REVIEW OF APPLICATION FOR RE-CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE BUFFALO RIVER HYDROELECTRIC FACILITY, LIHI #21

Prepared by Patricia McIlvaine
February 8, 2022

I. INTRODUCTION

This report reviews the recertification application submitted for the 250-kW Buffalo River Hydropower Project (P-1413) (the "Project"), LIHI #21 which is owned by Fall River Rural Electric Cooperative, Inc. (FRREC) and operates as a run-of-river facility. The Project is located on the Buffalo River about 39 miles north of Ashton, in Fremont County, Idaho.

This is the first review of the Project under the 2nd Edition of the Handbook. The Project was first certified by LIHI in 2006 for a 5-year period. The certification lapsed from 2011 – 2016 until certification was sought again. In 2016, the Project was certified under the April 2014 LIHI Handbook, with a term effective from November 28, 2016 to November 28, 2021, which was extended to March 31, 2022. The current certification included the following condition:

> **Condition 1.** *The Owner shall consult the US Geological Survey (USGS) and Henry Forks Foundation (HFF) on how best to adjust flow records on an ongoing basis in order to assure their accuracy. Within 90 days of receipt of the LIHI certification, the Owner shall provide proof of the consultation and a description of the steps that have been taken to correct the problem.*

This condition was closed in 2017 by LIHI staff upon agreement between FRREC and the Henry's Fork Foundation (HFF)[1], in which HHF conducts the stream gage calibrations 3 to 4 times annually instead of the US Geological Society, starting in 2016. As discussed further under the Ecological Flow Regime criterion, a new Condition is recommended to address this change and updating of the Operational Compliance Monitoring Plan required under License Article 403.

II. RECERTIFICATION PROCESS AND MATERIAL CHANGE REVIEW

Under the current LIHI Handbook recertification reviews are a two-phase process starting with a limited review of a completed LIHI application, focused on three questions:

(1) Is there any missing information from the application?
(2) Has there been a material change in the operation of the certified facility since the previous certificate term?
(3) Has there been a change in LIHI criteria since the Certificate was issued
In accordance with the Recertification Standards, all Projects currently applying for renewal must

[1] Henry's Fork Foundation is a nonprofit based in eastern Idaho that uses a science-based, collaborative approach to promote favorable streamflow, good water quality, healthy fish populations, and a positive fishing experience in the Henry's Fork and South Fork Snake River watersheds

go through a full review unless their most recent certification was completed using the 2016 version of the Handbook. Thus, this Stage II report was required for the Buffalo River Project.

A review of the initial application, dated October 2021, resulted in a Stage I or Intake Report, dated November 4, 2020. The Stage I report noted that only limited data was missing, thus an updated application was not needed. Instead, the Applicant provided the needed data via email to LIHI by November 18, 2021, which included a question as to the nature of the plant repairs noted in the 2020 US Forest Service (USFS) annual inspection. As these changes were limited to bearing replacement, machining of the runner blades to original tolerances and repairs to a butterfly valve, returning the facility to original condition, it was determined they were not "material changes" under the LIHI Handbook.

This Stage II assessment included review of the application package, public records in FERC's eLibrary since the last LIHI certification in February 2017 through January 31, 2022, and annual compliance statements received by LIHI during the past term of Certification. Also, follow-up communication with the Applicant was conducted for this review. Appendix A contains a copy of this communication. An email from the Idaho Department of Environmental Quality (IDEQ) confirming the validity of the Water Quality Certification (WQC), which was provided in response to my questions, is also in the Appendix.

III. PROJECT'S GEOGRAPHIC LOCATION

The Buffalo River Project is located on the Buffalo River near its confluence with the Henry's Fork River, about 39 miles north of Ashton in Fremont County, Idaho. Henry's Fork is a tributary to the Snake River. The Buffalo River is 10.5 miles in length and drains an area of about 36.7 square miles. The Project is located in the northeast corner of Fremont County near the border with Montana and Wyoming as shown on Figure 1. The Project dam is the only one on the Buffalo River. Figure 1 also shows the location of the Buffalo River Project and other dams in the Snake River basin. Upstream storage dams on both the West and East Branches of the Snake River control a large portion of flows within the drainage area. The Island Park Dam and Reservoir, a major U.S. Bureau of Reclamation (USBR) development, is located on the Henry's Fork of the Snake River just upstream of where the Buffalo River meets Henry's Fork. The Island Park Hydroelectric Project is also owned by FRREC and is certified as LIHI #2 (see Figure 2). Island Park is simultaneously undergoing LIHI recertification review.

Figure 1 – Location of the Buffalo River Project

Figure 2 – Aerial Showing the Buffalo River and Island Park Dams

IV. PROJECT AND IMMEDIATE SITE CHARACTERISTICS

The dam was built in 1936 to generate hydroelectric power for the construction of USBR's Island Park Dam and Reservoir, part of the Minidoka Project, which provides water to irrigate farmland in Idaho's Snake River Plain. The facility was subsequently acquired by Ponds Lodge, a resort lodge located upstream on the Buffalo River in Island Park. It provided power for the lodge until the powerhouse was struck by lightning and burned in 1986. Buffalo Hydro, Inc. rebuilt the powerhouse, resuming hydroelectric operation in 1994. In 1997, Buffalo Hydro, Inc. sold the operation to FRREC.

The Project consists of a 142-foot-long by 12-foot-high timber-faced rock-filled diversion dam. A new intake structure was built in 2005 with fish screens and a mechanical screen cleaner having openings of 0.25 inch and a screen approach velocity less than 0.8 feet per second.

The Project has a 40-foot-long by 3-foot-high concrete slab spillway with stop logs and a small auxiliary spillway. The original 1930's fishway was replaced in 2006 with a 270-foot-long fishway to pass trout as small as 100 mm.

The 250-kW Bouvier Kaplan inclined shaft turbine is fed by a 52-foot-long by 5-foot-diameter concrete encased steel penstock, located in a 34 by 22-foot masonry block powerhouse.

Land area within the Project boundary is noted as 9.8 acres, with 0.1 acres occupied by Project features and a 1.9-acre impoundment. The watershed area at the Buffalo River dam is approximately 36.7 square miles. The Project diverts a fixed flow of 100 cfs from the Buffalo River year-round, directing the flow via a short 52-foot-long penstock to the powerhouse which discharges to the Henry's Fork about 330 feet upstream of the Buffalo River confluence. The diversion creates a 660-foot-long bypassed reach. The estimated total average annual generation is 1.6 GWh.

Figures 3, 4 and 5 were taken from the 2017 LIHI Certification Report.

Figure 3 – Aerial of Key Project Features

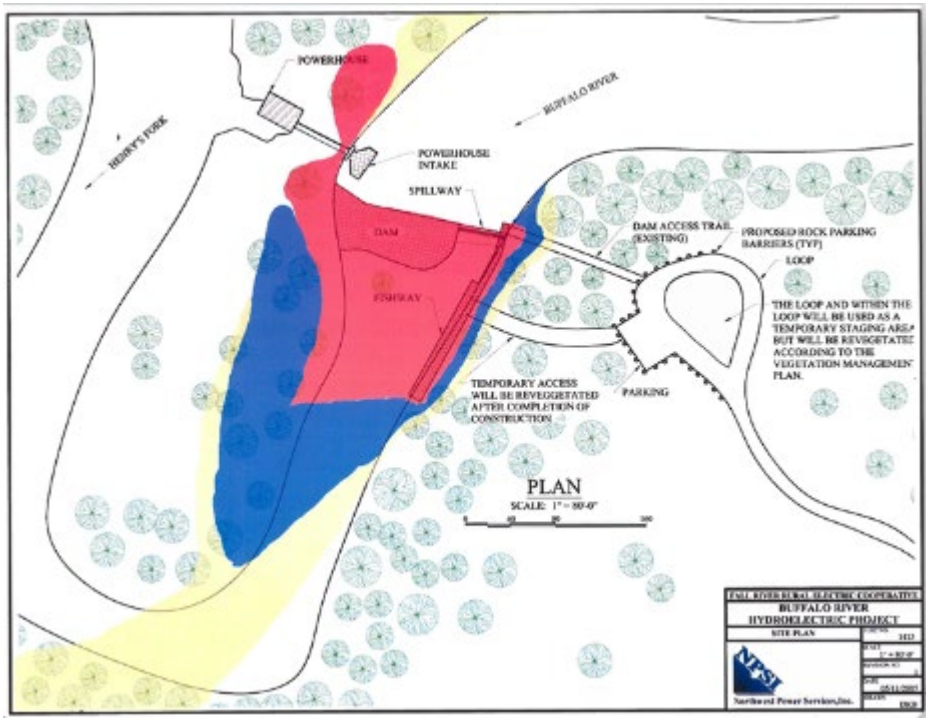

Figure 4 – Project Layout

Figure 5 – Looking upstream at spillway with showing bypass and fishway along east (left) bank of river

Figure 6 – Looking downstream from spillway at bypass and fishway

Figure 7 – Impoundment of the Buffalo River

Figure 8 – Powerhouse and Henry's Fork looking upstream

V. ZONES OF EFFECT AND STANDARDS SELECTED

Three Zones of Effect (ZOE) were appropriately designated by the Applicant, as illustrated on Figure 9.

- ZOE #1 – Impoundment – outlined in green on Buffalo River
- ZOE #2 – Bypass Reach – outlined on yellow on Buffalo River
- ZOE #3 – Tailrace – outlined in red on Henry's Fork

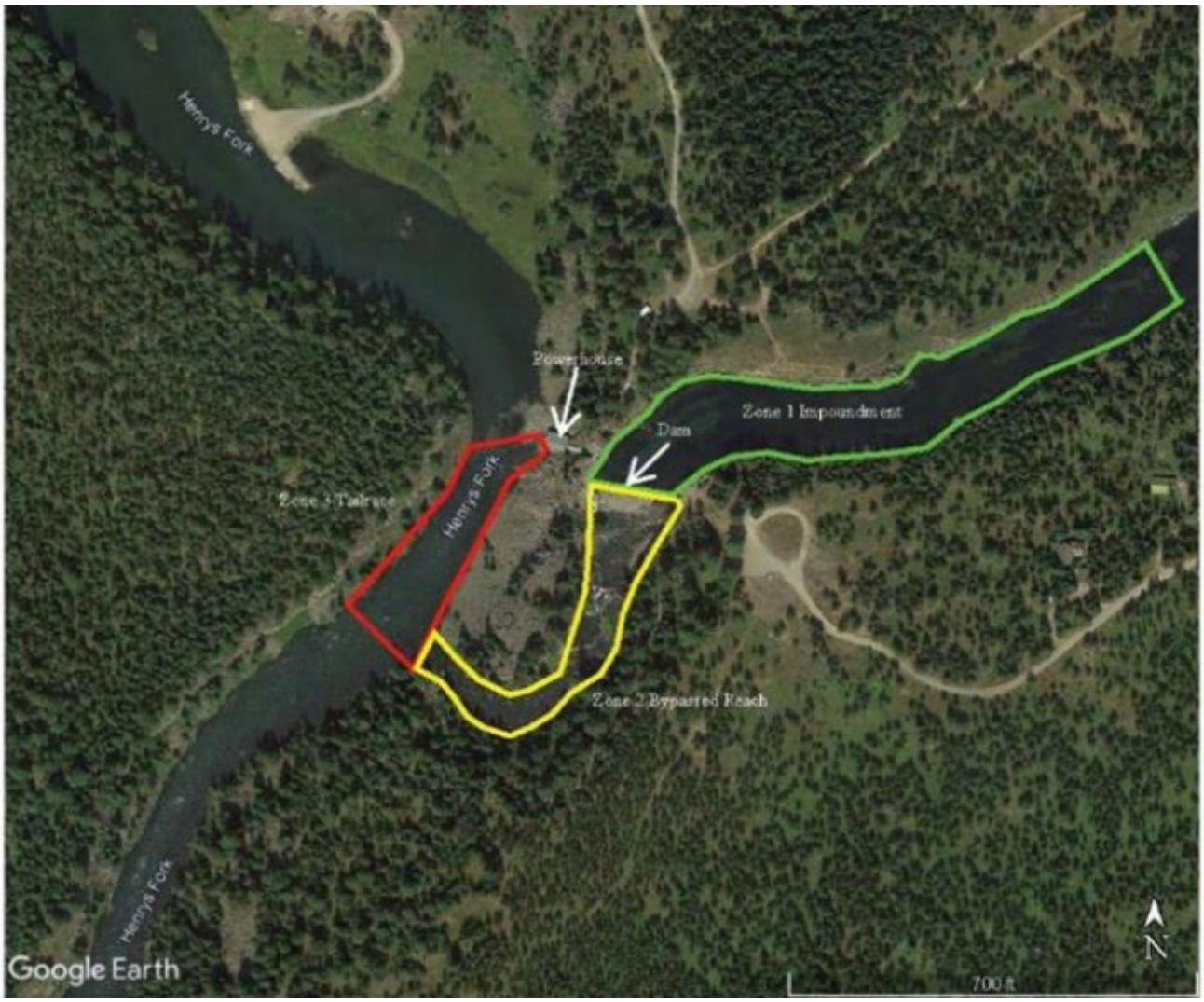

Figure 9 – Project Zones of Effect

The Standards shown below were selected by the Applicant with the exception of those in red which were Reviewer assigned. Details of the standard recommendations and compliance with the criteria are presented in Section VIII.

Zone:		1: Impoundment	2: Bypass	3. Tailrace
River Mile Extent:		RM 1.13 – 1.0	RM 1.0 – 0.87	RM 1.0 – 0.92
Criterion		Standard Selected		
A	Ecological Flows	1	2	2*
B	Water Quality	~~1~~ (2)	~~1~~ (2)	~~1~~ (2)
C	Upstream Fish Passage	1	2	2
D	Downstream Fish Passage	2	2	1
E	Shoreline and Watershed Protection	1	1	1
F	Threatened and Endangered Species	~~1~~ (2)	~~1~~ (2)	~~1~~ (2)
G	Cultural and Historic Resources	~~1~~ (2)	~~1~~ (2)	~~1~~ (2)
H	Recreational Resources	2	2	2

*The Table 2 in the application shows Standard 1, however the Criterion support section indicates Standard 2.

VI. REGULATORY AND COMPLIANCE STATUS

Copies of the Federal Energy Regulatory Commission (FERC) license, amendments, US Forest Service (USFS) Special Use Permit and Water Quality Certification (WQC) referenced below are contained in the LIHI application.

The Project received its original license from the FERC on March 14, 1980, for a period of 40 years, which contained ten Articles addressing flows, water quality, fish protection and passage, and development of plans to safely pass large river debris and control of hazardous substance spills. A subsequent license was issued to FRREC on November 5, 2004. The license was amended in 2005[2] and 2016[3]. (All Articles and both amendments were addressed in detail under the February 2017 LIHI Certification Report.) Although a water quality certification application was filed with the Idaho Department of Environmental Quality (IDEQ) on November 26, 2002, IDEQ

[2] This amendment modified the flow requirement under Article 402, allowing deviations from run-of-river to occur when the station is taken off line and there is a lag before full flows are restored downstream. IDEQ and the Henry Forks Foundation (HFF) commented and had no objections to the change.

3 This amendment reduced fishway and fish screen monitoring under Article 407 from year-round to February through June only, to capture the spring out-migration, based on monitoring conducted from 2007 thru 2016 which showed the fishway was operating successfully. USFS supported the amendment.

did not issue a Water Quality Certification (WQC) until November 28, 2003, outside of the maximum one year allotted under federal Clean Water Act Section 401 for final action on an application. Consequently, FERC deemed the certification waived. However, as also found by the 2017 LIHI review, since the issued WQC contained no conditions, the waiver had no material effect. The Project also operates under a Special Use Permit with USFS, which contains nineteen conditions of interest to LIHI. While many of these mirror FERC License Articles, others include requirements associated with recreational facilities, scenery and vegetation management, cultural resource protection, and protection of endangered and threatened species as well as Forest Service designated sensitive species. They are discussed within the applicable criterion evaluation section.

No deviations from FERC license requirements were found during the review of the FERC eLibrary from February 1, 2017 through February 6, 2022. This lack of deviations was also reported in the application.

VII. PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI

The deadline for submission of comments on the LIHI recertification application was February 6, 2022. Only one comment was received, via email from Lee Maybe, a fisheries biologist with the USFS, which stated "*To my knowledge the plant is being operated as originally licensed with effective fish passage and screening occurring."* This is posted on the LIHI website. Given the completeness of the application and good compliance record apparent from the FERC record review, no Agency outreach was found to be necessary.

VIII. DETAILED CRITERIA REVIEW

A. ECOLOGICAL FLOW REGIMES

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

Assessment of Criterion Passage

The Applicant appropriately selected **A-1 - Not Applicable/De Minimis Effect** for the Impoundment (ZOE #1) as allowed for in the LIHI Handbook and **A-2 – Agency Recommendation** for the Bypass Reach (ZOE #2) and Tailrace (ZOE #3).

Buffalo River flows are predominantly derived from springs that originate in the headwaters. The springs provide a stable year-round base flow at the Project of about 200 cubic feet per second (cfs). The station diverts a fixed flow of 100 cfs from the Buffalo River year-round, directing the flow via a short penstock to the powerhouse on the east bank of the Henry's Fork about 330 feet upstream of the Buffalo River confluence. The diversion creates a 660-foot-long bypassed reach in the Buffalo River extending from the dam to the river mouth. Base flows in the bypassed reach average about 100 cfs from June through March and exceed 200 cfs in April and May. Inflow greater than 100 cfs (the turbine's fixed hydraulic capacity) is passed over the dam to the fishway, fish attractant pipe, and over the spillway.

License Article 402 requires run-of-river operation, while compliance monitoring follows the Operational Compliance Monitoring Plan required by License Article 403. FERC amended Article

402 in 2005 allowing for short term deviations from run-of-river when the station is taken off line that results in a lag time of about 20 – 30 minutes before the forebay elevation rises enough that flows over the spillway approximate inflows, and during operating emergencies beyond the control of the licensee, and for short periods upon agreement of Idaho Department of Fish and Game (IDFG), and the USFS, and with notification to FERC. No deviations of these requirements have occurred since last certified by LIHI in 2016.

Under the Operational Compliance Monitoring Plan (OCMP), which FERC approved in 2007, Project inflows are monitored daily using a staff gage located at State Route 20 near Ponds Lodge in Island Park. The gage rating curve was annually updated under a contract with the USGS. However, starting in 2016, USGS stopped providing this service. According to FRREC, under current procedures, FRREC records river stage daily using the original USGS wire-weight gage and provides those stage records to HFF at the end of each month. HFF measures streamflow at the station 10-12 times per year to maintain the rating curve and produces estimates of daily discharge once each month after receiving the daily stage data from FRREC. While confirmation was provided that HFF is conducting this work, in response to my inquiry, FRREC stated that the OCMP has not been updated to reflect this change. FRREC stated that they intend to update the Plan once the continuous-reading transducers and staff gage are installed and operating, which is scheduled for 2023.

License Article 410 required development of a Diversion Operation Plan to maintain the Buffalo River channel in the Project area and pass large woody debris downstream of the Project for its habitat benefit in that reach. The plan includes monitoring of the spillway for debris and monitoring of the fishway channel after high flow events to ensure fish access is maintained and the fishway remains intact.

There are no mandated minimum flow requirements to the bypass reach, which is about 660 feet long and characterized by two major steep gradient sections and other moderate gradient sections. Riffle habitat predominates based on habitat mapping and habitat quality that was characterized during the last relicensing. As noted in the LIHI application, aquatic habitat studies at the time of the original licensing indicated that habitat in the bypassed reach is almost identical to adjacent areas upstream and downstream of the Project, and that the existing bypass flows of about 50% of total inflow when the Project is generating, were sufficient to sustain the aquatic ecosystem in the reach. No agencies or FERC recommended a change in the bypass flow although IDFG stated that if the river hydrology changed in the future, a bypassed reach flow of 50 cfs would be essential to protect aquatic resources in the Buffalo River[4]. There have been no changes in river hydrology that warrant re-evaluation of the bypassed reach flow and no agency has requested an evaluation to date.

The 2017 LIHI certification review report included LIHI Reviewer generated calculations of the bypassed reach flow using the Tennant Montana Method, a regionally accepted approach to assess flow adequacy for aquatic biota. That method uses 30% of average daily flow to characterize

[4] Neither the scientific basis for the 50 cfs flow recommendation nor FERC staff's rationale for not addressing bypass conservation flows in the 2004 amendment are explained in the FERC final environmental assessment (July 2004).

"good" habitat conditions. For this recertification, additional average daily low flow data from 2017 to 2020 was provided which indicated that 2012 – 2016 were somewhat drier than normal, but still likely provided good habitat.

Bypassed Reach Flow Calculations

Year	Low Daily Average River Flow (cfs)	30% of Flow (cfs)
2012	185	56
2013	178	53
2014	165	50
2015	170	51
2016	183	55
2017	210	63
2018	210	63
2019	218	65
2020	200	60
2021 to date	202	61
Average	192	58

Adjusted for the 100 cfs, base flows in the bypass during the dry months of June through March, in every year, flows in the bypassed reach based on the average daily low flow, remained above IDFG's flow recommendation of 50 cfs, as well as the calculated "good habitat" flow using the Tennant Montana Method.

Based on review of available information, lack of operational deviations, and lack of stakeholder comments to the contrary, I believe that the Buffalo River Project can be considered to continue to satisfy this criterion upon updating of and approval of their OCMP.

The Project Conditionally Passes Criterion A – Ecological Flow Regimes

B. WATER QUALITY

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

Assessment of Criterion Passage

The Applicant selected **B-1 - Not Applicable/De Minimis Effect** for all ZOEs, however I believe that **B-2 – Agency Recommendation** is more applicable as a Water Quality Certification was issued for the Project on November 28, 2003 and it remains valid as noted by an email dated November 19, 2021 from Troy Saffle of IDEQ[5]. There have been no changes in Project operations since the Project was last certified by LIHI.

Uses of the Buffalo River in the Project reach are designated for aquatic life: cold water

[5] https://lowimpacthydro.org/wp-content/uploads/2021/12/Buffalo-River-IDEQ-WQC-response-2021.pdf

communities – salmonid spawning; primary contact recreation; and domestic water supply. Under the state water quality standards, a salmonid spawning designation invokes more stringent temperature and dissolved oxygen criteria compared to other aquatic life designations.

The Idaho 2018/2020 Integrated Report identifies the reach encompassing the Project (assessment unit ID 17040202SK016_03) as having insufficient data and information to determine if beneficial uses are being attained and is listed as Category 3, not assessed. The reach from Elk Creek upstream of the Project is listed as Category 4a, not supporting aquatic habitat due to sedimentation/siltation. Figure 10 shows these reaches.

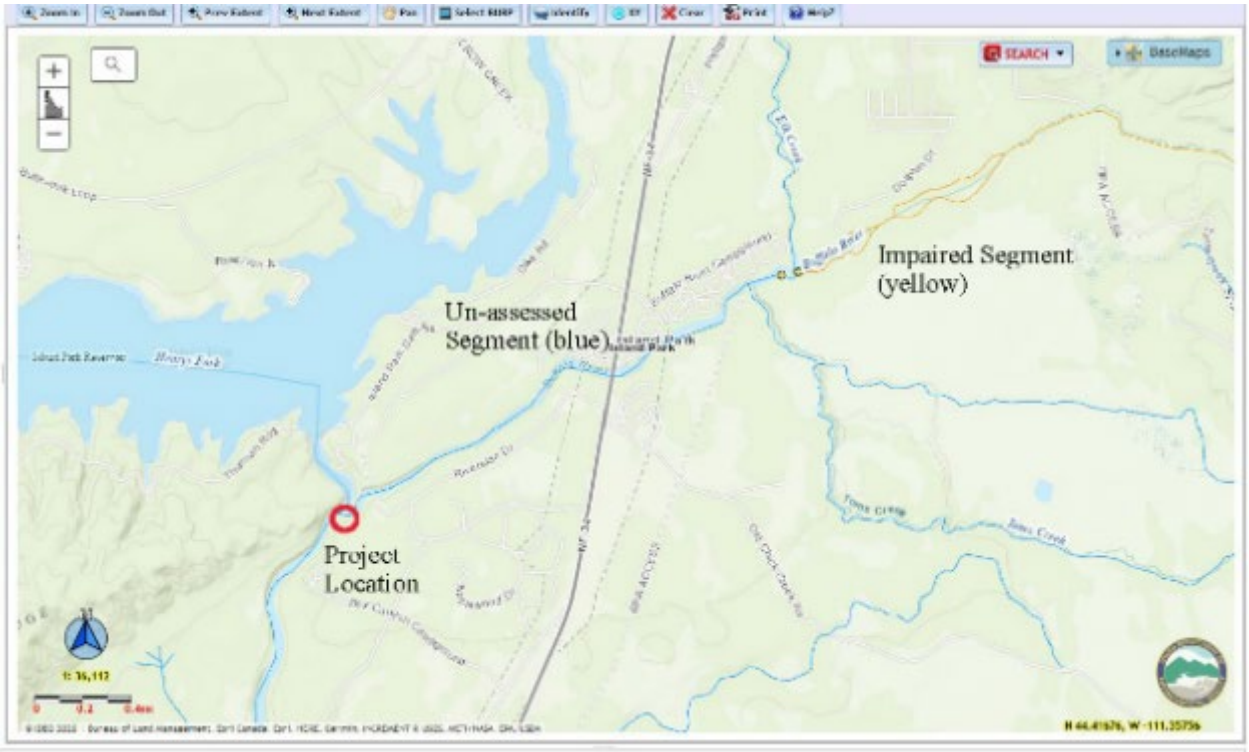

Figure 10 – Mapping Taken from 2018/2020 State Integrated Report

FRREC noted in their current LIHI application that as part of the 2016 LIHI certification, IDEQ stated: "DEQ can't confirm compliance with numeric standards due to the lack of data; however, DEQ is confident the Project is not adding common pollutants such as sediment solar load (temperature) by the current operations". As Project operations have not changed since that time and given the run-of-river operation and lack of deviations from these requirements, it is not likely that Project operations are impacting water quality in the Buffalo River.

Based on my review of available information and lack of stakeholder comments to the contrary, I believe the Project continues to satisfy the requirements for this criterion.

The Project Passes Criterion B – Water Quality

C. UPSTREAM FISH PASSAGE

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

Assessment of Criterion Passage

The Applicant appropriately selected **A-1 - Not Applicable/De Minimis Effect** for the Impoundment and **A-2 – Agency Recommendation** for the Bypass Reach and Tailrace, but as it relates to resident fish, rather than migratory fish. The Project is located in the Snake River headwaters with natural barriers downstream (Figure 11), preventing diadromous fish from reaching Project waters.

Figure 11 - Upper Mesa Falls, Targhee National Forest, on Henry's Fork 26 miles downstream of the Project.

Henry's Fork and the Buffalo River support rainbow trout, brook trout, and mountain whitefish as well as several non-game species. In the 1930's, construction of the Buffalo River Dam blocked resident fish upstream movement to the Buffalo River, the only large tributary to the Henry's Fork between Island Park Dam (River Mile 91.7) and Mesa Falls (River Mile 65.0), two barriers that isolate this reach of Henry Fork.

The IDFG Fisheries Management Plan 2019-2024 identifies the Buffalo River as a coldwater fishery managed for wild rainbow and brook trout. In 1996, a working group of the Henry's Fork Watershed Council realized the goal of restoring fish migration from the Henry's Fork into the

Buffalo River with the completion of a fish ladder at the Buffalo River dam, replacing one built in the 1930's.

There are no formal passage prescriptions in the FERC license, although there is a reservation of authority should the USFWS elect in the future to prescribe passage. License Article 405 required fishway construction, Article 407 required monitoring of the fishway and reporting every third year (after three initial annual reports), and Article 408 required filing of an upstream fishway construction plan and schedule. The fish ladder was improved in early 2006 to allow juvenile trout access to winter habitat and to increase the number of spawning trout migrating upstream in hopes of increasing recruitment to the Henry's Fork fishery. The 270-foot-long fishway was designed in consultation with the USFS, US Fish and Wildlife Service (USFWS), IDFG, and HFF. No fish ladder changes have occurred since the 2016 LIHI certification.

Article 407 was modified in 2016, with agency approval, to reduce fishway monitoring from year-round to only the spring migration season, although the fishway continues to operate year-round. As the purpose of monitoring is to verify the numbers of migrating adults that may be spawning in the Buffalo River, USFWS approved the monitoring change noting that the number of spawners and up-migrating young had remained relatively constant over time with little movement during winter.

In a 2016 report, looking at data from 2006-2016 on timing of fishway utilization, fishway effectiveness, population genetics, and species composition, HFF concluded that fish passage has been successfully restored between the Henry's Fork and Buffalo Rivers. The latest three-year fishway report for 2017-2019, filed in January 2020, indicates that the fishway continues to demonstrate its effectiveness. Numbers of fish passed met the historical average in 2019 and saw the most spawning sized rainbow trout since 2013. These reports are linked to the LIHI application.

Based on my review of available information, that there were no comments raising concerns and the supporting comment from the USFS noting that the Project has "effective fish passage", I believe that the Project continues to satisfy this criterion.

The Project Passes Criterion C – Upstream Fish Passage

D. DOWNSTREAM FISH PASSAGE AND PROTECTION

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

Assessment of Criterion Passage

The Applicant has selected **D-1 - Not Applicable/De Minimis Effect** for the Tailrace and **D-2 – Agency Recommendation** for the Impoundment and Bypass Reach.

As discussed under Ecological Flow Regimes, flows in the bypass appear to provide sufficient

habitat for aquatic biota.

License Article 406 required turbine and canal intake screening to prevent fish entrainment, and no changes to these requirements occurred in the past five years. Downstream passage is provided through the spillway. The screen was designed to meet USFS design standards for spacing (1/4-inch) and maximum approach velocity (0.8 ft/sec). License Article 407 required impingement monitoring for the first three years after installation and every third year thereafter. Monitoring includes recording the number, species, lengths, and likely causes of death of fish on a daily basis. To date there have been no observations of impingement. If that occurred data would be provided to agencies. The screen is inspected and cleaned as needed to keep it clear and maintain proper approach velocities.

As part of the 2016 comprehensive report identified under Upstream Fish Passage, HFF conducted a PIT-tag study in 2014 – 2015 to evaluate trout movement downstream after they had migrated upstream above the dam. Results indicated that most downstream migrating trout had not previously migrated upstream but were spawned upstream of the dam by resident fish in that reach.

In a letter dated April 14, 2020, from FERC to FRREC, FERC acknowledged that dips in 2017 and 2018 numbers of rainbow trout, brook trout, mountain whitefish, Utah suckers, and other smaller species were likely due to four consecutively dry water years in 2013 through 2016. However, numbers of most species increased to the historic average in 2019. It was also noted that no operational changes are proposed, and that hydrologic conditions moving into 2020 appeared favorable for trout recruitment.

Based on my review of available materials, no comments raising concerns and the comment from the USFS which stated that the screening at the Project is effective, I believe that the Buffalo River Project continues to satisfy this criterion

The Project Passes Criterion D – Downstream Fish Passage and Protection

E. SHORELINE AND WATERSHED PROTECTION

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

Assessment of Criterion Passage

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

The lands at the Project site and the contributing watershed are primarily in federal ownership or control, including the impoundment, as part of the Targhee National Forest. Area within the Project boundary is estimated to be 9.8 acres on federal land, of which 0.1 acres is occupied by Project facilities, and 1.9 acres of impoundment.

There continues to be no requirement for a shoreline management or similar protection plans.

There are no lands of significant ecological value and there are no designated critical habitats for threatened or endangered species within the approximate 10 acres within the Project boundary. Both a Scenery Management Plan and Vegetation Management Plan, required under license Article 401 (which adopted requirements of the USFS Special Use Permit), have been developed and appear to be followed. Included in the Vegetation Management Plan is a requirement to monitor erosion on the east side of the dam near the trail and parking lot. The LIHI application notes that no issues have been identified to date. There have been no changes in these plans since last certified by LIHI.

Based on my review, and lack of changes, I believe the Project continues to satisfy this criterion.

The Project Passes Criterion E – Shoreline and Watershed Protection

F. THREATENED AND ENDANGERED SPECIES PROTECTION

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

Assessment of Criterion Passage

The Applicant selected **Standard F-1 – Not Applicable / De Minimis Effect** for all ZOEs. However, as there are several species potentially on or near the site, but that onsite habitat is limited and no impacts to them, if they occur, is expected, I believe that **Standard F-2 - Finding of No Negative Effect** is more appropriate.

An evaluation of habitat and potential effects of Project construction and operation on Federally protected species and Sensitive Species listed by the USFS was conducted in 2005, under License Article 401 and USFS conditions. The evaluation concluded that two species of frogs, the Columbia spotted frog and the western toad, (both State Species of Concern and USFS Sensitive Species), the Yellowstone cutthroat, (USFS Sensitive Species) and bald eagle (a State endangered and federally threatened species at the time) were found on or near the site and could be temporarily impacted by construction activities. Protection measures to minimize those impacts including restrictions on construction timing to avoid potential impacts, erosion control measures, and re-vegetation after construction were implemented. Currently, the Columbia spotted frog and bald eagle are no longer listed by either the state or federal programs.

An online data check was conducted in October 2021 for federally listed species in the immediate Project area. The report identifies the following species as possibly present: the threatened Canada lynx and grizzly bear along with the monarch butterfly which is a candidate for listing. While there is federally designated critical habitat for both the Canada lynx and grizzly bear, location of the habitat was not provided in the USFWS report. It is unlikely that the Project lands would serve as critical habitat for these species given the Project's small size.

A similar search of available records for state listed species can be, but was not requested, possibly because, while the state of Idaho does maintain a list of fish and wildlife for classification purposes, it does not have an endangered species act law. The state list is a compilation of various federal lists and includes Canada lynx which is classified as threatened under the federal Endangered Species Act (ESA) and by USFS. The list apparently incorrectly identifies that grizzly bear has

been removed from the federal ESA, even though it remains as a threatened species by the US Fish and Wildlife Service under the ESA.[6, 7]

The Project lands occupy only about 10 acres, mostly on federal lands which do not include significant habitat for the listed species. No Project operations or maintenance activities would likely impact the species even if they were present. This is supported by the conclusion during detailed studies in 2005, that only temporary impacts during construction were identified.

Based on my review, I believe the Project continues to satisfy this criterion.

The Project Passes Criterion F – Threatened and Endangered Species Protection

G. CULTURAL AND HISTORIC RESOURCE PROTECTION

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

Assessment of Criterion Passage

The Applicant has selected **Standard G-1 – Not Applicable/De Minimis Effect** for all ZOEs **however** I believe **Standard G-2 – Agency Recommendation** is more appropriate.

There were no identified cultural or historic resources within the Project footprint and Project facilities are not eligible for listing on the National Register of Historic Places. However, as Article 401 and USFS conditions required development of a heritage resource protection plan to mitigate the Project's effects on items of potential cultural, historical, archeological, or paleontological value discovered or reported during ground-disturbing activities or as a result of Project construction or operations, I believe this constitutes an Agency Recommendation. The LIHI application also stated that FERC also recommended in the relicensing environmental assessment that if new or undocumented sites are discovered that the licensee should conduct appropriate consultation with the State Historic Preservation Officer. My review of the Environmental Assessment confirmed this. Curiously, the FERC License does not specify this as a License Article.

The LIHI application states that no ground intrusion activities have taken place in the past five years. Based on my review of the materials provided and from FERC eLibrary, it appears that the Project continues to satisfy this criterion.

The Project Passes Criterion G – Cultural and Historic Resource Protection

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6 https://idfg.idaho.gov/species/taxa/list?usesa[]=Delisted&usesa[]=Proposed&usesa[]=Candidate&usesa[]=Threatened&usesa[]=Endangered

7 The USFWS conducted a five-year review for grizzly bear in March 2021 and recommended no change in its threatened status.

H. RECREATIONAL RESOURCES

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

Assessment of Criterion Passage

The Applicant has appropriately selected with **Standard H-2, Agency Recommendation** for all ZOEs. License Article 401 and USFS Condition Nos. 10 and 11 required development of a Recreation Management Plan and an Interpretive Display Plan, respectively. The requirements include parking improvements, new trail development interpretive signs and specific improvements to meet Americans with Disabilities Act standards. FRREC is responsible for providing recreational access sites within the Project vicinity (limited to bank fishing) while the USFS is responsible for maintaining the recreation sites. All requirements were fulfilled.

FERC's most recent environmental inspection, conducted 2017, found all resources were in satisfactory condition, with the exception of a Part 8 sign. That sign was installed in the spring of 2018.

Based on my review, I believe that the Project continues to satisfy this criterion.

The Project Passes Criterion H – Recreational Resources

IX. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION

Based on my review, I believe that this Project conditionally continues to meet the requirements of a Low Impact facility and recommend it be re-certified for a ten-year period with the following condition.

Condition 1 – In the annual compliance statements, the Facility Owner shall update LIHI on the status of the transducer and staff gage installation project, and on the status of updates to the Operational Compliance Monitoring Plan to reflect the current procedures for monitoring stream flows. It is anticipated that this will be completed in 2023. Upon completion, LIHI shall be provided with a copy of FERC's approval of the Plan.

Appendix A

Communications

Questions On Buffalo River Application for LIHI Recertification – November 2. 2021

1. **Possible Material Change** – The 2020 US Forest Service annual inspection letter references "*ongoing repairs to the machinery in the facility*". Please provide a description of what this work was so that this review can ascertain whether it constitutes a "Material Change". Please also discuss your rationale of why it is not a Material Change if you believe that is the case.

In 2020 the following repairs were made to the project:

- Upper and Lower bearings replaced in the turbine.
- Runner machined to original tolerances.
- Repairs made to butterfly valve – i.e. – large broken operating spring replaced.

Since these repairs only returned existing equipment to original specifications, no material changes seem to be made.

2. **Ecological Flows** –Please provide evidence that the data now being collected by the Henry Fork's Foundation, which was formerly being collected by the US Geological Survey, is being used to update rating curve as required by your Operational Compliance Monitoring Plan (OCMP) (see Plan page 7 and Appendix A). Based on review of FERC records since January 1, 2017, it does not appear that the Operational Compliance Monitoring Plan has been updated. If the OCMP has been updated, please send us a copy of FERC's approval of the change. If it has not, please provide your schedule for updating it.

See included e-mail from the Henrys Fork Foundation.

Fall River will update the OCMP when the new continuous-recording transducer and staff gage are installed and working – scheduled for 2023.

3. **Water Quality** – Page 68 of the LIHI Handbook states that for Water Quality Certifications greater than 10 years old, the LIHI Application must "*provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter from the agency)*." While the Idaho Department of Environmental Quality provided a email in 2016 confirming this need, an updated confirmation should be requested and provided to LIHI for this recertification application.

Troy Saffle with the IDEQ has been contacted and will provide this verification. This will be forwarded to you when we receive it.

Dave Peterson

From: Rob Van Kirk <rob@henrysfork.org>
Sent: Monday, November 15, 2021 12:35 PM
To: Dave Peterson
Cc: Matt Hively
Subject: Re: Buffalo OCMP

With regards to the ecological flows section of the Low Impact Hydro Institute Certification, Fall River Rural Electric Cooperative (FRREC) is required to provide daily streamflow data for the Buffalo River as part of Operational Compliance Monitoring Plan (OCMP) for the Buffalo River plant FERC 1413-032. Under the original OCMP approved in 2006, FRREC records daily river stage readings in the Buffalo River at US Geological Survey station 13043000. USGS had operated and maintained that station regularly from 1936-1941 but discontinued the station in 1941. USGS made periodic field measurements between 1984 and 2016. Through a funding agreement with FRREC, USGS updated and maintained the rating curve from 2006 to 2016, and this curve was used to estimate streamflow from FRREC's daily stage readings. USGS stopped maintaining the rating curve in 2016 but provided the rating to the Henry's Fork Foundation (HFF), which has since maintained it.

Under current procedures, FRREC records river stage daily using the original USGS wire-weight gage and provides those stage records to HFF at the end of each month. HFF measures streamflow at the station 10-12 times per year to maintain the rating curve and produces estimates of daily discharge once each month after receiving the daily stage data from FRREC. HFF uses an acoustic doppler current profiler and standard USGS methods to measure streamflow. The full dataset of daily streamflow estimates and field measurements is available from HFF upon request.

Going forward, HFF plans to install a continuous-recording transducer and staff gage at the station, develop and maintain a new rating curve, transmit stage and streamflow data in real time to a data server, and make the data publicly available on a website. HFF has existing hardware, software, and IT capabilities to do this and has received a WaterSMART grant from U.S. Bureau of Reclamation to install this real-time gage as part of a watershed-wide project to provide hydrologic data and modeling products not currently supplied by government agencies. As of November 2021, USGS has conducted environmental review for the equipment installation, and HFF has received permission from the Idaho Department of Transmission to install the equipment in the highway right of way where the station is located. Some of the equipment has already been installed, but unavailability of electronic components has prevented installation on the timeline specified in the grant. HFF plans to complete the installation as soon as parts are available. After installation, there will be a period of overlap during which FRREC will continue to provide daily stage readings and HFF will begin operating the new equipment. The overlap will allow "old" and "new" data to be used to estimate streamflow while simultaneously developing a new rating curve. Once it is developed, real-time and daily mean data will be collected by HFF without need for daily, manual stage readings. Public availability of data on the web is scheduled for 2023.

The existing 2006-present flow record and any other information regarding future plans for the station can be obtained from Rob Van Kirk at rob@henrysfork.org.

Rob Van Kirk, Ph.D.
Senior Scientist
Henry's Fork Foundation

Dave Peterson

From: Troy Saffle <Troy.Saffle@deq.idaho.gov>
Sent: Friday, November 19, 2021 8:10 AM
To: Nicholas E Josten
Cc: Dave Peterson
Subject: RE: Buffalo Hydro - FERC No. P-1413

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Nick. Water quality Certifications are valid for the life of the federal action they authorize.

The Water Quality Certification for the Buffalo project is still valid. When the FERC license is re-opened, a new Certification will be negotiated and issued by DEQ. Please let me know if you have any follow-up questions or concerns. Thank you.

Troy Saffle | Regional Administrator
Idaho Department of Environmental Quality
900 N Skyline, Suite B, Idaho Falls, Idaho 83402
Office: 208.528.2650
Cell: 208.521.4678
www.deq.idaho.gov

Our mission: To protect human health and the quality of Idaho's air, land, and water.

From: Nicholas E Josten <gsense@cableone.net>
Sent: Thursday, November 18, 2021 9:59 AM
To: Troy Saffle <Troy.Saffle@deq.idaho.gov>
Cc: Dave Peterson <Dave.Peterson@fallriverelectric.com>
Subject: Buffalo Hydro - FERC No. P-1413

Troy,

Fall River Electric is renewing their Low Impact Hydro Certification for the Buffalo powerplant. The certifying agency is asking us to verify that the 401 Certification conditions are still in effect. Can you help us to address that question? I'm not sure how the 401 conditions could have a different term than the license.

Nick

Nicholas E Josten
208-520-5135
gsense@cableone.net
GeoSense LLC
2742 St Charles Ave