application). It is likely that LD1 and LD2 WQCs are the same, but since they are so old, are not of use for this review. A single WQC was issued on April 9, 2001 for all three Projects as part of the FERC license amendment process. It does not contain any terms and conditions.

LD1: The LD1 FERC Order included project operation information and details on the multi-level intake structure to permit the withdrawal of water from depths ranging from 4 feet to 22.5 feet below the surface of the impoundment, noted as 28 feet deep. This operation was discussed with stakeholder agencies in concern over thermal impacts of the Project at the transition zone between coldwater fisheries of the upper White River and the warmwater fishery of the lower White River. The result was Article 37 requiring long-term monitoring to ensure maintenance of state water quality standards.

LD2: The LD2 FERC Order included project operation information and details on the multi-level intake structure to permit the withdrawal of water from depths ranging from 5 feet to 27 feet below the surface of the impoundment, noted as 29 feet deep. This operation was discussed with stakeholder agencies in concern over thermal impacts of the project at the transition zone between coldwater fisheries of the upper White River and the warmwater fishery of the lower White River. The result was Article 37 requiring long-term monitoring to ensure maintenance of state water quality standards.

LD3: LD3 Project included the installation of a steel sheeting at the project dam resulting in an increase in the impoundment of 3 feet. The LD3 FERC Order included Project operation information and details on the multi-level intake structure to permit the withdrawal of water from depths ranging from 4 feet to the bottom surface of the impoundment, noted as 26 feet deep. This operation was discussed with stakeholder agencies in concern over thermal impacts of the project at the transition zone between coldwater fisheries of the upper White River and the warmwater fishery of the lower White River. The result was Article 37 requiring long-term monitoring to ensure maintenance of state water quality standards.

The 2001 FERC Amendments relating to capacity changes included consultation and review of environmental impacts. The Order indicated with the percentage reduction in flow (55 percent

for LD1, 42 percent for LD2, 56 percent for LD3) "reduction in flow through the generator unit and increased duration of spillage, it is expected that the proposed project change would result in.....less impact to downstream water quality than was identified during processing of the original application for license".

The Project developed a Dissolved Oxygen (DO) and Temperature Monitoring Plan<sup>9</sup> in accordance with the requirement of the FERC Orders Article 37. This plan, dated June 24, 2013, was approved by FERC on February 27, 2014. Water quality monitoring for DO and temperature was completed in accordance with the plan from 2014-2019. The requirements of long-term monitoring under Article 37 were amended and discontinued via Order Terminating Dissolved Oxygen and Water Temperature Monitoring issued January 28, 2020<sup>10</sup>.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project does not appear to adversely impact water quality and operation does not directly change water quality. Therefore, the Project satisfies the water quality criterion.

### 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:** The Applicant selected Standard C-1, Not Applicable/De Minimis Effect in Zone 1, Zone 3, and Zone 5 (Impoundment zones) and Standard C-2, Agency Recommendation for Zone 2, Zone 4 and Zone 6 (tailrace/downstream zones).

**Discussion:** The Project area is located within a transition zone between the cold water fisheries of the upper White River and the warm water fishery of the lower White River. Temperature and dissolved monitoring, as discussed in Criteria B – Water Quality, was conducted to ensure the transition zones were preserved and monitored.

LD1: The Applicant noted the dam was originally constructed with a fish ladder which was located about 40 feet from the right abutment training wall on the southwest bank. Only remnants of this fish ladder remain at this time. There are no barriers to upstream passage in the impoundment Zone of Effect.

LD2: The Applicant noted the dam was originally constructed with a fishway located at the center of the spillway. Only remnants of this fishway remain at this time. There are no barriers to upstream passage in the impoundment Zone of Effect.

LD3: The Applicant noted the dam was originally constructed with a fishway located at the

<sup>&</sup>lt;sup>9</sup> <u>https://elibrary.ferc.gov/eLibrary/idmws/common/opennat.asp?fileID=13396922</u>

<sup>&</sup>lt;sup>10</sup> <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15453628</u>

dam near the right spillway abutment. Only remnants of this fishway remain at this time. There are no barriers to upstream passage in the impoundment Zone of Effect.

The Project's licenses Standard Article 15 reserves authority for agencies to require fish passage facilities, which to date has not been exercised. Comments provided in the 2013 water quality monitoring plan included reference to the dams being a barrier to natural fish movement and the differences in fish populations above and below the dam, but no specific recommendations were made to require the installation of fishways, with the exception of fish ladders for passage of species such as American eel. This same 2013 water quality report did note Chinese carp (an invasive species of Asian carp introduced in the area) are found below the LD1 dam but rarely above, indicating the dams may be restricting upstream movement.

In 2017, the Arkansas Game and Fish Commission (AGFC) contracted with Milieu Inc. to perform a feasibility assessment for installing upstream eel passage at the Arkansas River and White River<sup>11</sup>, including review of LD1, LD2 and LD3 facilities. Based on high flows and flooding noted within the Project area, the report indicated "a permanent eel ladder at any of the three hydroelectric stations would not resist the destructive power of extreme flooding". Recommendations within this report indicated that short temporary ladders could be installed from June through December at each of the dams to allow for eel passage. Recommended temporary eel ladder locations and concepts were included. In support of the LIHI application, the Applicant reached out to AGFC and received this comment: "If you are interested in installing these temporary eel ladders on your dams, we would be willing to look into obtaining grants to help offset the costs....It would be possible to install an eel ladder at Batesville to begin with and see how much use it receives as a pilot study." (see Appendix A).

While agencies have provided comment on the benefits of eel ladder installation, no formal request for installation has been made for this Project and latest correspondence indicates support by AGFC for voluntary installation.

Based on the application, supporting documentation, and FERC eLibrary documents, and correspondence from the Applicant, this review finds that the Project is in compliance with the Upstream Fish Passage criterion. An optional PLUS award may be available (see Section VII) for voluntarily compliance with AGFC suggested co-funded pilot installation of eel passage at LD1 or another facility.

<sup>&</sup>lt;sup>11</sup> Report on American Eel Ladders for the Arkansas and White River prepared for the Arkansas Game and Fish Commission by Milieu, Inc. dated 2017.

#### **D: Downstream Fish Passage**

**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:** The Applicant selected Standard D-2, Agency Recommendation in Zone 1, Zone 3 and Zone 5 (Impoundment zones) and Standard D-1, Not applicable/De Minimis Effect for Zone 2, Zone 4 and Zone 6 (tailrace/downstream zones).

**Discussion:** As noted previously in Criterion C - Upstream Fish Passage, the migratory species of concern in the Project area is the catadromous American eel. American eels migrate downstream to spawn. Migration downstream is through the dam during normal and high flow periods.

The Applicant has indicated species found upstream of the dams include rainbow and cutthroat trout, which are stocked annually in the Bull Shoals lake. The Bull Shoals lake also included crappier, black bass, white bass, catfish, brook trout, shad and walleye. Trout are not native to Arkansas, but the fisheries have been noted to be a result of the cold water discharge from the USACE dams along the White River. Prior to the dams, the White River included smallmouth bass and warmwater fish, but these native species have been extirpated due to the coldwater discharge<sup>12</sup>.

The Project powerhouses for LD1, LD2 and LD3 have a 5-inch horizonal clear trashrack spacing which would entrain fish. However, the Project also utilizes Kaplan design propellers, which are considered "fish-friendly" and can be adjusted as needed.

The Project's licenses Standard Article 15 reserves authority for agencies to require fish passage facilities, which to date has not been exercised.

The Applicant appropriately selected Standard D-1 for the Downstream Reach Zone because whence in this zone there are no barriers to downstream movement.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project satisfies the downstream fish passage 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.

<sup>&</sup>lt;sup>12</sup> <u>https://www.agfc.com/en/fishing/sportfish/trout/</u>

**Assessment of Criterion:** The Applicant selected Standard E-1, Not Applicable/ De Minimis Effect for all six ZoEs.

**Discussion:** There are no specific agency recommendations and the Project does not have, nor is required to have, a specific shoreline or watershed management plan. There are no lands of ecological significance nor any critical habitats for threatened or endangered species that are under the Applicant's ownership. As noted above, the Projects have no ability to impound water and are operated in a run-of-river manner that has a de minimis effect on the watershed.

The Applicant indicated the major land covers at the Projects include agricultural grasslands and pastures, oak hickory forest and agricultural croplands of corn and sorghum.

LD1: The lands around LD1 are urbanized with industrial uses.

LD2: The lands around LD2 are primarily undeveloped forested or agricultural lands. Some development was located on the north side of the river.

LD3: The lands around LD3 are primarily undeveloped forested or agricultural lands.

The Project lands include the impoundments up to the high water mark, small parcels on both sides of the river adjoining the facilities, the transmission line which runs 20.6 miles along the north side of the river from LD3 to a substation near LD2, and the line continues down to LD1.

As part of the 2002 FERC Amendment, for construction of the transmission line associated with the Projects, the Owner was required to develop an Erosion and Sedimentation Control Plan, Wildlife/Vegetation Management Plan and Wetland/Floodplain Management Plan, and Raptor Protection Plan. These plans were filed in February 2004 by Trans-Tec Consulting. The plans were reviewed by USFWS and AGFC with no comments.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project with its run-of-river operation and small footprint, has little to no impact on the shoreline and therefore satisfies the shoreland 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:** The Applicant selected Standard F-2, Finding of No Negative Effects for all six ZoEs.

**Discussion:** The FWS Information for Planning and Consultation (IPaC) database was accessed to determine federally-listed species that could occur in the Project vicinity. An updated IPaC

review was conducted in April 2021 (summarized in Appendix A). Findings indicated the following species potentially present at the Project locations. No critical habitats were identified for these species in the Project vicinity.

- Three federally-listed mammals may inhabit the Project vicinity and include the gray bat (endangered), Indiana bat (endangered) and Northern long-eared bat (endangered);
- Three federally-listed bird species may inhabit the Project vicinity and include the Eastern black rail (threatened), the piping plover (threatened), and the red knot (threatened);
- One federally-listed amphibian species may inhabit the project vicinity and includes the Ozark hellbender (endangered);
- Two federally listed flowering plants may inhabit the project vicinity which include the Missouri bladderpod (threatened) and running buffalo clover (endangered).

The IPaC database noted two federally-listed clam species may inhabit the project vicinity and include the pink mucket – pearlymussel (endangered) and rabbitsfoot (threatened). The critical habitat for the rabbitsfoot was noted to overlap the LD1 Project area. The 2002 Order Amending License for LD3 included specific review of Endangered Species under Section 7 of the Endangered Species Act. The review included outreach to USFWS and noted there were no existing records of species listed by USFWS as Endangered of Threatened within a quarter mile of the transmission route and via USFWS letter dated January 23, 2002, "concludes that no federally listed or proposed threatened or endangered species occur in the impact area of the project". As part of this Order Amendment, DOI requested an update to the status of the scaleshell mussel and pick mucket mussel, both of which were Federally listed as endangered. A mussel survey was completed noting no living scaleshell mussels or pink mucket mussels. The order indicates "On July 10, 2002, the DOI filed a letter stating that since no live endangered mussels were found during this survey, the projects, as proposed, are not likely to adversely impact any endangered species"<sup>13</sup>.

No migratory birds of conservation concern protected under the Migratory Birds Treaty Act and the Bald and Golden Eagle Protection Act were expected to occur within the Project vicinity. The State of Arkansas does not maintain a separate list of threatened or endangered species.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project is unlikely to affect listed species given its small footprint, run-of-river operations, and previous assessments. Therefore, the Project satisfies the threatened and endangered species protection criterion.

<sup>&</sup>lt;sup>13</sup> United States Department of the Interior – Fish and Wildlife Services letter to FERC dated July 10, 2002 in reference to proposed White River Lock and Dam Hydroelectric Projects.

#### **G:** Cultural and Historic Resources 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: The Applicant selected Standard G-2, Approved Plan for all six ZoEs.

**Discussion:** The application states the Project areas were surveyed for cultural resources prior to construction of the hydroelectric facilities. The locks and dams were determined to be eligible for listing on the National Register of Historic Places and construction of the hydroelectric stations would require removal of portions of the existing lock and dam structures. At that time, the Arkansas State Historic Preservation Officer (SHPO) noted this would constitute an adverse impact on the eligible properties and recommended documentation of the projects prior to demolition.

LD1: LD1 FERC Order, Article 39 required coordination with the Arkansas SHPO to record all or part of the Lock and Dam No. 1, construct a scale model as it was originally constructed and produce a film on display for visual interpretation of the historical operation. The Applicant provided documentation of the scale model and educational film materials generated to meet this requirement.

LD2: LD2 FERC Order, Article 38 required coordination with the Arkansas SHPO to record all or part of the Lock and Dam No. 2, construct a scale map to show the relation of the Lock and Dam to other historic complexes on the White River. The applicant provided documentation of the map materials generated to meet this requirement.

LD3: LD3 FERC Order, Article 40 required coordination with the Arkansas SHPO to record all or part of the Lock and Dam No. 3, construct a scale map to show the relation of the Lock and Dam to other historic complexes on the White River. The applicant provided documentation of the map materials generated to meet this requirement.

Further consultation with the SHPO was completed in support of the 2002 FERC Amendment<sup>14</sup> for construction of the transmission line. The 2002 Environmental Assessment indicated that Native Americans once inhabited the area around the Project and scattered artifacts and archeological sites have been located. A Phase 1 Cultural resources survey had been completed along the transmission line, substation and access roads, identifying 37 sites with 24 potentially eligible for listing on the National Register of Historic Places. On August 30, 2002 a Memorandum of Agreement (MOU) was executed with FERC, the SHPO and the Federal Advisory Council on Historic Preservation<sup>15</sup> requiring development of a Historic Properties Treatment Plan. The plan was approved, under article 406, via Order Approving Revised Historic Properties Treatment Plan Issued November 4, 2005.

<sup>&</sup>lt;sup>14</sup> <u>https://elibrary.ferc.gov/eLibrary/idmws/common/opennat.asp?fileID=14765797</u>

<sup>&</sup>lt;sup>15</sup> <u>https://elibrary.ferc.gov/eLibrary/idmws/common/opennat.asp?fileID=10681460</u>

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project does not adversely impact cultural or historic resources. The Applicant requested a Section 106 review by the SHPO as part of this application to confirm completeness of the project requirements; however, no response was received. In response to the LIHI intake review, the Applicant provided supplemental information to confirm compliance (see Appendix A). Therefore, the Project satisfies the cultural and historic resources criterion.

### **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 selected Standard H-3, Assured Accessibility for all six ZoEs.

#### Discussion:

LD1: The LD1 FERC Order notes that the Arkansas Department of Parks and Tourism provided comment on the Project during the original licensing review, noting existing facilities provide for recreational need. Article 17 and Article 18 of the LD1 FERC Order requires the construction and maintenance of reasonable recreational facilities and reasonable public free access to project waters and lands, respectively. The Applicant has provided a summary of recreational resources and access in/around the LD1 site, which include public boat ramps upstream and downstream of the dam (developed and maintained by AGFC) with available parking and access to fishing. Small City parks are referenced on both banks adjacent to the dam with playgrounds, picnic areas, and fishing. Public fishing access is available at the lock wall.

LD2: The LD2 FERC Order noted the Arkansas Department of Parks and Tourism recommended inclusion of public access and canoe portage in the vicinity of the lock and dam given the recreational value of the White River for fishing, swimming and boating. Article 17 and Article 18 of the LD2 FERC Order requires the construction and maintenance of reasonable recreational facilities and reasonable public free access to project waters and lands, respectively. The Applicant has stated there is limited access to the LD2 Project and "The powerhouse and lock are fenced for public safety. Upstream of the spillway on a small side stream there is an undeveloped site that the public uses to gain boating access. The site is privately owned. Informal camping and river access occur on the sandy shoreline on both banks below the spillway and powerhouse."

LD3: The LD3 FERC Order noted the Arkansas Department of Parks and Tourism recommended inclusion of public access and canoe portage in the vicinity of the lock and dam given the recreational value of the White River for fishing, swimming and boating, and indicated the applicant proposed installation of additional portage, picnic tables and outdoor cooking facilities. Article 17 and Article 18 of the LD3 FERC Order requires the construction and

maintenance of reasonable recreational facilities and reasonable public free access to project waters and lands, respectively.

Article 39<sup>16</sup> required the construction of a canoe portage above and below the dam and the construction of a picnic area. Apparently, Article 39 was later rescinded. The application states and the FERC eLibrary search confirms no FERC amendment order document that deleted Article 39, but FERC environmental inspection reports from 2009 and 2015 do not list an Article 39, so it appears that FERC did rescind the requirement sometime after the 2001 environmental inspection report which listed Article 39.

The 2009 inspection report states: "There are no required developed points of public access. There is some fishing from small boats, shoreline fishing, bank camping, swimming, and some canoeing" and "[t] he public has very limited access to the project area." The state has developed public boating sites upstream and downstream of LD3. The Applicant has indicated that they conduct annual clearing of an access path to support an annual Boy Scout canoe race and other canoeing use is very light in that section of the river. The 2009 FERC inspection stated that the clearing is timed to meet the needs of the race that is attended by hundreds of Boy Scouts and their leaders.

For all three Projects, FERC Environmental Inspection Reports were most recently conducted in August 2015 for each of the Projects. With regard to recreational facilities, the licensee was informed of a required Form 80 Recreational Report. FERC eLibrary included a copy of the 2014 Form 80 Recreational Report<sup>17</sup> submitted by Northbrook Power Management for LD1, LD2 and LD3 on November 2, 2015<sup>18</sup>.

Based on review of the application, supporting documentation, and publicly available FERC eLibrary documents, this review finds that the Project satisfies the recreational resources criterion.

### VII. CERTIFICATION RECOMMENDATION

This review included evaluation of the application and additional information provided, a review of the FERC eLibrary, and review of other publicly available information. Based on this evaluation, the Reviewer recommends that the White River Project be certified for a term of five (5) years. The following conditions are also recommended.

<sup>&</sup>lt;sup>16</sup> The LIHI application stated that LD1's license has an Article 39 related to recreation, but that is incorrect since Article 39 is related to cultural/historic resources.

<sup>&</sup>lt;sup>17</sup> <u>https://elibrary.ferc.gov/eLibrary/filelist?document\_id=14395841&optimized=false</u>

<sup>&</sup>lt;sup>18</sup> FERC has since eliminated filing of FERC Form 80s for all licensed Projects unless another license article requires it.

- Condition 1: Should the facility Owner receive notification during the term of this LIHI Certification from either USFWS or AGFC that upstream and/or downstream passage for anadromous or catadromous fish is required at any of the Projects, the Owner shall forward to LIHI a copy of that notification along with a summary of plans and a schedule to initiate consultation and implement passage; and shall provide a status update on implementation progress annual compliance statements.
- Condition 2 (Optional): if at any time prior to six months before the expiration of the Certification terms for each Project the Owner voluntarily implements seasonal upstream eel passage at one or more of the Projects in the absence of an agency recommendation in Condition 1, LIHI will review that information and determine whether or not to award a PLUS standard and extend the Certificate term for three additional years.

## **APPENDIX A**

From:	Jack Tobin
То:	mfischer@lowimpacthydro.org
Subject:	FW: White River Hydroelectric (Batesville, AR)
Date:	Thursday, April 22, 2021 3:32:29 PM
Attachments:	image001.png
	Report on Eel Ladders in Arkansas.pdf

Maryalice,

See attached and below as discussed re: eel passage.

I'll get back to you on their response to your follow up.

-Jack

From: Quinn, Jeffrey <jeffrey.quinn@agfc.ar.gov>
Sent: Tuesday, April 20, 2021 2:37 PM
To: Jack Tobin <jtobin@aca.com>
Cc: cc: Posey, Bill <William.Posey@agfc.ar.gov>; Justin Stroman <Justin.Stroman@agfc.ar.gov>
Subject: Re: White River Hydroelectric (Batesville, AR)

Dear Mr. Tobin, As per your request, I'm attaching the final report for the eel passage feasibility project you referenced by Milieu. The Milieu report recommends a temporary eel ladder (cost = \$25,000 each for materials) at each dam that is removed each year (operating June-December). If you are interested in installing these temporary eel ladders on your dams, we would be willing to look into obtaining grants to help offset the costs (possibly 1/2 the cost). It would be possible to install an eel ladder at Batesville to begin with and see how much use it receives as a pilot study. Migrating eel numbers are known to vary a lot so a multiple year study is usually required.

Justin Stroman is our biologist that works with Northbrook Power with these dams, and he is part of the AGFC team that makes determinations regarding fish passage and hydropower licenses.

Thanks, Jeff

On Mon, Apr 19, 2021 at 1:18 PM Jack Tobin <<u>itobin@aca.com</u>> wrote:

Mr. Quinn,

Following up on my voicemail, ACA Financial Guaranty is the bondholder (owner, effectively) of the White River Hydroelectric Facility consisting of three lock and dam structures in and around Batesville.

I received your contact information from Northbrook Power Management, who manages the project for us.

I am writing to ask if there was any follow up or determination made by AFGC regarding eel passages. I am basically looking for an email from you guys stating that the issues highlighted below have been addressed or deemed unnecessary.

Standard article 15 of the Project licenses reserve agency authority to prescribe fishways. To date, no new or reconstructed upstream fishways have been ordered at the Projects. However, in comments included in the 2013 water quality monitoring plan (see link above) AGFC noted:

"The dams are a barrier to natural fish movements...and we do see differences in fish populations above and below these dams."

The comment stated that American eel and freshwater drum were reported to be seldom found from above the dams except following extended periods of high flows and flood events when they can be flushed downstream from the USACE dams. However, Chinese carp (an introduced invasive species of Asian carp) are found below the Project dams, but rarely above them suggesting that the dam may be of benefit by impeding this species movement. AGFC suggested, however, that reconstruction of the fish ladders for passage of species such as American eel should be considered. AGFC brought in a consultant to evaluate eel passage several years ago, but nothing ever came of that effort and there has been no request for eel passage since that time.

Please let me know if you can help with this inquiry, or if not, where I should turn.

Thank you, Jack

Jack Tobin ACA Financial Guaranty Corporation 555 Theodore Fremd Avenue, Suite C-205 Rye, NY 10580

T: (212) 375-2330 F: (212) 375-2100

jtobin@aca.com www.aca.com

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#### Jeff Quinn

Stream and River Fisheries Biologist E: <u>Jeffrey.Quinn@agfc.ar.gov</u> | P: (501)-470-3309 | M: (501) 539-0892

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213A Hwy 89 South | Mayflower, AR 72106 P: 1-877-470-3309 | F: (501) 470-3399 www.agfc.com

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#### White River Hydroelectric Project LIHI Application Supplement

#### Upstream fish passage:

See emails with AGFC already sent to LIHI. A report commissioned by the agency did not recommend permanent eel ladders due to seasonal flooding.

#### **Shoreline and Watershed Protection:**

For project construction, an erosion and sediment control plan was required under the original 1985 (LD1 and LD3) and 1986 (LD2) licenses' Article 35. Plans were filed in 1987 (not available electronically) and were updated and refiled on October 25, 2004 under Article 401 which replaced Article 35 in FERC's 2002 license amendments. <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=10276842</u>

Protection plans for transmission line relocation required under the 2002 license amendments included: Article 401 – Erosion and Sediment Control Plan with annual monitoring reports.

Article 403 – Wildlife/Vegetation Management Plan

Article 404 – Wetland/Floodplain Management Plan

Article 401 for the transmission line, and Article 403 and 404 plans were submitted together in February 2002

LD3 - https://elibrary.ferc.gov/eLibrary/filedownload?fileid=10066570

LD2 - https://elibrary.ferc.gov/eLibrary/filedownload?fileid=10066569

LD1 - <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=10066571</u>

FERC approved the Article 401 plan for the transmission line, and Article 403 and 404 plans on May 27, 2004

LD3 - https://elibrary.ferc.gov/eLibrary/filedownload?fileid=10157673

LD2 - https://elibrary.ferc.gov/eLibrary/filedownload?fileid=10157674

LD1 - https://elibrary.ferc.gov/eLibrary/filedownload?fileid=10157672

Annual erosion monitoring reports were filed in 2005 and 2006. On August 3, 2007 FERC agreed with USFWS that additional erosion monitoring was no longer required.

LD3 - https://elibrary.ferc.gov/eLibrary/filedownload?fileid=11418245

LD2 - https://elibrary.ferc.gov/eLibrary/filedownload?fileid=11418244

LD1 - https://elibrary.ferc.gov/eLibrary/filedownload?fileid=11418243

#### Threatened and Endangered Species:

Updated USFWS IPaC reports already provided to LIHI.

LD3 – In addition to the species included in the application, the updated report re-mapped the project area resulting in the elimination of the pinkmucket and rabbitsfoot mussels in the re-mapped areas for LD2 and LD3, although they remain in the mapped LD1 area. Additional identified species at all three projects include three threatened bird species – Eastern black rail (newly listed in 2020), piping plover (Atlantic Coast and Northern Great Plains populations) and red knot; and one endangered amphibian – Ozark hellbender.

- There is a species assessment report for the Eastern black rail<sup>1</sup>. It is a wetland dependent bird primarily associated with herbaceous, persistent, and dense emergent wetland plant cover. A prior 2012 assessment concluded that eastern black rails are currently vagrants (casual or accidental vagrants) in Arkansas (p. 29 of the report). While it could be possible for this species to occur in the transmission corridor wetlands, it is unlikely given their vagrant status. Vegetation management in the corridor excludes wetland areas so project operations are unlikely to affect this species.
- Piping plover has a recovery plan<sup>2</sup> in place which does not indicate the species is present in the project area (Figure 1 in the plan). The species breeds and raises young on sparsely vegetated sandbars and reservoir shorelines on river systems. Habitat protections in the plan include ensuring that river management mimics the natural system to the extent possible and furnishes sufficient high-quality nesting habitat to be available at a level to support piping plovers at recovery goals. The project's run-of-river operations supports this goal and project operations are unlikely to affect this species.
- Red knot has a threats assessment document<sup>3</sup> applicable to the project area. Along the Mississippi Flyway in Arkansas, the species is a rare fall transient during migration in August and September with only two spring records (p. 112). It is unlikely to be present in the project area and project operations would not affect the species.
- Ozark Hellbender is a salamander with a 2020 draft recovery plan<sup>4</sup>. The species is present in the White River basin, mostly in smaller streams. There may be some individuals possibly still present in the mainstem of the White River (p. 10). The species is a habitat specialist that depends on consistent levels of dissolved oxygen, temperature, and flow. Adults are typically found beneath large rocks in rocky, fast-flowing streams<sup>5</sup>. Run-of-river operations provide consistent flow, DO and temperature so it is unlikely that project operations affect this species.

#### **Cultural and Historic Resources:**

**Requirements:** 

- LD 1: Article 39 scale model and film along with NPS filing 1988
- LD 2: Article 38 map along with NPS filing 1988
- LD 3: Article 40 map along with NPS filing 1988

Copy of 1988 documentation already sent to LIHI. See also proof of filing of historical photdocumentation with NPS here: <u>https://www.loc.gov/resource/hhh.ar1123.photos?st=gallery</u>

<sup>&</sup>lt;sup>1</sup> <u>https://ecos.fws.gov/ServCat/DownloadFile/186791</u>

https://ecos.fws.gov/docs/recovery\_plan/Vol%20I%20NGP%20Draft%20Revised%20Breeding%20Rec%20Plan%20(JR%20Edits)%20(kk)%2020160224 1.pdf

<sup>&</sup>lt;sup>3</sup> https://fws.gov/northeast/red-knot/pdf/20141125 REKN FL supplemental doc FINAL.pdf

<sup>&</sup>lt;sup>4</sup> https://www.regulations.gov/document/FWS-R3-ES-2019-0101-0003

<sup>&</sup>lt;sup>5</sup> <u>https://www.fws.gov/Midwest/endangered/amphibians/pdf/ozheRecoveryOutline.pdf</u>

Images below of the exhibits at Old Independence Regional Museum, Batesville: <u>https://www.oirm.org/Pages/Virtual\_Tour/Virtual%20Tour.html</u>





From project archives: 15-minute video dated 2004





From project archives: 14-page binder with historical photos

#### Transmission Line Cultural Treatment Plan review for changes in regulations, statutes, etc.

Requires 5-year review of treatment plan (p. 47). There is no requirement to file review reports.

The MOA (already provided to LIHI) scope was limited to construction of the transmission line only, not post-construction.

Since the transmission work was completed in less than the 5-year review period, no reviews were conducted.

However, we recently reviewed regulations and statutes and noted no changes that would affect cultural resources associated with the transmission line:

- National Historic Preservation Act amendments <u>https://libraryguides.law.pace.edu/c.php?g=838577&p=5990247</u>
- Section 106 <a href="https://www.achp.gov/sites/default/files/regulations/2017-02/regs-rev04.pdf">https://www.achp.gov/sites/default/files/regulations/2017-02/regs-rev04.pdf</a>
- 36 CFR Part 800 was amended in 2004 before transmission line treatment plan approval by FERC in 2005.
- 1983 Secretary of Interior Standards have not changed. in 2014, much of former Title 16 was moved to new Title 54, without substantive changes. <u>https://www.nps.gov/subjects/historicpreservation/upload/standards-guidelines-archeologyhistoric-preservation.pdf</u>
- Arkansas State Plan: <u>https://archeology.uark.edu/who-we-are/50moments/stateplan/</u> Appendix B and C of the state plan were revised 01/01/2010 with no changes relevant to postconstruction aspects of the transmission line. <u>https://archeology.uark.edu/wp-content/uploads/2019/03/Guidelines-for-Cultural-Resources-</u> Fieldwork-Report-Writing-in-AR\_StatePlanAppendices B-and-C\_March2019.pdf