REVIEW OF APPLICATION FOR RE-CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE FARMERS IRRIGATION DISCTRICT PROJECT, LIHI #45

Prepared by Stephen Byrne
June 11, 2020

I. INTRODUCTION

This report summarizes the review findings of the application submitted by Farmers Irrigation District (Applicant) to the Low Impact Hydropower Institute (LIHI) for re-certification of the Farmers Irrigation District Hydroelectric Project FERC (P-6801 and P-7532). The Farmers Irrigation District Hydroelectric Project is a conduit facility that consists of the upstream Plant 3 (P-6801) and the downstream Plant 2 (P-7532) (Projects), 4.4 MW combined. The Projects were first Low Impact Certified as LIHI #45 effective March 25, 2009. The Projects are located off the main stem of the Hood River near the Columbia River Gorge, about 60 miles west of Portland, Oregon. The Projects operate in run-of-river modes.

On March 30, 2020 LIHI received a complete application for Low Impact Recertification of the Projects. Since the previous certification in 2014, the two turbines in Plant 2 were replaced with a single turbine and additional equipment enhancements in 2015, and the control system and hydraulic power and conditioning unit at Plant 3 were upgraded in 2017. However, because these changes do not affect environmental resources that are addressed by LIHI's criteria, they are not considered a "material change" as defined in the LIHI Certification Handbook. However, an operational change made effective by the 2019 Memorandum of Agreement with Oregon Division of Fish and Wildlife and Oregon Department of Environmental Quality (entered into in order to secure agency support for continued LIHI Certification), shifted the mainstem hydropower diversion shutdown period from October 1-15 to August 16-30, does constitute a material change. There have also been material changes in the LIHI Criteria and certification process since the Project was last certified, in that an updated Certification Handbook has been published by LIHI. This current review was made using the new 2nd Edition LIHI Certification Handbook (Revision 2.04, April 1, 2020).

II. PROJECT'S GEOGRAPHIC LOCATION

The Projects are located off the Hood River, approximately 4.5 miles upstream of the Columbia River confluence, and consist of two hydropower plants/powerhouses (one upstream and one downstream), connected through a penstock, two forebays, and 2 turbines in total – a single, new, Gilkes Turgo style turbine in Plant 2 and a Pelton style turbine in Plant 3.

The Hood River flows northwest through the Cascade mountain range in north-central Oregon and joins the Columbia River about 60 miles west of Portland. From that confluence, the Columbia River flows approximately 160 miles west to the Pacific Ocean. There are no dams on the Hood River upstream or downstream of the Plant 2 tailrace discharge location. The U.S. Army Corps of Engineer's Bonneville Dam is the only dam on the Columbia River downstream of the Hood River confluence.

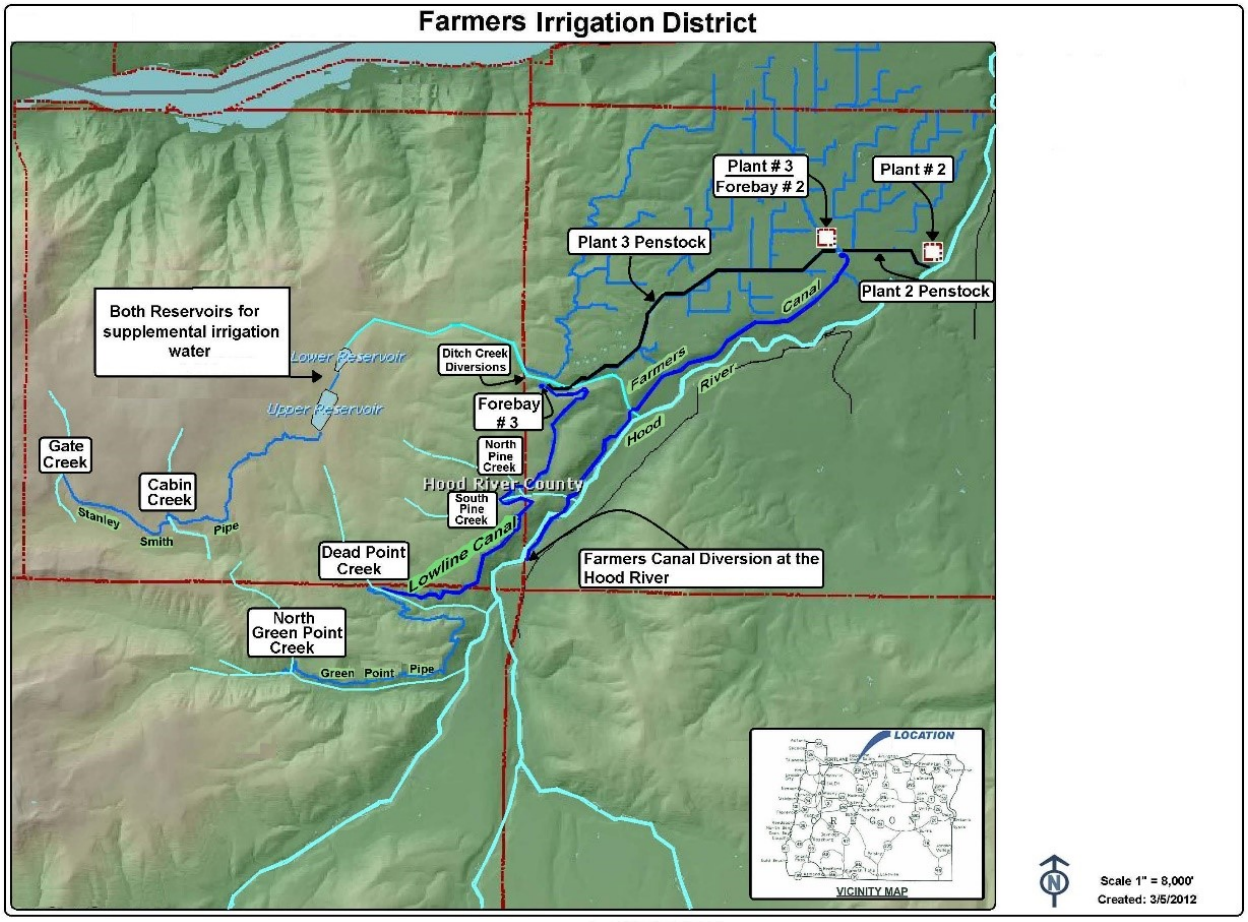

Figure 1 – Farmers Irrigation District Hydroelectric Project

III. PROJECT AND IMMEDIATE SITE CHARACTERISTICS

Water from Applicant's upper and middle district diversions (on tributaries to the West Fork Hood River and tributaries to the mainstem Hood River) is delivered to Forebay 3. From Forebay 3 water is transported down the penstock to Plant 3. During irrigation season, this water is diverted for irrigation use before reaching Forebay 3 and/or from the penstock, resulting in

decreased flows running through Plant 3 in the spring until plant shut-off (usually in early June) through the end of irrigation season. Water from the Applicant's lower district diversion on the mainstem Hood River is mixed with water through Plant 3 within Forebay 2 and then down the penstock to Plant 2. During irrigation season, much of this water is diverted for irrigation use before reaching Forebay 2, resulting in decreased flows running through Plant 2 from July through September. Water passing through Plant 2 outfalls into the mainstem Hood River at RM 4.5.

Tailrace from Plant 2

The mainstem Hood River diversion was originally constructed in the 1800s for irrigation. The diversion stemwall was rebuilt in 2007 after being destroyed in a debris flow. A new fish screen was installed in March 2019. The diversions at Gate, Cabin, North Green Point, Dead Point, South Pine, North Pine, and Ditch creeks were all originally built in the late 1800s/early 1900s for irrigation. Improvements in diversion structure and screening technology have occurred over the years. New horizontal fish screens were installed at North Green Point in 2006 and Dead Point in 2009. The irrigation canal was originally built between 1874 and the early 1900s with the primary purpose of irrigation water supply.

Forebay 3 is approximately 0.15 acres and feeds Plant 3. The powerhouse at Plant 3 contains one 1.8 MW Pelton turbine with a hydraulic capacity range of 4 to 36 cubic feet per second (cfs). Forebay 2 is just downstream of Plant 3 and approximately 0.17 acres, and feeds Plant 2. The powerhouse at Plant 2 contains one 2.6 MW Gilkes Turgo turbine with a hydraulic capacity of 12 to 116 cfs. There are no trashracks at the powerhouses, but horizontal fish screens are used at all diversion points and allow debris to pass. The Project generates approximately 22,526 MWh annually.

Plant 3 and Forebay 2

IV. ZONES OF EFFECTAND STANDARDS SELECTED

Three Zones of Effect (ZOE) were designated by the Applicant and were determined to be appropriate. Zone of Effect 1 beginning at Forebay 3 and includes the penstock that conveys water to Plant 3, as well as Plant 3 itself. Zone of Effect 2 begins at Forebay 2, receives discharge water from Plant 3 and includes the penstock that conveys water to Plant 2, as well as Plant 2 itself. Zone of Effect 3 includes the Plant 2 tailrace. The locations of these facilities are shown in Figure 1.

Table 1 shows the Standards selected for each criterion for the three ZOEs. Where applicable, reviewer recommendations for alternate standards are shown in **red**.

Table 1. Standards Matrix for the Farmers Irrigation District Hydroelectric Projects.

	Zone No., Zone Name, and Standard Selected (including PLUS if selected)		1: Forebay 3 & penstock	2: Forebay 2 & penstock	3: Plant 2 tailrace
CRITERION and STANDARD SELECTED	***A***	**Ecological Flows**	1, plus	3, plus	3, plus
	B	**Water Quality**	1	3	3
	C	**Upstream Fish Passage**	1, plus	1, plus	2, plus
	D	**Downstream Fish Passage**	1, plus	1, plus	1, plus
	E	**Shoreline and Watershed Protection**	1, plus	1, plus	1, plus
	F	**Threatened and Endangered Species**	1	1	2 , **3**
	G	**Cultural and Historic Resources**	1	1	1
	H	**Recreational Resources**	1	1	1

V. REGULATORY AND COMPLIANCE STATUS

Both Projects were issued exemption orders from the licensing requirements of part I of the Federal Power Act by FERC in the early1980s (Plant 3 exemption issued February 1, 1983, and Plant 2 exemption issued April 6, 1984). The Applicant is required however, to adhere to the articles listed in the exemption order and any mandatory terms and conditions filed by state and federal resource agencies. Since the last LIHI certification application, Farmers Irrigation District replaced two 30-year-old Francis style turbines with a total maximum nameplate capacity of 3 megawatts with a single Gilkes Turgo style turbine with a maximum nameplate capacity of 2.6 megawatts. While the nameplate capacity is less, the total annual generation for the plant was projected to increase 12.4 percent due to greater operational efficiencies through the entire flow range. The upgrade was made for enhanced operational efficiencies and reliability.

VI. PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI

The application was posted for public comment on March 31, 2020 and the notice was forwarded to agencies and stakeholders listed in the application. The deadline for submission of comments on the LIHI certification application was May 30, 2020. No formal comments were submitted. Outreach was made to Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service and the results of this correspondence are summarized in Appendix A.

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 Passage: The Applicant has appropriately selected Standard A-1, Not Applicable/De Minimis Effect for Zone No. 1 (Forebay 3 & penstock) and Standard A-3, Limited Storage for Zone No. 2 (Forebay 2 & penstock) and Zone No. 3 (Plant 2 tailrace).

The Projects operate in a run-of-river mode and are on water conduits. Source waters for the facilities associated with Zone No. 1 are Gate Creek, Cabin Creek, North Green Point Creek, Dead Point Creek, South Pine Creek, North Pine Creek, and Ditch Creek, which are all mixed in Forebay 3. Water from Forebay 3 is released into Plant 3 via a 4.5-mile-long concrete reinforced steel penstock. As noted in section 3 above, during irrigation season, water is diverted for

irrigation use before reaching Forebay 3 and/or from the penstock, resulting in decreased flows running through Plant 3 in the spring until plant shut-off (usually in early June) through the end of irrigation season.

Flow restrictions/requirements set forth in the Applicant's water rights certificates (Certificates 67266, 67267, and 75809) were designed to ensure flows were in compliance with regional plans and/or support fisheries habitat. Storage capacity in Forebay 2 was calculated to be 1.36 acre-feet and storage time to be 9-49 minutes, based on the time it takes to fill the forebay, followed by flow rate into the forebay being matched to the flow rate through Plant 2.

A review of the Projects' annual compliance letters to LIHI and eLibrary indicated that no violations in Ecological Flow Criterion have occurred during the current Low Impact certification period.

The Applicant also selected **Standard A-Plus** for all Zones

The Applicant has worked with Oregon Department of Fish and Wildlife (ODFW) and Oregon Department of Environmental Quality (ODEQ) since 2009 to adaptively manage the hydropower facilities with water temperature monitoring and adjustments to the flow requirements (withdrawal allowances) and Project operations. Beginning in 2009 the Applicant signed a Memorandum of Agreement (MOA) with (ODFW) and (ODEQ) to maintain minimum flows downstream of Plant 2, to provide a shutdown period for fish populations and water quality, and to monitor water temperature. The MOA was most recently revised in 2019 (Appendix B) to require the Applicant to cease diversions from the mainstem Hood River under their hydropower right when mainstem mean daily discharge drops below 250 cfs, shutdown mainstem hydropower diversion from August 16-30, and conduct temperature monitoring around Plant 2 operations. Additionally, under the 2019 MOA, the mainstem hydropower diversion shutdown period was moved from October 1-15 to August 16-30. This period was determined to be a higher priority timeframe for both fish populations and stream temperature.

Based on my review of the application, supporting documentation, and publicly available information, the Projects are operated in a manner that eliminates their impact on flows so that natural flows can support habitat and other conditions suitable for healthy fish and wildlife resources[1]. As such, the Projects continue to satisfy the Ecological Flow Regimes criterion. While the adaptive management aspects of the MOA qualify for the PLUS standard, no more than 2 Plus standard credits may be awarded to a Project. For the reasons discussed below, PLUS standard credits are recommended for Criterion D – Downstream Fish Passage and Protection

[1] Unlike many conventional hydropower facilities which are required to provide a certain amount of flows into a bypass reach or natural river bed, FID, like many conduit facilities in the west, instead are restricted in the water they are allowed to divert away from the natural river bed.

and Criterion E – Shoreline and Watershed Protection. Therefore, I do not recommend the Projects be awarded the PLUS standard for 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 Passage: The Applicant appropriately selected Standard B-1, Not Applicable/De Minimis Effect for Zone No. 1 (Forebay 3 & penstock) and Standard B-3, Site Specific Studies for Zone Nos. 2 and 3 (Forebay 2 & penstock and Plant 2 tailrace).

Project facilities associated with Zone No. 1 are on the existing irrigation water conduit and there are no fish and wildlife resources or human water uses within or around this system to be affected by the Projects.

Since the 2009 MOA was signed, the Applicant has conducted annual water temperature monitoring to determine the thermal effects of its Project operations. The mainstem of the Hood River has a temperature TMDL from RM 1.5 to the confluence of the East and West Forks. The temperature monitoring data has shown that Plant 2 releases are cooler than the mainstem Hood River and that the Plant 2 releases result in cooler water in the river after mixing with water from upstream of the Plant 2 tailrace.

The Hood River in the Project vicinity (ID# 1215067457204) is also listed as impaired on the Oregon 303(d)[2] list for copper, iron, lead, and thallium, which are not caused, or exacerbated by the Project. With the November 2019 revised MOA, ODEQ indicated that it supports the Applicant's efforts to maintain LIHI Certification so long as the instream flow methodology and temperature monitoring methodology outlined in the 2019 MOA are met. The 2019 temperature monitoring methodology has the goal of determining the thermal effects of the Applicant's hydropower operations with two main objectives: (1) determine how the Applicant's Plant 2 tailrace affects temperatures in the Hood River; and (2) determine how the Farmers Canal hydropower diversion affects temperatures in the Hood River. To attain these goals, the 2019 temperature monitoring methodology includes provisions for water temperature monitoring at several locations on the Hood River upstream of the Plant 2 discharge, Plant 2 tailrace, and the mixing zone in the Hood River downstream of the Plant 2 discharge. The Applicant files annual summary reports with ODEQ.[3]

Based on my review of the application, supporting documentation, and publicly available information, the Projects continue to satisfy this criterion.

[2] https://www.deq.state.or.us/wq/assessment/rpt2012/results.asp
[3] https://www.fidhr.org/images/LIHI/2018_Update_FID_Thermal_Study.pdf

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, sustainable fish and wildlife resources in areas affected by the facility.

Assessment of Criterion Passage: The Applicant appropriately selected Standard C-1, Not Applicable/De Minimis Effect for Zone No. 1 (Forebay 3 & penstock) and Zone No. 2 (Forebay 2 & penstock) and Standard C-2, Agency Recommendation for Zone No. 3 (Plant 2 tailrace).

Migratory species in the vicinity of the Project facilities include Pacific lamprey, summer and winter steelhead, spring and fall Chinook, coho, bull trout, and coastal cutthroat trout. The facilities associated with Zones 1 and 2 release water into the conduit system, where migratory species cannot enter and therefore upstream passage is not applicable to these Zones.

Preventing fish from entering the facilities is the primary objective. During the removal of PacifiCorp's Powerdale Dam in 2010, ODFW had concerns about the outflow from Plant 2 becoming attraction water for salmonids and migratory species in the Hood River. Prior to the dam removal, Plant 2 discharged directly into the Powerdale impoundment. Through coordination and site visits between the Applicant and ODFW, the solution was to place large boulders in the Plant 2 tailrace to reduce the newly formed channel depth, dissipate the energy of Plant 2's discharge, and minimize the attraction flow potential of the Plant 2 discharge. After the project was completed ODFW reported that fish were no longer attracted to the discharge and the project was deemed successful.[4] Fish are therefore purposefully excluded from the Plant 2 tailrace.

The Applicant has also selected **Standard C-Plus** for all Zones however this review finds that the fish screens discussed in the Application are principally a downstream passage protective measure through preventing fish from entering the facility pipelines at diversion points.

Based on my review of the application, supporting documentation, and publicly available information, the Projects do not negatively affect upstream passage of migratory fish in the mainstem Hood River and continue to satisfy the Upstream Fish Passage criterion; however, the PLUS standard is not appropriate for this criterion.

[4] https://www.fidhr.org/images/LIHI/ODFW_email_tailrace_attraction.pdf

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. All migratory species are able to successfully complete their life cycles and to maintain healthy, sustainable fish and wildlife resources in the areas affected by the Facility.

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

Riverine fish species in the vicinity of the Projects include rainbow trout, redband rainbow trout, cutthroat trout, brook lamprey, sculpin, mountain whitefish, bridge-lipped sucker, large-scale sucker, long nose dace, spotted dace, leopard dace, stickleback, northern pikeminnow, and the non-native brook trout. As noted for the Upstream Fish Passage criterion, migratory species that may occur in the vicinity of the Projects include Pacific lamprey, summer and winter steelhead, spring and fall Chinook, coho, bull trout, and coastal cutthroat trout.

All diversions associated with the Applicant's hydropower facilities have screens, and therefore fish cannot enter the conduit system or the Project facilities.

The Applicant has also selected **Standard D-Plus** for all Zones.

All of the Applicants diversions are screened, and their main channel diversions use an off-channel horizonal fish screen that the Applicant developed in the early 2000's and tested, and subsequently received agency approval for its use. Smaller diversions in the area are being upgraded to the same screen technology as money allows. While migratory species can bypass the screens via the fish return channel, the off-channel screening helps to maintain upstream fish passage in the main channel Hood River. The screens were tested and found to be effective for downstream passage in canal systems.[5]

[5] https://www.fidhr.org/images/news/FID_Marine_and_Freshwater_Research_Article_July_2019.pdf

Farmers Screen (from website)

The Farmers Screen[6] was developed by FID employees with input and testing by resource agencies to improve both fish screening and debris passage. The prototype screen was built on FID's mainstem diversion in 2002. After testing, the screens received agency approval and the technology was patented. Farmers Conservation Alliance, a local non-profit, was given license for the technology in 2006 with the agreement to market the new screen technology and to invest any excess revenue into developing other technologies that benefit both the environment and agriculture. The screen design uses hydraulics to manage debris and protect fish. It has no moving parts and does not require power to operate. Off-channel screening predominately means upstream passage is maintained in the natural stream channel, but migratory fish are capable of passing the screens upstream if they access the fish return channel.

Based on my review of the application, supporting documentation, and publicly available information, the Projects continues to satisfy the Downstream Fish Passage criterion by having a de minimis effect due to all its diversions being screened. The Projects also meet the PLUS standard because the Applicant has deployed advanced technology in the form of its own horizonal fish screens that exclude fish from the canal system and help maintain natural fish migration in the mainstem Hood River.

E. SHORELINE AND WATERSHED PROTECTION

Goal*:* The Facility has demonstrated that enough 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 appropriately selected Standard E-1, Not Applicable/De Minimis Effect in all Zones.

There are no specific agency recommendations and the Projects do not have, nor are required to have, a specific watershed land protection plan. There are no lands of ecological significance in the vicinity of the Projects that are under the Applicants ownership. The Applicant owns 2.2 acres of land under/around Plant 3 and Forebay 2 and has easements for the land under/along Forebay 3, Penstock 3, Penstock 2, and Plant 2. Combined acreage of Forebays 3 and 2 is roughly 0.3 acres. Property owners along these easements include Hood River County (forestland, vacant) and private landowners (forest land, exclusive farm use, rural residential).

[6] https://farmerscreen.org/

The Applicant has also selected **Standard E-Plus** for all Zones.

The Applicant is part of the Hood River Watershed Group and has contributed $116,000 since 2001 toward operations and implementation of the Hood River Watershed Action Plan[7] through financial and technical assistance. The Plan identifies and prioritizes projects and strategies to improve watershed health, water quality, and fish populations in the Hood River watershed of the lower Columbia River Basin. Habitat restoration projects in the vicinity of the hydropower facilities since 2014 include: Beren's Bend Indian Creek Restoration, Powerdale Dam Removal & Lands Transfer, Indian Creek Riparian & Instream Habitat Enhancement, Orchard Spray Buffer Riparian Planting Project, Powerdale Corridor Riparian & Floodplain Restoration, and Indian Creek Urban Riparian Enhancement. Water conservation projects have included Farmers Irrigation District Lower District Pressurization Project, Indian Creek Corridor Piping Project, Lowline Canal Pipeline Project, Farmers Canal Pipeline – Phase I, Agricultural Irrigation Efficiency & Water Quality Improvement Projects, and Green Point Pipeline Project which increased summer flow to benefit summer steelhead as well as spring Chinook migration, spawning and rearing.
Based on my review of the application, supporting documentation, and publicly available information, the Projects are operated in a manner that has a de minimis effect on the watershed. The Projects' owner is also contributing to watershed enhancement projects throughout the basin designed to achieve the ecological equivalent of land protection and which far exceeds protections that could be made under the Projects' land ownership. Therefore, the Projects continue to satisfy the Shoreline and Watershed Protection criterion and meet the PLUS standard.

F. THREATENED AND ENDANGERED SPECIES PROTECTION

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

Assessment of Criterion Passage: The Applicant appropriately selected Standard F-1, Not Applicable/De Minimis Effect for Zone No. 1 (Forebay 3 & penstock) and Zone No. 2 (Forebay 2 & penstock) and Standard F-2, Finding No Negative Effects for Zone No. 3 (Plant 2 tailrace). However, this review finds Standard F-3, Recovery Planning and Action, is more appropriate for Zone No. 3.

State and federally listed aquatic species in the Hood River that could occur in the vicinity of the Plant 2 tailrace include summer and winter steelhead, spring and fall run chinook salmon, coho salmon, and bull trout. The Hood River from its confluence with the Columbia River, upstream past the Plant 2 tailrace, and to Mount Hood is listed as critical habitat for bull trout. There are

[7] http://hoodriverswcd.org/revised/wp-content/uploads/2019/09/HRWG_HRWatershedActionPlan.pdf

no listed terrestrial species or state-listed species in the Project vicinity.

Bull trout is the only species with a recovery plan. FWS issued the final recovery plan on September 30, 2015, that includes recovery measures for the Hood River. The recovery plan states that *"In the Hood River core area, bull trout conservation measures have included the decommissioning and removal of Powerdale Dam by PacifiCorp in coordination with Columbia River Land Trust and Hood River Count), various stream habitat improvements, and screening of the Coe Creek diversion by the Middle Fork Irrigation District.*"

The recovery measures are based on three threat category classifications: Habitat (Upland/Riparian Land Management, Instream Impacts, and Water Quality), Demographic (Connectivity Impairment, Fisheries Management, Small Population Size, and Forage Fish Availability), and Nonnatives. Upland/Riparian land management actions that would address habitat threats through restoring instream channel conditions in the Hood River Core Area include implementing channel restorations and wood addition actions outlined in the Hood River Watershed Action Plan. Completed habitat restoration projects on the Hood River that were developed in the Hood River Watershed Action Plan include the Powerdale Dam Removal & Lands Transfer and the Powerdale Corridor Riparian & Floodplain Restoration Projects. Improving water temperature (i.e not increasing) downstream of Laurance Lake during the bull trout spawning season (late summer to early fall) is also identified in the recovery plan as a water management action to address habitat threats. As noted earlier, the Applicant's 2019 MOA contains provisions for water temperature monitoring and annual reporting to ODEQ, with the goal of determining the thermal effects of the Applicant's hydropower operations on the Hood River. To date, the temperature monitoring data has shown that Plant 2 releases are cooler than mainstem Hood River and that the Plant 2 releases result in cooler water in the river after mixing with water from upstream of the Plant 2 tailrace. As such, the hydropower operations are providing cooler water downstream of Laurance Lake, which provides more ideal habitat. Additionally, there are several proposed enhancement projects in the Hood River Watershed Action Plan that aim to improve bull trout habitat, including the Red Hill Creek Large Wood Addition Project, the West Fork Hood River Large Wood Addition Project, and the Clear Branch Dam Fish Passage, Flow & Temperature Improvement Project.

Under the 2019 MOA, the mainstem hydropower diversion shutdown period was moved from October 1-15 to August 16-30 because this period was determined to be a higher priority timeframe for both fish populations and stream temperature.

In its email response to my inquiry, on June 2, 2020 ODFW indicated that it generally had no concerns with facility operations attracting salmonids to the plant 2 tailrace (Appendix A). The addition of large boulders in the tailrace removed potential holding water for adult salmon. Prior to this addition, and following the removal of Powerdale Dam, upstream migratory fish were

attracted to the Plant 2 tailrace. Improving fish passage in natural waterways is a main component of salmonid recovery plans. By screening all their diversions, the Applicant also helps maintain fish passage in the Hood River.

Based on my review of the application, supporting documentation, and publicly available information, I find that the Projects continue to satisfy the Threatened and Endangered Species criterion.

G. CULTURAL AND HISTORIC RESOURCE 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 Passage: The Applicant appropriately selected Standard G-1, Not Applicable/De Minimis Effect for all Zones.

There were/are no cultural or historic resources present at/around Forebay 3 or the penstock, Plant 3, Forebay 2 or the penstock, Plant 2, or the tailrace. A review of the National Register of Historic Places did not find any listed properties or structures in any Zones. Most listed properties in Hood River County Oregon are in the city of Hood River, approximately 2.5 miles northeast of the Project facilities.

Based on a review of eLibrary and Applicant's annual compliance letters to LIHI, there does not appear to be any concern over project operation and maintenance on cultural or historic resources. Therefore, based on my review of the application, supporting documentation, and publicly available information, the Projects continue to satisfy the Cultural and Historic Resource 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 appropriately selected Standard H-1, Not Applicable/De Minimis Effect for all Zones.

There are no recreation facilities associated with either Project. As noted earlier, the Applicant owns about 2.2 acres of land under/around Plant 3 and Forebay 2 and has easements for the land under/along Forebay 3, Penstock 3, Penstock 2, and Plant 2. Land is gated and restricted due to high-voltage and otherwise sensitive equipment unsafe for the general public and the Applicant

does not have any authority to allow public access on the easements. Combined acreage of Forebays 3 and 2 is roughly 0.3 acres. The Applicant does not restrict public access to its hydropower facilities if the landowner (e.g. Hood River County) allows public access, excepting swimming in Forebay 3 and access into Plant 2, due to dangerous conditions and/or sensitive equipment unsuitable for the general public.

Based on my review of the application, supporting documentation, and publicly available information, the Project continues to satisfy the Recreational Resources criterion.

VIII. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION

Based on my review, I believe that the Project meets the requirements of Low Impact Certification and recommend it be re-certified for a 10-year period including the two PLUS standards for downstream passage and shoreline and watershed protection. I recommend the following condition:

Condition 1: The facility Owner shall continue to operate the Project in accordance with the 2019 Memorandum of Agreement (MOA) with ODFW and ODEQ and provide status updates to LIHI in annual compliance statements. Updates should specify if operations are modified as a result of the adaptive management program, or if the MOA is revised during the LIHI term.

APPENDIX A – AGENCY CORRESPONDENCE

From:	Rod French
To:	Byrne, Stephen
Cc:	mfischer@lowimpacthydro.org
Subject:	RE: Threatened and Endangered Species inquiry for the pending LIHI recertification of Farmers Irrigation District, LIHI #45, OR
Date:	Tuesday, June 2, 2020 11:19:29 AM
Attachments:	image001.png

Hi Stephen,
Generally speaking we have no concerns with facility operations attracting salmonids to the tailrace. The picture you have on your website is dated, and does not reflect the current situation at FID Plant #2. Following the removal of the Powerdale Dam in 2010 and its associated forebay, the tailrace of the FID Plant #2 now extends approximately 100 meters to its confluence with the Hood River creating a short channel. Following the removal of Powerdale upstream migrant fish were attracted to the tailrace of Plant #2. This situation was corrected by adding roughness to the tailrace channel (i.e. large boulders), that removed potential holding water for adult salmonids. Currently downstream migrant salmonids can temporarily enter the tailrace channel, but do not appear to be negatively affected by occupying that area. When emergency shutdowns of the plant occur with rapid dewatering, however, juvenile fish can become trapped in the tailrace area.

Let me know if you have additional questions. Rod

Rod A. French
Mid-Columbia District Fish Biologist
3701 W. 13th St.
The Dalles, OR 97058
o. 541-296-4628 ext 322
c. 541-980-1960
rod.a.french@state.or.us

From: Byrne, Stephen <stephen.byrne@wsp.com>
Sent: Friday, May 29, 2020 7:43 AM
To: 'Rod French' <Rod.A.French@state.or.us>
Cc: mfischer@lowimpacthydro.org
Subject: Threatened and Endangered Species inquiry for the pending LIHI recertification of Farmers Irrigation District, LIHI #45, OR

Hello,

I am reviewing the LIHI recertification application for the Farmers Irrigation District Project, LIHI# 45, and wanted to see if you have any concerns related to the potential for facility operations and maintenance to negatively affect any listed species (i.e. listed salmonids in the Hood River being attracted to the Plant 2 discharge) or critical habitat (bull trout CH in the Hood River)?

For reference, the Farmers Irrigation District Project, LIHI# 45 website and application can be found here: https://lowimpacthydro.org/lihi-certificate-45-farmers-irrigation-district-hydro-project-ferc-s-7532-and-6801/

Thank you very much,

Stephen Byrne
Fisheries Biologist

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96 Morton St. 8th floor
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From: mfischer@lowimpacthydro.org <mfischer@lowimpacthydro.org>
Sent: Tuesday, March 31, 2020 12:53 PM
To: 'Rod French' <Rod.A.French@state.or.us>; MEHTA.Smita@deq.state.or.us; tom.hausmann@noaa.gov; chris.brun@ctwsbnr.org; Winston.S.Zack@usace.army.mil; Ann_gray@fws.gov; cindy@hoodriverwatershed.org
Cc: Byrne, Stephen <stephen.byrne@wsp.com>
Subject: FW: Pending Application: Recertification of Farmers Irrigation District, LIHI #45, OR

Good afternoon,

You may have already received the notice below if you are on the Low Impact Hydropower Institute (www.lowimpacthydro.org) email list. However, you were also identified as an agency or stakeholder contact on the LIHI recertification application recently submitted by Farmers Irrigation District for their hydroelectric Project located off of the Hood River in Hood River County, OR. The application reviewer, Steve Byrne (copied here), may be in contact with you if he has questions about the project or wishes to clarify any aspects of the LIHI application. You may also provide public comments directly to LIHI as indicated below.

More information about the project and its application can be found in the link below. If you would like to receive additional notices about this project or other hydroelectric projects in your region applying for LIHI certification, please sign up for our mailing list at https://lowimpacthydro.org/join-our-list/.

Best regards,

Maryalice Fischer
Certification Program Director

From:	Gray, Ann E
To:	Byrne, Stephen
Cc:	mfischer@lowimpacthydro.org
Subject:	Re: [EXTERNAL] Threatened and Endangered Species inquiry for the pending LIHI recertification of Farmers Irrigation District, LIHI #45, OR
Date:	Monday, June 1, 2020 7:58:39 PM
Attachments:	image001.png

Hi Stephen-
I defer questions on listed anadromous salmonids to Tom Hausman of NMFS, who was on your earlier email. At this time, I have not heard of any concerns re: bull trout critical habitat in the Hood River associated with the FID. I had hoped to review the FID LIHI application earlier, but my workload is such that I will not be able. My understanding is ODFW staff, who are more familiar with FID and the needs of bull trout in Hood River, have been typically supportive of the FID LIHI certification in the past. thank you.
ann

Ann E. Gray
U.S. Fish and Wildlife Service
TELEWORK- SHELTER IN PLACE: 503-847-4531
503-231-6179 (Office)
503-231-6195 (fax)

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From: Byrne, Stephen <stephen.byrne@wsp.com>
Sent: Friday, May 29, 2020 7:46 AM
To: Gray, Ann E <ann_e_gray@fws.gov>
Cc: mfischer@lowimpacthydro.org <mfischer@lowimpacthydro.org>
Subject: [EXTERNAL] Threatened and Endangered Species inquiry for the pending LIHI recertification of Farmers Irrigation District, LIHI #45, OR

Hello,

I am reviewing the LIHI recertification application for the Farmers Irrigation District Project, LIHI# 45, and wanted to see if you have any concerns related to the potential for facility operations and maintenance to negatively affect any listed species (i.e. listed salmonids in the Hood River being attracted to the Plant 2 discharge) or critical habitat (bull trout CH in the Hood River)?

For reference, the Farmers Irrigation District Project, LIHI# 45 website and application can be found here: https://lowimpacthydro.org/lihi-certificate-45-farmers-irrigation-district-hydro-project-ferc-s-7532-and-6801/

Thank you very much,

Stephen Byrne
Fisheries Biologist

Phone: +1 781 707 7446
Email: stephen.byrne@wsp.com

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96 Morton St. 8th floor
New York, NY 10014 USA

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From: mfischer@lowimpacthydro.org <mfischer@lowimpacthydro.org>
Sent: Tuesday, March 31, 2020 12:53 PM
To: 'Rod French' <Rod.A.French@state.or.us>; MEHTA.Smita@deq.state.or.us; tom.hausmann@noaa.gov; chris.brun@ctwsbnr.org; Winston.S.Zack@usace.army.mil; Ann_gray@fws.gov; cindy@hoodriverwatershed.org
Cc: Byrne, Stephen <stephen.byrne@wsp.com>
Subject: FW: Pending Application: Recertification of Farmers Irrigation District, LIHI #45, OR

Good afternoon,

You may have already received the notice below if you are on the Low Impact Hydropower Institute (www.lowimpacthydro.org) email list. However, you were also identified as an agency or stakeholder contact on the LIHI recertification application recently submitted by Farmers Irrigation District for their hydroelectric Project located off of the Hood River in Hood River County, OR. The application reviewer, Steve Byrne (copied here), may be in contact with you if he has questions about the project or wishes to clarify any aspects of the LIHI application. You may also provide public comments directly to LIHI as indicated below.

More information about the project and its application can be found in the link below. If you would like to receive additional notices about this project or other hydroelectric projects in your region applying for LIHI certification, please sign up for our mailing list at https://lowimpacthydro.org/join-our-list/.

Best regards,

Maryalice Fischer
Certification Program Director
Low Impact Hydropower Institute

APPENDIX B – NOVEMBER 2019 MEMORANDUM OF UNDERSTANDING

OREGON DEPARTMENT OF FISH AND WILDLIFE, OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, AND FARMERS IRRIGATION DISTRICT MEMORANDUM OF AGREEMENT FOR HYDROELECTRIC OPERATION CONDITIONS FOR THE PURPOSE OF MEETING LOW-IMPACT HYDROPOWER INSTITUTE CERTIFICATION

RECITALS

Farmers Irrigation District (District) continues to implement their Water Management and Conservation Plan and Sustainability Plan (Plan) to modernize the irrigation system, maintain/improve fish passage, improve water conservation, increase instream flow, decrease water temperature, eliminate canal failures and non-point source pollutant transport, and restore/protect natural resources; and

In order to complete its Plan, the District must continue to realize a financial return on its investments in irrigation enhancement and natural resource restoration and protection; and

Oregon Department of Fish and Wildlife's (ODFW's) goal is to implement measures to improve instream flow in the Hood River for fish spawning, rearing, and migration, and ODFW is working with the Oregon Department of Environmental Quality (ODEQ) to improve water temperature and other water quality parameters; and

ODEQ's goal is to implement measures to improve water temperature and other water quality parameters, and ODEQ is working with ODFW to implement measures to improve instream flow in the Hood River for fish spawning, rearing, and migration; and

Measures to improve instream flow in the Hood River for fish spawning, rearing, and migration and measures to improve water temperature and other water quality parameters are both advanced by the District's Plan; and

The District, ODFW, and ODEQ (collectively "the Parties") wish to further the positive outcomes of the District's Plan; and

The Parties make the following assumptions:

- The increased revenue from the sale of Renewable Energy Certificates (RECs) is dedicated to advancing the District's Plan; and
- ODFW and ODEQ will realize improved water quantity and water quality from the continued implementation of the District's Plan;

TERMS & CONDITIONS OF AGREEMENT

The District will operate under the conditions set forth in Exhibit A (Instream Flow Methodology), which is specifically incorporated herein by reference, and will continue to implement the actions set forth in Exhibit B (Temperature Monitoring Methodology), which is specifically incorporated herein by reference, provided the following conditions continue to be met:

- The District has secured and, if economically sustainable, will maintain Low-Impact Hydropower Institute (LIHI) certification (Certification) to achieve increased revenue from the sale of Renewable Energy Certificates (RECs); and
- The District will realize a net positive revenue from its RECs;

Furthermore, ODFW and ODEQ will support the District's efforts to maintain Certification, provided that the conditions laid out in Exhibit A (Instream Flow Methodology) and Exhibit B (Temperature Monitoring Methodology) continue to be met.

TERMINATION OF THE AGREEMENT

This Agreement may be terminated by written agreement of all three of the Parties.

EFFECTIVE DATE OF THE AGREEMENT

The "Effective Date" is the day the last of the Parties executes the Agreement.

TERM OF THE AGREEMENT

This agreement shall terminate on the expiration date of the LIHI certification, March 25, 2029.

EXHIBIT A
INSTREAM FLOW METHODOLOGY

Oregon Department of Fish and Wildlife LIHI Certification Conditions:

- The District will operate and maintain existing fish protection and mitigation measures as conditioned by the agencies in the FERC exemption.
- ODFW will support the District's effort to maintain Certification so long as the District continues to operate in the manner described herein:
    - The District agrees to contact the ODFW Field Office in The Dalles when ceasing or starting hydropower diversion or cutting Farmers Canal diversion to 40 cfs.
    - The District will provide a yearly summary report of the operational shut-down or cut-back periods by the close of each calendar year.
    - Beginning from the date of this agreement and continuing so long as this agreement remains in effect, the District shall operate its hydroelectric system based on instream flows in the Hood River as measured at the USGS gauge station at Tucker Bridge according to the following prescribed parameters:
        - During the months of July through October, when daily mean discharge in the Hood River is below 250 cfs for three consecutive days, diversion from the Hood River into Farmers Canal, as measured at the Farmers Canal Deep Cut meter, shall not exceed 40 cfs until the daily mean discharge in the Hood River exceeds 250 cfs for three consecutive days. The District may generate through Plant 2 if operationally appropriate.
        - Beginning at 10:00 a.m. on August 16 and continuing to 10:00 a.m. on August 30, diversion from the Hood River into Farmers Canal, as measured at the Farmers Canal Deep Cut meter, shall not exceed 40 cfs. The District may either bypass operational overflow through Plant 2 or generate through Plant 2.

EXHIBIT B
TEMPERATURE MONITORING METHODOLOGY

Oregon Department of Environmental Quality LIHI Certification Conditions:

- The District will operate and maintain existing fish protection and mitigation measures as conditioned by the agencies in the FERC exemption.
- ODEQ will support the District's effort to obtain and maintain Certification so long as the District's hydropower system operation does not cause thermal effects in excess of ODEQ standards (or does not exacerbate thermal conditions already in excess of ODEQ standards) as determined by the below temperature study.
- To determine the thermal effects of its hydropower system operation as to:
    - How the District's Plant 2 tailrace affects temperatures in the Hood River; and
    - How the Farmers Canal hydropower diversion affects temperatures in the Hood River;

  The District shall collect data in at least these locations:
    - At the upstream end of the Farmers Canal diversion to determine the temperature of the river at the point of diversion.
    - In the Plant 2 tailrace upstream of the Hood River to assess how much the diverted water temperature rises, falls, or remains constant at the tailrace (just before entering the river) relative to the river temperature at the Farmers Canal diversion.
    - In the mixing zone below where the Plant 2 tailrace enters the Hood River to determine the temperature of the river downstream of FID hydropower operations.
    - In the Hood River above the confluence with Neal Creek, to assess the thermal effects of the diversion as separate from natural heating that might occur along the project bypass reach on the Hood River.
- The District shall provide an annual summary report to ODEQ of the collected data at the above locations.
    - The District shall include daily mean flow in the mainstem Hood River (as measured and reported by USGS at the USGS gauge station at Tucker Bridge) and in the tailrace (as measured through Plant 2) in this annual summary report.
- The District agrees to contact the ODEQ office in Bend when ceasing or starting hydropower diversion or cutting Farmers Canal diversion to 40 cfs.

All Parties approve and agree to this Memorandum of Agreement and Associated Exhibits and agree to support the District's effort to maintain Low-Impact Hydropower Institute Certification, so long as the District continues to operate in the manner described.

Les Perkins, Manager
Farmers Irrigation District

11/26/2019
Date

Erica Kleiner, Deputy Director for Administration
Oregon Department of Fish and Wildlife

11/15/19
Date

Smita Mehta, TMDL Basin Coordinator
Oregon Department of Environmental Quality

11/19/19
Date