REVIEW OF APPLICATION FOR LIHI RECERTIFICATION OF THE BOULDER CREEK HYDROELECTRIC PROJECT, LIHI #31

FERC Project No. 7086 (exempt)
Boulder Creek, Lake County Montana

July 2, 2021
Maryalice Fischer, Certification Program Director

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FINAL REVIEW OF APPLICATION FOR LIHI RECERTIFICATION OF THE BOULDER CREEK HYDROELECTRIC PROJECT, LIHI #31

This report provides final review findings and recommendations for the recertification application submitted to the Low Impact Hydropower Institute (LIHI) by S & K Business Services, Inc. on behalf of the Confederated Salish and Kootenai Tribes (Tribes or Applicant) for recertification of the Boulder Creek Hydroelectric Project, LIHI #31 (Project). The Project is a 0.35 MW facility located on Boulder Creek in northwest Montana. The final recertification application package including fee was filed on April 12, 2021 and is subject to review under the 2nd Edition LIHI Handbook.

I. INTRODUCTION

The Project was first certified by LIHI in 2007 for an 8-year term and was recertified in 2015 for a 5-year term which expired on October 24, 2020. The term was extended to February 28, 2021 and again to July 31, 2021 to allow time to complete the recertification process. The 2015 recertification did not include any conditions.

II. RECERTIFICATION PROCESS AND MATERIAL CHANGE REVIEW

Under the 2nd Edition LIHI Handbook, 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, if the only issue is some missing information, a Stage II review may not be required. These standards also state that "material changes" mean non-compliance and/or new or renewed issues of concern that are relevant to LIHI's criteria. If the answer to either question (2) or (3) is “Yes”, a more thorough review of the application using the LIHI criteria in effect at the time of the recertification application, and completion of a Stage II report is required. As a result, all projects currently applying for renewal must go through a full review unless their most recent certification was completed using the 2nd Edition Handbook.

A review of the initial application submitted January 28, 2021 resulted in a Stage I report dated March 30, 2021. The Stage I assessment found no material changes at the Project and determined that no additional information was needed.

The application was posted for public comment on April 14, 2021 and the 60-day public comment period ended on June 13, 2021. This Stage II assessment included review of the recertification application package, the FERC elibrary, other publicly available information, and annual compliance statements submitted during the past term of Certification.

III. PROJECT LOCATION AND SITE CHARACTERISTICS

The Project is located at river mile 1 on Boulder Creek, a 4.3-mile-long stream that drains into Flathead Lake from the Mission Range of the Rocky Mountains (Figure 1). There are no other dams on the creek.

Boulder Creek flows much of its journey to Flathead Lake underground. The entire drainage of 7.1 square miles is within the boundary of the Flathead Indian Reservation. A portion of the creek surfaces approximately 100 yards upstream from the impoundment and reappears less than 10 yards below the diversion structure even in the lowest flow periods of the year. The flow continues to grow and recharges itself to at least 0.5 cfs within 200 feet below the diversion.

The Project was designed and developed for the Tribes between 1982 and 1984 and went online in December of 1984. The US Bureau of Indian Affairs (BIA) on behalf of the Tribes provided oversight for construction. As part of an easement agreement for the powerhouse location, the Tribes installed a collection pipe and built a pump house to serve local residents as their primary source of drinking water. This location is approximately 40 yards downstream from the powerhouse and pumps Boulder Creek water to approximately 10 homes in the vicinity.

The Project is a run of river facility with a maximum flow of 8 cfs diverted from the creek. The 5-foot-tall, 16-foot-long diversion structure creates a very small impoundment with a maximum surface area of 0.15 acres and gross storage capacity of 0.30 acre-feet with net storage capacity of 0.025 acre-feet. The diversion and intake area occupy 203.36 square feet. The entire 3,650 feet[1] of piping and penstock from the diversion to the powerhouse is buried under ground, and the powerhouse and tailrace occupy an area of 800 square feet (Figures 2 – 4, powerhouse image is shown on the cover page). The powerhouse contains one single-nozzle impulse type turbine with a synchronous generator having a 350-kW maximum generating capacity and a hydraulic capacity of 2 cfs to 8 cfs.

[1] Corrected length noted by FERC in a 2015 letter https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13926815

Figure 1. Project location and watershed

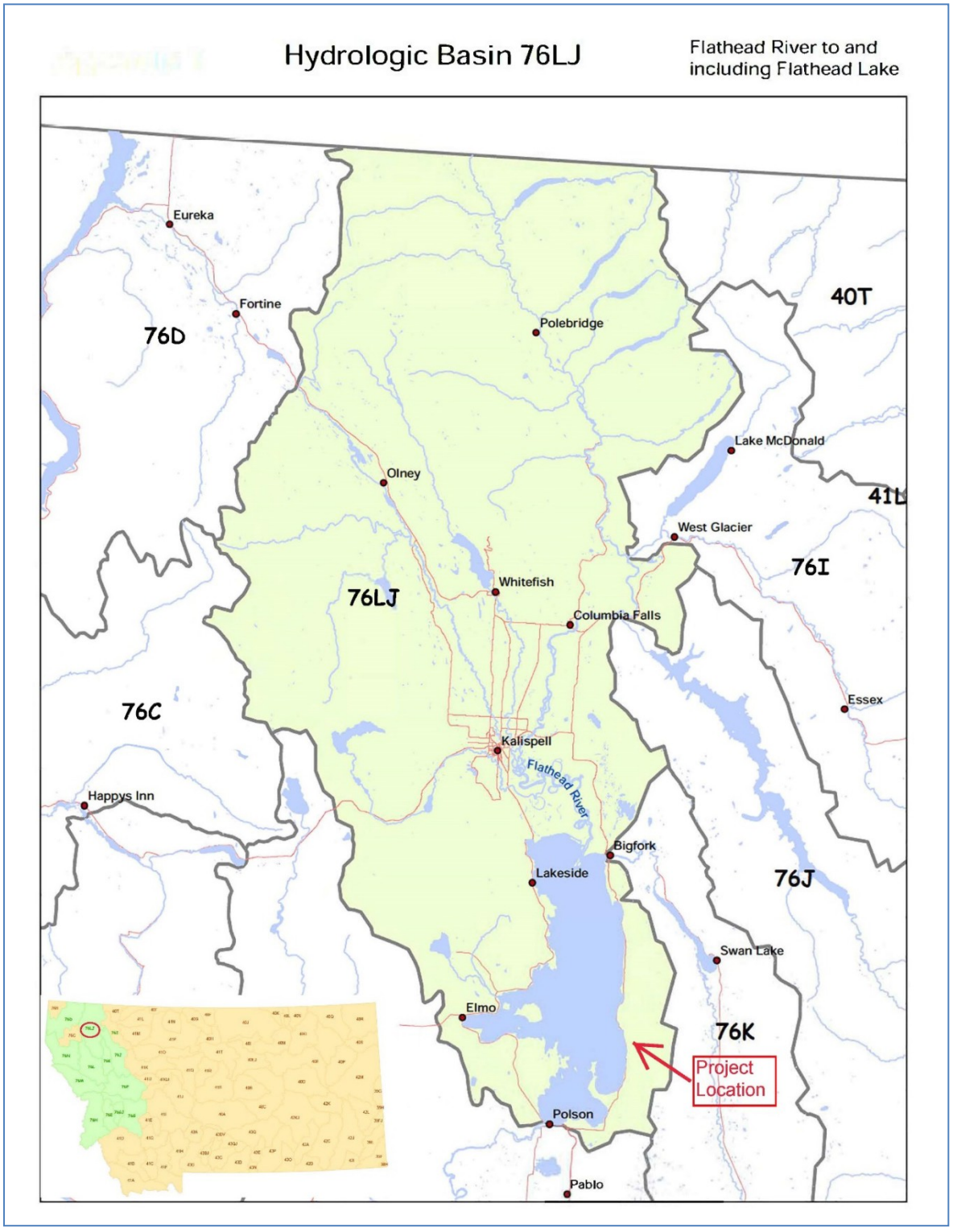


Figure 2. Impoundment

Figure 3. Diversion Structure

Figure 4. Turbine

IV. REGULATORY AND COMPLIANCE STATUS

FERC issued an exemption (No. 7086) for the Project on September 23, 1983[2]. A review of the FERC elibrary from January 1, 2015 to present identified only dam safety documents and contact change notifications. The current LIHI Certification does not include any conditions.

V. PUBLIC COMMENTS RECEIVED OR SOLICITED BY LIHI

The application was publicly noticed on April 14, 2021 and notice of the application was forwarded to resource agency and stakeholder representatives listed in the application. No public comments were received during the 60-day comment period which ended on June 13, 2021. Based on the completeness of the application, no direct outreach to resource agencies or other stakeholders was conducted as part of this review.

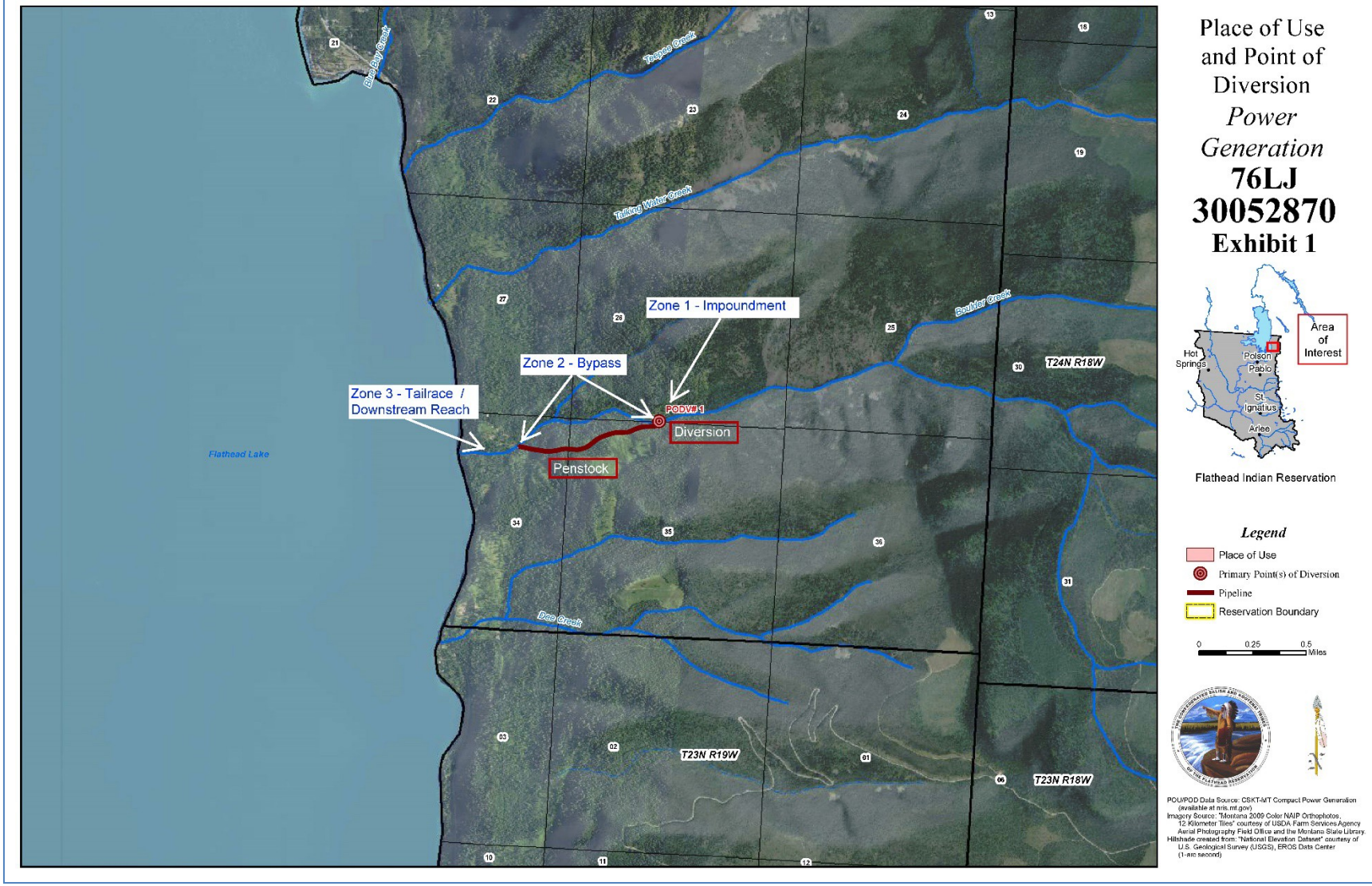
VI. ZONES OF EFFECT

The Applicant delineated the Project into three Zones of Effect (ZoEs) as shown in Figure 5.

- Zone 1: impoundment extending from RM 1.01 – 1.0
- Zone 2: bypass reach extending from RM 1.0 - 0.29
- Zone 3: tailrace/downstream reach extending from RM 0.29 to RM 0 at Flathead Lake

[2] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13535891

Figure 5. Zones of Effect



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

Zone:		1: Impoundment	2: Bypassed Reach	3. Downstream Reach
River Mile Extent:		RM 1.01 – 1.0	RM 1.0 – 0.29	RM 0.29 - 0
Criterion		**Standard Selected**		
A	Ecological Flows	2	2	2
B	Water Quality	1	1	1
C	Upstream Fish Passage	1	1	1
D	Downstream Fish Passage	1	1	1
E	Shoreline and Watershed Protection	1	1	1
F	Threatened and Endangered Species	1	1	1
G	Cultural and Historic Resources	1	1	1
H	Recreational Resources	3	3	3

VII. DETAILED CRITERIA REVIEW

A: Ecological Flow Regimes

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

Assessment of Criterion: The Applicant selected Standard A-2, Agency Recommendation for all ZoEs.

Discussion: The Project is operated in a run-of-river mode. There is no impoundment storage. All flows less than 2 cfs, the turbine minimum hydraulic capacity, or greater than 8 cfs, the maximum hydraulic capacity, are passed into the bypassed reach. Between 2 and 8 cfs, all flows are diverted into the penstock and powerhouse. The creek flows mostly underground. A portion of it surfaces approximately 100 yards upstream from the impoundment which is utilized by the diversion for power generation.

The diversion utilizes all of the flow in all but the highest-level periods (during spring runoff or significant runoff events). But even with full dewatering of the stream, surface water flow reappears less than 10 yards below the diversion structure even in the lowest flow periods of the year. The flow continues to grow and recharges itself to a minimum of approximately 0.5 cfs within 200 feet below the diversion. Thus, the bypassed reach is watered under all conditions.

The Project has a State of Montana water right permit to divert up to 8 cfs year round for hydropower generation[3]. The permit is codified under a state statute (section 85-20-1901) detailing a water rights compact entered into by the Confederated Salish and Kootenai Tribes of the Flathead Reservation, Montana; the State of Montana; and the United States for waters within the Reservation[4].

There are no fish present within Boulder Creek. Tribal resource agencies confirmed that that existing flow conditions are appropriate for the facility based on an analysis conducted at the time of Project construction by the Tribal Fisheries Program. The Tribes' Natural Resources Department, Division of Water Management agreed that the flow levels and conditions within the stream are adequate for wildlife and known aquatic resources. In a July 31, 2007 letter (see Exhibit F of the 2007 LIHI application[5]) the agency stated:

> *"Your question was in relation to flows required for fish and wildlife below the diversion dam to the power plant where the water is returned to the stream. Analysis was done by the Tribal Fisheries Program in the year prior to the building of the plant. It was determined that no fisheries resources existed in the reach of stream. The stream recharges to approximately 0.5 cfs approximately 200 feet below the diversion dam keeping the reach of the stream alive, therefore providing adequate flows for the wildlife resources as well aquatic resources…"*

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project effects on flows are minimal and the Project continues to satisfy the ecological flows criterion.

B: Water Quality

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

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

Discussion: Boulder Creek is on reservation lands and not assessed by the Montana Department of Environmental Quality for use impairments under Section 303(d), but it remains subject to the federal Clean Water Act. On January 3, 2019, the Tribal Council of the Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation adopted rules for surface water quality standards for the Flathead Indian Reservation, which were approved by US EPA on April 2, 2019[6].

[3] http://dnrc.mt.gov/divisions/water/water-compact-implementation-program/docs/cskt/2013_appendix19bouldercreekhydroelectricprojectabstract.pdf
[4] https://leg.mt.gov/bills/mca/title_0850/chapter_0200/part_0190/section_0010/0850-0200-0190-0010.html
[5] https://lowimpacthydro.org/wp-content/uploads/2020/07/Boulder-Hydro-LIHI-Application-Narrative-revised.pdf
[6] http://csktnrd.org/component/rsfiles/download-

The creek is classified as an A-1 water, with designated uses for drinking, culinary, and food processing purposes after conventional treatment. A-1 waters are also suitable for bathing, swimming, and recreation; wildlife, the growth and propagation of salmonid fish and associated aquatic life; and for agricultural and industrial water supply. In a September 21, 2007 letter the Natural Resources Department of the Confederated Salish and Kootenai Tribe responded to a water quality question (see footnote 3 above, Exhibit I of original LIHI application):

> *" …staff has reviewed the Technical Specifications and Drawings for the Boulder Creek Hydroelectric Project and has determined it is in compliance with the CSKT Water Quality Standards that support designated uses pursuant to the Federal Clean Water Act in the facility area and in the downstream reach."*

As part of the original agreement for an easement for the powerhouse, the Tribes installed a collection pipe and built a pump house to serve local residents as their primary source of drinking water. This location is approximately 40 yards downstream from the powerhouse and pumps Boulder Creek water to approximately 10 homes in the vicinity. According to the Applicant, Boulder Creek maintains extremely high water quality and has been proposed as a potential water supply for bottled water.

Based on the application, supporting and publicly available documentation, and FERC elibrary documents, this review finds that the Project does not impact water quality in the creek and continues to satisfy 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 for all ZoEs.

Discussion: The FERC exemption Standard Article 2 requires the facility to comply with any federal or state fish and wildlife agency terms and conditions. To date, no such conditions have been imposed. There are no migratory or resident fish species present in the creek.

The Flathead Lake and river fishery is managed under a plan coordinated between the Montana Department of Fish, Wildlife and Parks and the Tribes. The lake supports bull trout, a threatened species, as well as native species including: westslope cutthroat trout, mountain whitefish, pygmy whitefish, longnose sucker, largescale sucker, northern pikeminnow, peamouth chub, redshide shiner, and sculpin. Non-native, introduced species include lake

file/files?path=Water%2BQuality%2BStandards%252FWater%2BQuality%2BStandards%2BClean%2BDigital%2BVersion.pdf&Itemid=101

trout, lake whitefish, kokanee, yellow perch, northern pike, rainbow and brook trout, largemouth bass, smallmouth bass, pumpkinseed, and black bullhead.[7]

A large hydroelectric dam is located on the Flathead River just downstream of the outlet of Flathead Lake. It was completed in 1938 as Kerr Dam and was purchased by the Tribes in 2015 and renamed Se¿liš Ksanka Qlispe¿. The dam is 204 feet tall and impedes fish movement up into Flathead Lake. Fish movement from the lake into Boulder Creek is also impeded by natural barriers located within the first 100 yards above its mouth on the east shore of Flathead Lake. There is an eight-foot drop that presents a significant barrier to fish migration.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project does not impact upstream fish passage and continues to satisfy the upstream passage criterion.

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-1, Not Applicable/De Minimis Effect for all ZoEs.

Discussion: As noted above, there are no migratory or resident fish in Boulder Creek. There are no means for fish from Flathead Lake to ascend the natural barrier at the mouth such that they would later need to move back downstream. According to the Applicant, the Tribes Division of Fish, Wildlife, Recreation and Conservation conducted fish studies prior to the construction of the Project. Electroshocking in all likely pools or riffles at the time of Project construction confirmed that there are no species of fish within Boulder Creek at or above the Project site. According to the Applicant, in the years since, Tribal staff have walked the stream proper from the diversion to the powerhouse to observe flow and to look for fish but none have ever been observed during any of these observation periods.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project does not impact downstream moving fish and continues to satisfy the downstream passage and protection criterion.

[7] http://csktnrd.org/regulations-applications/all-documents/download?path=Fisheries%252FCo-management%2BPlan.pdf

E: Shoreline and Watershed Protection

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

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

Discussion: There are very few lands associated with the facility. The small impoundment covers 0.15 acres and the powerhouse area covers 0.073 acres. The penstock system is buried underground. There are no critical habitats for threatened or endangered species and no lands of ecological significance. While dewatering of Boulder Creek occurs, there is little to no aquatic habitat present.

The Flathead Lake and River Fisheries Co-Management Plan notes: "*The Flathead Lake and River System in Northwest Montana represents one of the cleanest large lake and river systems in the United States. The lake and its tributaries have unique ecological, recreational, spiritual, and economic values*."

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project does not adversely impact the shoreline or watershed and continues to satisfy the shoreline and watershed protection criterion.

F: Threatened and Endangered Species

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

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

Discussion: The Applicant conducted a US Fish and Wildlife Service IPaC online data check in October 2020 that showed the following species may be present near Boulder Creek:

- Canada lynx
- Grizzly bear
- Yellow-billed cuckoo
- Bull trout – critical habitat is limited to Flathead Lake, not within Boulder Creek. There is also a recovery plan for this species that includes the Flathead Lake population.

As noted above there are no fish in Boulder Creek, but the Tribes follow the 2015 Bull Trout Recovery Plan[8] across the reservation that supports activities to improve migration, redd site protection, and reduction of non-native predatory species that threaten bull trout.

[8] https://www.fws.gov/pacific/bulltrout/pdf/Final_Bull_Trout_Recovery_Plan_092915.pdf

Grizzly bears have been spotted infrequently in the area, but there ae no known den areas within ten miles of the Project. However, the Tribes follow the 1993 Grizzly Bear Recovery Plan[9] that has resulted in an increase of grizzly bears within the Reservation boundary. The Project is not within either the Zone 1 (highest concentration) or Zone 2 (significantly lower populations) of the plan. Gray wolves also are present on the Reservation as a whole; however, none have been observed within 10 miles of the Project and none appear on the IPaC report. Regardless, the Tribes follow the 1987 Gray Wolf Recovery Plan[10] that has increased the population of Gray Wolves within the Reservation boundary.

The IPaC report also lists the bald eagle as a migratory species protected under the Bald Eagle and Golden Eagle Protection Act. Bald eagle is not a species of conservation concern in the Project area but may be present during the breeding season from January through August.

An online data check of the Montana Natural Heritage Bureau in October 2020 indicated no additional state-listed species in the Project vicinity although Canada lynx, grizzly bear and bull trout are listed as state threatened species.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that given the very small Project footprint, operations and maintenance are very unlikely to affect any of the federal or state-listed species if any were present, and the Project continues to satisfy the threatened and endangered species criterion.

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-1, Not Applicable/De Minimis Effect for all ZoEs.

Discussion: No cultural or historic resources have been identified at the Project. Prior to construction, the Séliš-Q̓lispé Culture Committee, Kootenai Culture Committee, and Montana Historical Society were consulted to help identify culturally significant resources or locations within the Project area. None of the organizations were able to identify any location or item of cultural importance. The 2007 LIHI application contains consultation documents (see footnote 3, Exhibits L - N). No cultural or historic resources are listed on the National Register of Historic Places.

[9] http://igbconline.org/wp-content/uploads/2016/02/1996_Servheen_Grizzly_bear_recovery_plan.pdf

[10] https://www.fws.gov/montanafieldoffice/Endangered_Species/Recovery_and_Mgmt_Plans/Northern_Rocky_Mountain_Gray_Wolf_Recovery_Plan.pdf

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project does not affect cultural or historic resources, and continues to satisfy the cultural and historic resources protection 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 ZoEs.

Discussion: There are no recreation requirements associated with the Project, however a Tribal Recreation Permit is required for non-tribal members to access the facility as it is located within Tribal forestlands.

The Project is located near the base of the Mission Mountains within a designated Tribal wilderness area. Tribal members can hunt and gather wild berries near the Project. Wildlife species harvested in this area include elk, whitetail and mule deer, turkey, and grouse. Firewood harvesting is also prevalent. There are no restrictions on access to the land around the Project and no associated costs to recreate, or for access to Project lands.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the recreational resources criterion.

VIII. CERTIFICATION RECOMMENDATION

This review included evaluation of the application, a review of the FERC elibrary during the current LIHI term, and review of other publicly available information. Based on this evaluation, the Reviewer recommends that the Boulder Creek Project be recertified for a term of five (5) years with no conditions.