

October 8, 2015

VIA ELECTRONIC FILING

Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Subject: Offer of Settlement and Application for Non-Capacity Amendment for Opal Springs Fish Passage Project (FERC No 5891).

Dear Ms. Bose,

The Deschutes Valley Water District (DVWD) is the licensee for the Opal Springs Hydroelectric Project (OSHP), FERC No 5891. In accordance with the sections 385.602 and 4.201 of the Federal Energy Regulatory Commission's regulations (18 CFR §§ 385.602 and 4.201), DVWD hereby submits:

- (1) Settlement Agreement Concerning License Amendment for Fish Passage at the Opal Springs Hydroelectric Project, FERC No 5891, among the Deschutes Valley Water District, US DOI Bureau of Indian Affairs, US DOI Bureau of Land Management, US DOI Fish & Wildlife Service, National Marine Fisheries Service, Oregon Department of of Fish & Wildlife, and Trout Unlimited, originally executed in October 2011. This was subsequently revised and restated in September 2015; and
- (2) final non-capacity license amendment application for fish passage facilities and management at the OSHP.

On behalf of itself and the parties to the Settlement Agreement, DVWD requests approval of the Settlement Agreement and issuance of an amended license consistent with the Settlement Agreement and the license amendment application that authorizes a new normal maximum operating pool, construction of fish passage facilities, and an adaptive management program.

Background

The OSHP was authorized in 1982 and commissioned in 1985. Because anadromous fish had been extirpated from the Upper Deschutes Basin in the 1960s due to the downstream Pelton Round Butte Project (PRB Project, FERC No. 2030), fish passage was not required or provided at the time of licensing of the project.

In 2007, salmon and steelhead were reintroduced in the Upper Deschutes Basin, upstream of the PRB Project following the completion of upstream and downstream passage facilities. The reintroduced fish are repopulating three major tributaries to the Deschutes River: the Upper Deschutes River, the Metolius River, and the Crooked River on which the OSHP is situated.

The first adult salmon and steelhead returning to the PRB Project appeared in 2012 and the species have been in the OSHP vicinity since that time. Located at the lower end of the Crooked River, the OSHP is a barrier to passage into this tributary, which would otherwise provide spawning, rearing, and foraging habitat for these anadromous species. Bull trout, a species listed under the federal Endangered Species Act (ESA), also is present below the OSHP, which is considered critical habitat under the ESA. In response to a request from the Oregon Department of Fish and Game (ODFW), DVWD has been passing fish above the OSHP through a trap-and-haul effort voluntarily since 2012.

Because of these changing conditions and to facilitate upstream migration at the OSHP, DVWD voluntarily engaged with the relevant government agencies and non-governmental organizations in 2008. For more than 4 years, DVWD and interested parties investigated, discussed, and negotiated a collaborative solution. In October 2011, DVWD and the following agencies and entities (the Parties) came to a balanced agreement for construction and maintenance of fish passage facilities and fisheries management at the OSHP:

- US DOI Bureau of Indian Affairs (BIA)
- US DOI Bureau of Land Management (BLM)
- US DOI Fish & Wildlife Service (USFWS)
- National Marine Fisheries Service (NMFS)
- Oregon Department of Fish & Wildlife (ODFW)
- Trout Unlimited (TU)

Settlement Agreement

The Settlement Agreement, which was amended and restated in 2015 to ensure consistency with this license amendment application, provides a framework for connecting important habitat in the Crooked River with the lower Deschutes Basin, while recognizing the voluntary nature of the DVWD's action. For a more detail explanation of the Settlement Agreement, its terms and conditions, and proposed license articles and amendment, please refer to the following documents attached to this filing:

- (1) Joint Explanatory Statement; and
- (2) Settlement Agreement, originally executed in October 2011, and revised and restated in September 2015, plus:
 - o Settlement Agreement Appendix A (Proposed License Articles)
 - o Settlement Agreement Appendix B (Fish Passage and Protection Plan)

License Amendment Application

On December 21, 2011, following the execution of the Settlement Agreement, DVWD submitted an Initial Consultation Document to initiate the three-stage license amendment process set forth in section 4.38 of the Commission's regulations (18 C.F.R. § 4.38).

In the intervening time, DVWD has worked with the Parties to develop facility designs for fish passage at the OSHP, and this included review and approval by the Fish Agencies (NMFS, USFWS, BIA, ODFW) at the 30%, 60% and 90% stages of completion. The DVWD has also with ODFW to provide interim passage using trap-and-haul methods since 2012.

Collectively, the Parties have agreed that both the Settlement Agreement and the license amendment application are now complete and ready for the Commission's review. This submittal contains DVWD's final license amendment application, including:

- (3) Initial Statement
- (4) Applicant Prepared Environmental Assessment including a Biological Assessment/Biological Assessment for listed species;
- (5) Revised Exhibit A
- (6) Revised Exhibit F Drawings
- (7) Revised Exhibit G Maps

Service and Distribution

With regard to service on DVWD relating to the Settlement Agreement, final license amendment application, and any related dockets and sub-dockets, DVWD requests that service be made on the following persons:

Edson Pugh, P.E., General Manager Deschutes Valley Water District 881 SW Culver Highway Madras, Oregon 97741 Ph: (541) 475-3849 edson@dvwd.org	Gary Lytle Hydro Operations Manager Deschutes Valley Water District 881 SW Culver Highway Madras, Oregon 97741 Ph: (541) 546-6141 glytle@dvwd.org
Todd Glass Wilson Sonsini Goodrich & Rosati PC 701 Fifth Avenue Suite 5100 Seattle, WA 98104 Ph: (206)883-2571 tglass@wsgr.com	Finlay Anderson Sr. Regulatory Consultant Kleinschmidt Associates 1500 NE Irving Street, Suite 550 Portland, Oregon 97232 Ph: (503) 345-0517 finlay.anderson@kleinschmidtgroup.com

With regard to service on the Parties to the Settlement Agreement relating to the Settlement Agreement, final license amendment application, and any related dockets and subdockets, they request that that service be made on the persons designated on Service List:

- (8) Service List of Parties to Opal Springs Fish Passage Settlement Agreement, Joint Explanatory Statement, and License Amendment Application

We are providing electronic copies of this application to the entities on the attached distribution list. The entities include the resource agencies and non-governmental organizations that were party to the Settlement Agreement and Indian tribes who are also co-managers of the Deschutes Basin's fish resources. We will also be communicating with the numerous organizations that have expressed interest in the proceedings but who may never have attended meetings or joined FERC's Service List.

Requests

On behalf of itself and the other Parties to the Settlement Agreement, DVWD respectfully requests the Commission to:

- A. expedite processing of the DVWD's application because the reintroduction effort is in progress, and improving upstream passage conditions at the OSHP will have an immediate beneficial effect on the recovery effort;
- B. approve the Settlement Agreement without modification; and
- C. amend the new license to include Appendices A and B of the Settlement Agreement.

If you have questions regarding this filing, please contact Gary Lytle at (541) 546-6141.

Respectfully Submitted,



Edson Pugh, P.E.
General Manager

Enclosures:

- (1) Joint Explanatory Statement and Settlement Agreement, originally executed in October 2011, and revised and restated in September 2015, plus:
 - Settlement Agreement Appendix A (Proposed License Articles)
 - Settlement Agreement Appendix B (Fish Passage and Protection Plan)
- (2) Initial Statement
- (3) Applicant Prepared Environmental Assessment including a Biological Assessment/Biological Evaluation for listed species
- (4) Revised FERC Exhibits including:
 - Exhibit A Project Description
 - Revised Exhibit G Drawings
 - Revised Exhibit F Maps
- (5) Service List of Parties to Opal Springs Fish Passage Settlement Agreement, Joint Explanatory Statement, and License Amendment

Cc: Distribution list (see attached)

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

*Application for Amendment of Project Description and Authorized Normal Operating Pool
of the License for Opal Springs Hydroelectric Project No. 5891*

INITIAL STATEMENT

1. Deschutes Valley Water District (DVWD) applies to the Federal Energy Regulatory Commission (FERC) for a non-capacity license amendment for the Opal Springs Hydroelectric Project (OSHP), FERC No. 5891.

2. The location of the OSHP is as follows:

State:	Oregon
County:	Jefferson County
Township or nearby town:	Culver, Oregon
Stream or other body of water:	Crooked River

3. The exact name, business address, and telephone number of the applicant are as follows:

Deschutes Valley Water District
881 SW Culver Highway
Madras, Oregon 97741
(541) 546-6141

4. The person authorized to act as agent for the applicant is as follows:

Edson Pugh, P.E., General Manager
Deschutes Valley Water District
881 SW Culver Highway
Madras, Oregon 97741
Ph: (541) 475-3849
edson@dvwd.org

5. DVWD, a Municipal Water District established according to the laws of the state of Oregon, is considered a municipality for purposes of the Federal Power Act (FPA), and the licensee of the water power project, designated as No. 5891 in the records of FERC, which issued an Order Issuing New License for the Project on November 2, 1982.

6. The amendment of license proposed and the reasons why the proposed changes are necessary:

The purpose of the amendment application is to amend the description of the OSHP in three ways. First, DVWD proposes to modify the authorized normal maximum reservoir elevation as described in Ordering Paragraph B(2) of the license order dated November 2, 1982, and amended by an order dated April 4, 1986. DVWD proposes to modify the OSHP to increase normal maximum pool elevation from 2,004.21 feet to 2,010.21 feet NGVD 29.^{1,2} The increased elevation will be accomplished by replacing the current system of removable flashboards and installing a series of five inflatable weirs across the crest of the existing dam. Second, DVWD proposes to construct a fish ladder on the east (right) bank of the diversion structure to facilitate volitional fish passage; this is desired because of the reintroduction of two anadromous fish species in the Upper Deschutes Basin. Finally, DVWD proposes to modify the existing roughened spillway by creating three smooth flumes to enable safe, timely, and effective downstream fish passage.

As a result of the Proposed Action, the reservoir's maximum operating pool elevation would inundate approximately 3.9 additional acres surrounding the reservoir.

Increasing the normal maximum reservoir elevation by approximately 6 feet would provide an average increase of 3,000,000 kilowatt hours (kWh) as a result of increased head. No

¹ All elevations are reported in NGVD 29, with the following exceptions: construction drawings are in a local project datum (LPD) that is greater than NGVD 29 by 1.79 feet. For purposes of keeping the construction and engineering simple, this LPD is used in an engineering context.

² The OSHP is authorized to operate at a maximum pool elevation of 2,005 feet NGVD 29; surveys conducted in 2009 by DVWD indicate that the current elevation of the impoundment is at 2,004.21 feet. The proposal is to increase the impoundment elevation by 6 feet, making the new maximum operating elevation 2,010.21 feet NGVD 29 (2,012 feet LPD)

change in the nameplate capacity of the OSHP is being proposed. The license exhibits that are being revised by this license amendment are as follows:

EXHIBIT	TITLE
A	Project Description
E	Applicant Prepared Environmental Assessment
F	Project Facilities
G	Project Boundary and Land Ownership

In addition to the revised exhibits, the application for license amendment includes an Applicant Prepared Environmental Assessment (APEA), which includes:

- Biological Assessment
- 2011 Settlement Agreement Concerning Fish Passage at the Opal Springs Hydroelectric Project
- Draft Water Quality Certification Application
- Consultation Record
- Supplemental Information

7. Lands of the United States affected by the proposed project are as follows:

The approximately 3.9 acres that would be affected as a result of the proposed increase in the reservoir’s maximum operating pool elevation are under management of the US. Bureau of Land Management (BLM).

8. The statutory or regulatory requirements of the state of Oregon that affect the OSHP as proposed with respect to bed and banks and the appropriation, diversion, and use of water for power purposes, and with respect to the right to engage in the business of developing, transmitting, and distributing power and in any other business necessary to accomplish the purpose of the license under the Federal Power Act are listed below.

- Fish Passage Requirements (ORS §509.585)
- Oregon Water Code (ORS 546.082)
- Removal-Fill Law (ORS 196.795.990)

9. The step the applicant has taken or plans to take to comply with each of these laws is as follows:

- The Oregon Department of Fish and Wildlife (ODFW) administers the state Fish Passage Law and is a signatory to the 2011 Settlement Agreement. Section 6.4 of the Agreement states “ODFW agrees that the measures required by this Agreement and its Appendices constitute a valid fish passage plan for the Project within the meaning of OAR 635-412-0035 and meet the fish passage criteria of ORS 509.585 and OAR 635-412-0020 and 635-412-0035.” In a letter dated April 21, 2015, ODFW approved design plans and specifications for the installation, operation, maintenance, and monitoring of fish passage facilities at the OSHP.
- DVWD requested to amend its existing water rights permit, pursuant to ORS 543.092, to reflect the proposed modifications of the hydroelectric facilities. An Application for Amendment pursuant to OAR 690-053-0010 including the revised map and facilities design was submitted October 5 2015. The modifications would increase the OSHP’s maximum hydraulic capacity by less than 15 percent and would not increase the OSHP’s nameplate capacity.
- A wetland delineation report was provided to the Oregon Division of State Lands (DSL) in May, 2014 (file WD 2014-0216), and was approved on January 23, 2015. This report will inform the Joint Application for the state and federal removal fill permits necessary for construction. These permits applications will be filed with DSL and the U.S. Army Corps of Engineers within the same timeframe as the filing of this license application.

INTRODUCTION

DVWD, licensee for the Opal Springs Hydroelectric Project (OSHP), is proposing to increase its normal maximum pool elevation from 2,004.21 feet to 2010.21 feet NGVD 29 (2,006 and 2,012 in the local project datum, respectively). Upstream fish passage would be provided by means of a vertical-slot ladder that ascends the east (right) bank of the dam and has flow of 30 cubic feet a second (cfs). Downstream passage would be supplemented by three vertical gates and spillways. A fourth gate would be used for flood control. Following construction, a monitoring and evaluation program would be implemented to inform an adaptive management program.

Amendment of the OSHP's FERC license is needed because of reintroduction of anadromous fish to the upper Deschutes River basin, which is underway as the result of fish passage measures required by Portland General Electric Company's FERC license for the Pelton Round Butte (PRB) Project (FERC No. 2030; PRB Project). The reintroduction has created a need to systematically address fish passage barriers within the three major tributaries upstream of the PRB Project, including the OSHP on the Crooked River.

DESCRIPTION OF AND NEED FOR AMENDMENT

1. NEED FOR FISH PASSAGE

The OSHP was licensed by FERC in 1982 and completed in 1985. Construction of the PRB Project, (FERC No. 2030) downstream in the 1960s had resulted in the extirpation of anadromous fish from the Upper Deschutes Basin; consequently, fish passage was neither required nor provided at the OSHP at the time of licensing. Instead, Article 36 of the original license requires the licensee to discharge a continuous flow of 50 cfs from the dam. Article 37 requires the licensee, in consultation with ODFW and the U.S. Fish and Wildlife Service (USFWS), to conduct a study to determine total fish mortality caused by the project annually and file a report with FERC that describes any mitigative measures deemed appropriate. As a result of that study, the licensee and ODFW developed a memorandum of understanding (MOU) to provide hatchery mitigation at the OSHP to supplement native fish populations. By agreement, the MOU has been updated and modified periodically to reflect current ODFW fish management objectives for the basin.

In 2007, following completion of upstream and downstream passage facilities as the PRB project, salmon and steelhead were reintroduced in the Upper Deschutes Basin, upstream of the PRB Project, which impounds Lake Billy Chinook. The headwater of Lake Billy Chinook is approximately a quarter of a mile downstream of the OSHP. The reintroduced fish are repopulating three major tributaries to the Deschutes River: the Upper Deschutes River, the Metolius River, and the Crooked River. As a result of the new PRB Project facilities and reintroduction of anadromous fish in the Upper Deschutes basin, the OSHP is now a passage barrier into this the lower Crooked River, which would otherwise provide significant spawning, rearing, and foraging habitat for these anadromous species. Bull trout, a species listed under the federal Endangered Species Act (ESA), is present below the OSHP in an area that is considered critical habitat under the ESA. Since adults first returned to the upper Deschutes basin in early 2011, the DVWD has voluntarily passed fish above the OSHP via a trap-and-haul effort. This effort was a response to a request from ODFW. Although this voluntary effort has facilitated movement of fish between the lower Deschutes basin and the lower Crooked River, it is not an ideal long-term solution.

Multiple agencies and other interested organizations have systematically addressed 13 barriers to fish passage in the Crooked River subbasin upstream of the OSHP. These organizations include ODFW, the USFWS, the National Marine Fisheries Service (NMFS), the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWS), Pacific Gas and Electric, the Crooked River Watershed Council (CRWC), Ochoco Irrigation District, and others. Passage structures have been installed at 10 diversion dams, and 3 dams have been removed. These actions have reconnected approximately 108 miles of river. The four remaining passage barriers in the lower Crooked River subbasin (including the OSHP) are being addressed.

In developing the proposal, DVWD engaged federal and state agencies, and non-governmental organizations in extensive pre-filing consultation. Most significantly, the *Settlement Agreement Concerning License Amendment for Fish Passage at the Opal Springs Hydroelectric Project* was executed in October 2011 (APEA, Exhibit A). The parties to the agreement (Parties) include the NMFS, USFWS, the US Bureau of Indian Affairs (BIA), BLM, ODFW, and Trout Unlimited (TU). Consequently, as a result of establishing a successful upstream passage program at the OSHP, a projected outcome of the license amendment is that 108 miles of upstream habitat for bull trout, summer steelhead and spring Chinook in the lower Crooked River will be reconnected with the lower Deschutes River and Lake Billy Chinook.

In order to effect this outcome, DVWD is requesting the following changes:

a) Ordering Paragraphs:

i. Existing Ordering Paragraph B(2) of the amended 1986 license:

Project works consisting of: (1) a 21-foot-high, 200-foot-long concrete capped rockfill diversion dam creating a pool with a storage capacity of 58 acre-feet and an area of 5.7 acres at normal maximum pool elevation of 2005 feet³; (2) a 44-foot by 33-foot rectangular concrete intake structure 32 feet in height located on the left abutment of the diversion dam; (3) two 12.5-foot-diameter, 1,157-foot-long buried

³ The reservoir capacity and surface area reported 1986 FERC Order Approving Revised Exhibits A, F, and G. Values reported for the 1986 amended license were 58 acre-feet and 5.7 acres; however newer information gathered as part of the current effort indicates 106.4 acre-feet 11.1, respectively. Differences in values are attributed to incorrect calculations made at the time the amended exhibits were submitted.

corrugated metal conduits; (4) a 30-foot-diameter steel surge tank-bifurcator; (5) a 16-foot-diameter, 160-foot-long steel penstock (6) two existing turbine-driven irrigation pumps, one rated at 175 and the other at 480 horsepower; (7) a powerhouse containing one 4.3 MW generating unit; (8) a 250-foot-long, 20.8-kV underground transmission line interconnecting to the Pacific Power and Light transmission system; and (9) appurtenant facilities.

ii. Proposed Ordering Paragraph B(2):

Project works consisting of (1) a 21-foot-high, 200-foot-long, concrete-capped, rockfilled diversion dam, controlled with four 6-foot-tall, inflatable weirs creating a pool with a storage capacity of 184.8 acre-feet and an area of 15 acres at normal maximum pool elevation of 2,010.21 feet NGVD 29; (2) a 30 cfs vertical slot ladder; (3) a 44-foot by 33-foot, rectangular, concrete intake structure 34 feet tall located on the left abutment of the diversion dam; (4) two 12.5-foot-diameter, 1,157-foot-long, buried, corrugated-metal conduits; (5) a 30-foot-diameter, steel bifurcator in the surge tank; (6) a 16-foot-diameter, 160-foot-long, steel penstock; (7) two existing turbine-driven irrigation pumps, one rated at 175 horsepower and the other at 480 horsepower; (8) a powerhouse containing one 4.3 megawatt (MW) generating unit; (9) a 250-foot-long, 69.5 kilovolt (kV), overhead transmission line interconnecting with the Pacific Power and Light transmission system; and (10) appurtenant facilities.

c) Revised Exhibits

The following exhibits are included in this application. DVWD requests that these exhibits replace or supplement (as described below) those exhibits currently on file with FERC:

EXHIBIT	TITLE
A	Project Description
E	Applicant-Prepared Environmental Assessment
F	Project Facilities
G	Project Boundary and Land Ownership

d) Proposed License Articles

Article 1	Opal Springs Fish Passage and Protection Plan	Requires the licensee to implement the Opal Springs Fish Passage and Protection Plan (Appendix B to the Settlement Agreement)
Article 2	Fish Passage Facilities	Requires construction, operation, maintenance, and monitoring of volitional fish passage facilities Requires construction, operation and maintenance of facilities to increase the normal maximum pool elevation of 2,010.21 feet NGVD 29 (2,012 feet LPD) Describes consultation requirements for the development and approval of facility designs
Article 3	Fish Passage Work Group	Provides for establishment of a Fish Passage Work Group (FPWG) to continue consultation over the remaining life of the license
Article 4	Bypass Flow Accrual Account	Establishes a water bank known as the Bypass Flow Accrual Account (BFAA) to facilitate upstream and downstream passage and describes how decisions with respect to the BFAA will be made

Article 5	Upstream Fish Passage Monitoring, Data Collection, Fish Passage Performance, and Reporting	Describes monitoring requirements for the fish ladder, migration delay in the OSHP area, and fish passage performance
Article 6	Downstream Fish Passage Monitoring, Fish Passage Performance, Data Collection, and Reporting	Describes monitoring requirements for downstream fish passage
Article 7	Fish Passage Performance Objectives	Sets fish passage performance objectives through the implementation of an adaptive management program; fish passage "standards" are set as well as "goals" for upstream and downstream passage
Article 8	Adaptive Management	Describes an adaptive management program for the term of the amended license relative to fish passage performance objectives; describes "tiers" of adaptive management measures that are applicable over successive 5-year monitoring programs
Article 9	Annual Report	Describes requirements to provide annual reports for the term of the amended license; the reports will cover (1) operations and maintenance, (2) annual BFAA allocation planning, (3) monitoring and evaluation, (4) planned monitoring activities for the coming year, (5) status of the adaptive management program and related measures, (6) the 5-year assessments required by the adaptive management program, and (7) any proposed changes of the Fish Passage and Protection Plan
Article 10	Inspection and Notice	Requires the licensee to permit members of the FPWG access to and across OSHP lands to inspect fish passage facilities
Article 11	Abandonment of Anadromous Fish Reintroduction	Describes actions to be taken in the event that the effort to reintroduce anadromous fish is abandoned
Article 12	Revised Exhibits	Requires filing as-built exhibits following modifications of OSHP facilities, as appropriate

Article 13	Review and Approval of Final Plans and Specifications	Provides for review of all plans and specifications by the Division of Dam Safety and Inspections
Article 14	Quality Control and Inspection Program	Requires submittal of a Quality Control and Inspection Program (QCIP) for FERC's review and approval; the QCIP shall include a sediment and erosion control plan
Article 15	Cofferdam Construction Drawings	Provides for FERC review and approval of designs for coffer dams
Article 16	Temporary Emergency Action Plan	Provides for FERC review and approval of emergency procedures in case failure of a coffer dam, large sediment control structure, or any other water-retaining structure could endanger construction workers or the public

Exhibit A to the Application is an executed agreement between the Parties and is preceded by a Joint Explanatory Statement. Appendix A of the agreement contains proposed license articles that the Parties have agreed to as being necessary to govern the implementation of the new facilities and to ensure that monitoring and evaluation efforts will facilitate achievement of defined standards. Appendix B is the Opal Springs Fish Passage and Protection Plan, which describes in additional detail how the Parties will implement the amended license.

DVWD requests that FERC adopt the text of the proposed license articles without modification. The proposed articles are anticipated to be consistent with terms and conditions required by the USFWS and the NMFS, pursuant to their authorities under Section 18 of the Federal Power Act.

2. NEED FOR SPECIAL USE PERMIT

The new maximum surface elevation of the operating pool would be contained entirely within the proposed FERC boundary, which extends an additional 700 longitudinal feet above the current FERC boundary. Survey work conducted by DVWD in 2010 indicates that the proposed boundary will inundate 3.9 acres of BLM lands up to but excluding the downstream boundary of the Wild and Scenic segment of the Crooked River. BLM will need to make a determination that the inundation of these lands could be approved through an amended right of way, and that the

Proposed Action would not impinge on the outstanding resource values (ORVs) of the Crooked Wild and Scenic River Area. DVWD anticipates that the BLM will provide this determination along with its Federal Power Act section 4(e) conditions when requested to do so by FERC.

DVWD requests that FERC adopt the license articles, which are consistent with anticipated terms and conditions required by the BLM, pursuant to Section 4(e) of the FPA. DVWD expects the BLM to require the necessary right-of-way authorizations and adherence to the terms and conditions of the authorizations.

MITIGATION MEASURES

In consultation with agencies, no significant environmental effects have been noted that would warrant specific mitigation measures. No proposed operational restrictions would prevent DVWD from using the full extent of the reservoir's proposed maximum normal pool elevation. During the development and review of the APEA, proposed environmental measures have been noted and described.

AGENCY CONSULTATION

Before filing the amendment, 18 CFR §4.38 requires DVWD to consult with federal, state, and interstate resource agencies, Indian tribes, and any other stakeholders who may be affected by the Proposed Action. The non-capacity amendment process for the Opal Springs Fish Passage Process has been marked by early consultation and collaborative efforts to identify the necessary environmental analysis. Initiation of three-stage consultation was preceded by stakeholder meetings and scoping efforts. A summary of the consultation process follows.

2008-2011. DVWD held a joint meeting with agencies and interested stakeholders in Culver, Oregon, in December 2008 to discuss issues around fish passage and the existing license and to outline a potential process for amending the license to help agencies achieve their fish passage needs. This was followed by 2 years of discussions regarding ESA considerations, negotiation of

a multi-party settlement agreement, feasibility studies, and development of an adaptive management plan. The original settlement agreement was signed in October 2011.⁴

In December of 2011, DVWD began Stage 1 Consultation as set forth in 18 CFR §4.38(b) by filing an Initial Consultation Document (ICD). The ICD consolidated into a single document the information needed by federal, state, and interstate resource agencies, Indian tribes, and other stakeholders to understand the Proposed Action, identify any environmental issues, identify any information needs or studies, and provide comments and recommendations.

2012. In its appendices the ICD also provided revised 2012 resource reports and responses to the agencies' general and resource-specific comments. A jointing meeting and a public meeting were held on May 22, 2014; comments on the ICD were received from the agencies in July 2013. Stage 1 consultation proceeded in 2012 with a public meeting and joint meeting in Culver, Oregon, on February 7, 2012. The agencies' comments on the ICD and study requests were provided in April of 2012. No information was requested beyond those needs identified in Section 7.1 of the ICD. The most significant of these needs was to advance facility designs and fish passage concepts. These designs and concepts are discussed in the APEA, as are the results of other information gathering efforts.

With the arrival of the first anadromous adults returning to the PRB Project in late 2011 and 2012, Fish Managers⁵ requested the DVWD to make provisions for a temporary trap-and-haul program at the OSHP to pass returning adults into the Crooked River. DVWD modified its existing hatchery ladder to serve as a temporary fish trap for the purpose of trapping and hauling returning summer steelhead and spring Chinook. On June 14, 2012, FERC approved a short-term modification of License Article 36. The modification provided a mechanism for transferring a portion of the 50 cfs bypass flow required under Article 36 to a downstream release point in order to aid in attracting migrating anadromous fish to a temporary trap.

⁴ . In September, 2015 the settlement agreement was revised and restated in order to ensure consistency with engineering designs which provide additional detail to the proposed action.

⁵ As defined in the restated 2015 settlement agreement, "Fish Managers" means the ODFW and CTWS (provided that the CTWS is a signatory to the Settlement Agreement).

2013. Fish passage facilities designs were completed, including agency consultation through the 90%-design level (see Consultation Summary, Exhibit B to the APEA). FERC's Division of Dam Safety and Inspections reviewed the design at the 30% and 60% levels of completion. Upon filing of this non-capacity amendment, DVWD will commence final design review with FERC.

2014. After 2 years of trapping at the Opal Springs Hatchery ladder, DVWD and Fish Agencies⁶ agreed that relocating the trap to a point at the base of the dam would improve trap performance. The configuration, location, and size of the hatchery ladder allowed adult fish to bypass the ladder entrance and continue upstream to the base of the dam. Relocating the ladder has resulted in improved capture efficiency.

2015. The DVWD issued a draft APEA and Biological Assessment (BA) on July 13, 2015. At that time, DVWD requested comments within 60 days. As documented in Exhibit B, comments on the APEA were received from the BLM, NMFS, USFWS, and ODEQ. Concurrent to the comment period, Parties reviewed the 2011 Settlement Agreement, as amended, for necessary updates. A restated settlement agreement, with updated appendices is being filed concurrently with the amendment application. The restated settlement agreement incorporates a previously adopted amendment and makes conforming changes to the appendices to reflect minor changes to the proposed facilities.

FEDERAL LANDS ACCESS AND RIGHT OF WAY

The larger reservoir will inundate approximately 3.9 acres of federal lands adjacent to the current impoundment. In August 2013, DVWD transmitted a form SF-299 application for right of way to the BLM and the application is being processed.

WATER RIGHTS

By separate filing, DVWD will submit an application to the Oregon Water Resources Department under the authority of Oregon Administrative Rule Chapter 690, Division 53, requesting to amend its existing water rights permit (#47591) to reflect the proposed facilities

⁶ As defined in the settlement agreement, "Fish Agency" or "Fish Agencies" means NMFS, USFWS, BIA, ODFW and CTWS (provided that the CTWS is a signatory to the settlement agreement).

and the new normal maximum reservoir elevation. No change in the quantity of water appropriated will be requested.

CONCLUSION

For the foregoing reasons, DVWD respectfully requests that FERC amend the description of the OSHP to (1) authorize a new normal maximum operating elevation of the reservoir and the modifications of the existing facilities, pending final design and dam safety approvals; (2) amend the existing license to include the proposed license articles described herein; and (3) approve proposed Exhibits A, G, F, and E (the APEA).

↓

Verification

This Application for Non-Capacity License Amendment is executed in the

State of Oregon
Town of Madras
Jefferson County

Edson Pugh, being first duly sworn, deposes and says that he is the General Manager of the applicant in the proceeding entitled above, and that he has read the forgoing application and knows the contents thereof, that the same are true of his own knowledge.

Deschutes Valley Water District

By Edson Pugh
Edson Pugh, P.E., General Manager

SUBSCRIBED AND SWORN to before me, this 8 day of October, 2015

(NOTARY SEAL)



Charity Pepito
Print Name: Charity Pepito
Notary Public in and for the State of Oregon
Residing at Oregon

My commission expires: July 28, 2019

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Deschutes Valley Water District)	Project No. 5891
Jefferson County, Oregon)	
)	
)	

JOINT EXPLANATORY STATEMENT IN SUPPORT OF OFFER OF SETTLEMENT

Pursuant to Rule 602 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("FERC" or "Commission"), 18 C.F.R. § 385.602, Deschutes Valley Water District ("DVWD"), the United States Fish & Wildlife Service ("USFWS"), the United States Bureau of Land Management ("BLM"), US National Marine Fisheries Service ("NMFS"), the Bureau of Indian Affairs ("BIA"), the Oregon Department of Fish & Wildlife ("ODFW") and Trout Unlimited ("TU") (collectively, the "Parties") hereby provide this Joint Explanatory Statement in support of the *Settlement Agreement Concerning License Amendment for Fish Passage at the Opal Springs Hydroelectric Project*, FERC No 5891 ("Project"), originally executed by the Parties in October 2011 and Amended and Restated on September ___, 2015 ("Settlement Agreement"). The restated Settlement Agreement updates and replaces a 2011 Settlement Agreement ("Original Settlement Agreement"). In accordance with section 385.602(c) of the Commission's regulations, the Parties hereby support DVWD's submission of: (1) the Settlement Agreement (including Appendices A (Proposed License Articles) and B (Opal Springs Fish Passage and Protection Plan) as an offer of settlement in Commission Docket P-5891, and (2) a final non-capacity license amendment application that, if approved, would implement the Settlement Agreement through the installation of fish passage facilities and adaptive management at the Project (License Amendment Application).

The Settlement Agreement, which has been approved and executed by all Parties, was negotiated independently and in advance of any specific Commission proceedings. The Parties have

entered into the Settlement Agreement for the purpose of anticipating and resolving all issues that could be raised before the Commission concerning measures to address fish passage at the Project. The Settlement Agreement includes proposed license articles that are attached thereto as Appendices A. As part of the license amendment process, the DVWD requests the Commission to amend the Project's existing license to include the proposed license articles. The Settlement Agreement is contingent on the Commission's adoption of the proposed license articles without material modification. NMFS, USFWS, and BLM expect to file with the Commission conditions and prescriptions under their Federal Power Act (FPA) authorities, and anticipate that such conditions and prescriptions will be consistent with Appendices A and B of the Settlement Agreement.

I. BACKGROUND

The Opal Springs Hydroelectric Project ("Opal Springs Project" or "Project") was licensed by the Commission in 1982 and completed in 1985. Because anadromous fish had been extirpated from the Upper Deschutes Basin following the construction of the downstream Pelton Round Butte Project (PRB Project, FERC No. 2030) in the 1960s, fish passage at the Opal Springs Project was neither required nor included at the time of licensing. Instead, Article 36 of the original Project license requires the licensee to discharge a continuous flow of 50 cfs from the dam. Article 37 requires the Licensee, in consultation with ODFW and USFWS, to conduct a study to determine total annual fish mortality caused by the Project and file with the Commission a report on the fish mortality study that includes any mitigation measures determined appropriate. As a result of this study, a memorandum of understanding was developed between the licensee and ODFW to provide hatchery mitigation at the Project to supplement native fish populations. By agreement, the MOU has been periodically updated and modified to reflect current ODFW fish management objectives in the basin.

In 2007, new upstream and downstream fish passage facilities were completed at the PRB Project, which impounds Lake Billy Chinook. As a result, salmon and steelhead were reintroduced into

the headwaters of the Upper Deschutes River Basin approximately one-quarter mile downstream of the Project. The reintroduced fish are repopulating three major tributaries to the Deschutes River – these include the Upper Deschutes River, the Metolius River, and the Crooked River. As a result of the new PRB Project facilities, and reintroduction of anadromous fish in the Upper Deschutes River Basin, the Project is now a passage barrier into the lower Crooked River, which would otherwise provide significant spawning, rearing, and foraging habitat for these anadromous species. Bull trout, a federally-listed species under the Endangered Species Act (ESA) are also present downstream of the Project, in a reach which is considered critical habitat under the ESA. Since adults first returned to the Upper Deschutes River Basin in early 2011, the DVWD has been voluntarily passing returning adult steelhead and spring Chinook above the Project through a trap-and-haul effort at the Project. While this voluntary effort has facilitated movement of fish between the lower Deschutes Basin and the lower Crooked River, it is not an ideal long-term solution.

In the Crooked River subbasin, thirteen barriers to fish passage upstream of the Project have been addressed systematically by multiple agencies, and other interested organizations, including the Parties. These organizations include Portland General Electric (PGE), ODFW, USFWS, NMFS, BLM the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWS), the Crooked River Watershed Council (CRWC), Ochoco Irrigation District, and others. Fish passage structures have been installed at ten diversion dams, and three dams have been completely removed. These actions have reconnected approximately 108 miles of river above the Opal Springs Project. The four remaining passage barriers in the lower Crooked River subbasin (including the Project) are being addressed. Consequently, the construction of fish passage at the Project is significant for the overall success of the reintroduction program.

II. SETTLEMENT PROCESS

The DVWD and the relevant agencies and other interested stakeholders have been engaged in voluntary discussions of fish passage issues at the Project since 2008. The parties met 21 times over the course of 3 years to negotiate a legal framework that would provide for substantive measures for physical fish passage facilities and adaptive management, while respecting the District's needs to manage cost and risk. The parties considered how this legal framework might satisfy the FPA, the Commission's regulations, and other relevant state and federal laws

In October 2011, the Parties finalized negotiations and signed the Original Settlement Agreement, which includes proposed license articles. The Agreement envisions a non-capacity amendment to authorize DVWD to provide for upstream and downstream passage at the Project, and provides an adaptive management structure for managing the fish passage facilities throughout the term of the amended license. In addition to satisfying the FPA and the Commission's rules, the Licensee's License Amendment filing should provide sufficient information for initiation of Endangered Species Act consultation for the proposed Project modifications, and for the Project's facilities and operations for the duration of the existing license term, which ends in 2032. The October 2015 restated Settlement Agreement updated the project description to reflect new information on the engineering design, and incorporates an amended termination date.

III. OVERVIEW OF SETTLEMENT AGREEMENT AND RATIONALE FOR KEY PROVISIONS

The Settlement Agreement and Proposed License Articles provide a structure whereby the DVWD will:

1. Construct a fish ladder to provide passage into the spawning, rearing, and foraging habitats of the Crooked River subbasin for adult anadromous summer steelhead, spring Chinook salmon, and migratory bull trout, the latter of which are listed as threatened under the ESA.

Additionally, the facilities will reconnect populations of native redband trout upstream and

downstream of the Project. Designs and specifications for the fish passage facilities are to be developed in consultation with the Opal Springs Fish Passage Work Group, which includes all the Parties who signed the October, 2011 Settlement Agreement. See Proposed Articles 2 (Fish Passage Facilities) and 3 (Fish Passage Work Group).

As of the filing of this Joint Explanatory Statement, the DVWD has substantially completed facilities designs. Fish Agencies (NMFS, USFWS, BIA, ODFW, and CTWS (provided that the CTWS is a signatory to the Settlement Agreement)), have reviewed and approved the design through the 90% design stage. The design balances the Licensee's need for project safety and operational simplicity with Fish Agencies' requirements for upstream fish passage over a range of flow conditions, from the 95 to the 5 percent streamflow exceedance, as required by the 2011 NOAA NMFS Northwest Region Anadromous Salmonid Passage Facility Design (NMFS 2011) manual. The proposed 30 cfs vertical slot ladder on the east bank meets these objectives, as described in the Section 4 of the 90 percent Supporting Design Report (Attachment 1).

2. Raise the maximum operating elevation of the Project reservoir from 2,004.21 feet elevation NGVD 29 to 2,010.31 feet NGVD 29, through modifications to the existing dam. See Proposed Article 2. This new elevation will enable the DVWD to construct alternative downstream passage routes for migrating fish and will enable the establishment of a water credit system to supplement flow into the Project's bypass reach and through the fish ladder as described in #3 below.
3. Establish a water credit system known as the Bypass Flow Accrual Account (BFAA). This water would serve as both attraction flow for adult fish that may be holding in the Project's tailrace, and as alternative passage for downstream migrants through a spillway that will be constructed as set forth in Proposed Article 2. Increased head resulting from the pool-raise

would allow DVWD to generate additional power to partially offset the cost of fish ladder construction and operation as well as costs associated with the ladder's monitoring and evaluation program. Water credits would be accrued in lieu of actual stored water, given that the Project has no storage capacity, and turbine discharge would be reduced when exchanging water credits for actual bypass flows. The Licensee would administer the BFAA, but decisions regarding its use would be made by the Fish Managers (ODFW and CTWS, provided that the CTWS is a signatory to the Settlement Agreement) , consistent with Opal Springs Fish Passage Work Group's BFAA Annual Allocation Plan and any terms and conditions established by the USFWS or NMFS through ESA consultation. *See Proposed Article 4 (Bypass Flow Accrual Account).*

4. Implement a monitoring and evaluation (M&E) program for assessing upstream and downstream passage relative to the performance objectives defined in Proposed Article 7 (Fish Passage Performance Objectives). *See also Proposed Article 5 (Upstream Passage Monitoring, Data Collection, Fish Passage performance, and Reporting) and Proposed Article 6 (Downstream Passage Monitoring, Data Collection, Fish Passage performance, and Reporting).*
5. Adaptively manage the Project to meet the fish passage performance objectives set forth in Articles 5, 6, and 7 in response to the M&E program and application of tiered measures that are designed to achieve the performance goals. *See Proposed Article 8.* Notably, the Adaptive Management Framework provides the ability for the Licensee to monitor and evaluate its compliance with any terms and conditions established through ESA consultation regarding the proposed action, while managing its risk for the duration of the existing license.
6. Implement the Opal Springs Fish Passage and Protection Plan which describes in detail the methods and objective behind each of the foregoing Proposed Articles. *See Appendix B.*

7. Provide annual reports addressing the activities within the calendar year relating to the fish passage facilities, O&M measures, BFAA, M&E program, and other fisheries management activities. *See Proposed Article 9 (Annual Report).*
8. Provide inspection rights to members of the Fish Passage Work Group. *See Proposed Article 10 (Inspection and Notice).*
9. Comply with typical Commission requirements regarding construction at a project. *See Proposed Articles 12-16.*

IV. AGREEMENT ON PROCESS TO DATE AND FUNDING

The Parties to the Settlement Agreement also agreed to a set of specific steps and actions to take upon its Execution on October 31, 2011. These steps have included the following actions:

1. Commence a 3-stage consultation within 60 days. The Licensee met this commitment on December 21, 2011 with the filing of the Initial Consultation Document (ICD) with FERC.
2. Seek designation of the Licensee as FERC's non-federal representative, which was granted by order dated January 19, 2012.
3. Work with the Parties in the NEPA scoping process. Pursuant to this requirement, the Licensee held a Joint Meeting that was open to the public on January 23, 2012, at the Culver Fire Hall. This process culminated in the Fish Agencies approving the Licensee's proposed information gathering plan as described in the ICD.
4. Prepare and circulate the Draft Environmental Assessment (Applicant Prepared Environmental Assessment or APEA) to the Parties for their review for consistency with the Agreement. The draft APEA was distributed on July 13, 2015. Non-substantive comments were received from the Parties on the APEA by the end of the requested comment period of September 11, 2015.

5. Prepare a draft Biological Evaluation (BE) in collaboration with the NMFS and USFWS. This draft BE was circulated simultaneously with the APEA, following comments from NMFS and USFWS on the outline and threshold objectives for the BE. The USFWS, NMFS, and DVWD met twice during the review period to discuss the BA and to agree on assessment methodologies; a revised BA will be filed with the APEA.
6. After completing the pre-filing amendment process and securing adequate funding for construction, draft and file a non-capacity license amendment with FERC. Section 3.1.5 of the Agreement specifies funding of the fish passage facilities could come from non-DVWD sources, but that DVWD would contribute an amount equal to the cost of constructing the pool raise component. As of this date, the Licensee has secured roughly half the funds necessary to construct the fish passage facilities. In order to keep the construction of fish passage facilities on schedule, however, the Licensee has proceeded with facility designs in advance of filing the amendment. This process has included Fish Agency consultation at 30 percent, 60 percent, and 90 percent design stages and has involved FERC's Division of Dam Safety and Inspections at the 30 percent and 90 percent designs. Now that the designs and consultations are complete, the Licensee is voluntarily proceeding with filing the non-capacity license amendment in order to increase the likelihood of obtaining the outstanding funding. In recognition of the voluntary nature of the amendment and an ongoing concern over economic impacts to the DVWD, Section 8.1 of the Settlement Agreement allows the Licensee to withdraw the license amendment application or reject a new license if (i) the Licensee is unable to receive funding for the fish ladder construction after filing the amendment application but before the license amendment is issued by FERC or (ii) if the license amendment, license conditions, Incidental Take Statement or Permit places material risks or costs on the Licensee that are materially inconsistent with the terms of this Agreement.

V. AGREEMENT ON AMENDMENT PROCESS

Pursuant to section 2.2 of the Agreement each entity with mandatory conditioning authority (Government Entity) under the Federal Power Act (FPA) intends that (i) the Proposed License Articles satisfy its respective authorities under the FPA for the scope of the license amendment and operation of the Project with respect to the fish passage facilities, M&E and adaptive management; and (ii) the Licensee's performance of its obligations under this Agreement shall fulfill its existing statutory and other legal obligations relating to the license amendment and pertaining to fish passage facilities, M&E and adaptive management. Section 6.1.3 of the Agreement provides each Government Entity with the ability to include a reservation of authority in the conditions, recommendations or prescriptions that it submits to FERC.

VI. REFERENCES TO RECORD CITATIONS AND PUBLIC INTEREST

The Parties are of the view that the Proposed License Articles and the "Purpose and Need" described in the APEA are fully supported by the available information, including the data collected and analysis prepared for the License Amendment Application. The Parties agree that amendment of the License in accordance with the Settlement Agreement is fair and reasonable and in the public interest because it supports resident fish and reintroduction of anadromous fish. Provided that the license is amended and fish passage facilities are constructed pursuant to the timeframes contained in the Settlement Agreement (as amended and restated, including appendices), the Parties also agree that the measures set forth in this Settlement Agreement are reasonable for providing safe, timely and effective passage of fish.

VII. REQUEST FOR EXPEDITED ACTION

The Parties respectfully request the Commission to provide expedited processing of the DVWD's Application. As described in *Background* above, expedited action is warranted because a basin-wide

reintroduction effort is ongoing and improving upstream passage conditions at the Project would have an immediate beneficial impact on the recovery effort.

VIII. CONCLUSION

The Parties respectfully request the Commission to approve the Settlement Agreement without modification and to amend the new license to include Appendix A (Proposed License Articles) and Appendix B (Fish Passage and Protection Plan).

IN WITNESS WHEREOF the Parties have respectfully submit this Joint Explanatory Statement to reflect the intent of the Amended and Restated October 2015 *Settlement Agreement Concerning Amendment for Fish Passage at the Opal Springs Hydroelectric Project (FERC 5891)*.

DESCHUTES VALLEY WATER DISTRICT
Date: _____
By: _____
Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE
Date: _____
By: _____
Title: _____

US DEPARTMENT OF COMMERCE, NATIONAL MARINE FISHERIES SERVICE
Date: _____
By: _____
Title: _____

TROUT UNLIMITED
Date: _____
By: _____
Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS
Date: _____
By: _____
Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE
Date: _____
By: _____
Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT
Date: _____
By: _____
Title: _____

IN WITNESS WHEREOF the Parties have respectfully submit this Joint Explanatory Statement to reflect the intent of the Amended and Restated October 2015 *Settlement Agreement Concerning Amendment for Fish Passage at the Opal Springs Hydroelectric Project (FERC 5891)*.

DESCHUTES VALLEY WATER DISTRICT

Date: Sept. 27 2015
By: [Signature]
Title: Chairman

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

Date: _____
By: _____
Title: _____

US DEPARTMENT OF COMMERCE, NATIONAL MARINE FISHERIES SERVICE

Date: _____
By: _____
Title: _____

TROUT UNLIMITED

Date: _____
By: _____
Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

Date: _____
By: _____
Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

Date: _____
By: _____
Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

Date: _____
By: _____
Title: _____

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DESCHUTES VALLEY WATER DISTRICT
Date: _____
By: _____
Title: _____

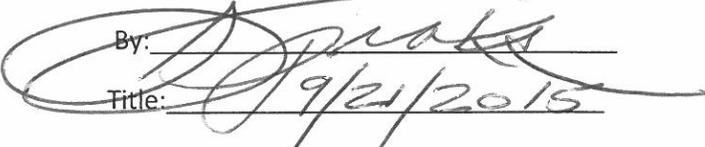
US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE
Date: _____
By: _____
Title: _____

US DEPARTMENT OF COMMERCE, NATIONAL MARINE FISHERIES SERVICE
Date: _____
By: _____
Title: _____

TROUT UNLIMITED
Date: _____
By: _____
Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

OREGON DEPARTMENT OF FISH AND WILDLIFE

Date: **SEP 21 2015**
By: 
Title: 9/21/2015

Date: _____
By: _____
Title: _____

Northwest Regional Director

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

Date: _____
By: _____
Title: _____

IN WITNESS WHEREOF the Parties have respectfully submit this Joint Explanatory Statement to reflect the intent of the Amended and Restated October 2015 *Settlement Agreement Concerning Amendment for Fish Passage at the Opal Springs Hydroelectric Project (FERC 5891)*.

DESCHUTES VALLEY WATER DISTRICT

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

Date: _____

By: _____

Title: _____

US DEPARTMENT OF COMMERCE, NATIONAL MARINE FISHERIES SERVICE

Date: _____

By: _____

Title: _____

TROUT UNLIMITED

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

Date: _____

By: _____

Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

Date: Sept. 18, 2015

By: Michelle McSwain

Title: Field Manager, Deschutes

Resource Area, Acting

IN WITNESS WHEREOF the Parties have respectfully submit this Joint Explanatory Statement to reflect the intent of the Amended and Restated October 2015 Settlement Agreement Concerning Amendment for Fish Passage at the Opal Springs Hydroelectric Project (FERC 5891).

DESCHUTES VALLEY WATER DISTRICT

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

Date: _____

By: _____

Title: _____

US DEPARTMENT OF COMMERCE, NATIONAL MARINE FISHERIES SERVICE

Date: _____

By: _____

Title: _____

TROUT UNLIMITED

Date: 09/25/15

By: Chancho Fenui

Title: OR Water Policy Advisor

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

Date: _____

By: _____

Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

Date: _____

By: _____

Title: _____

IN WITNESS WHEREOF the Parties have respectfully submit this Joint Explanatory Statement to reflect the intent of the Amended and Restated October 2015 *Settlement Agreement Concerning Amendment for Fish Passage at the Opal Springs Hydroelectric Project (FERC 5891)*.

DESCHUTES VALLEY WATER DISTRICT

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

Date: _____

By: _____

Title: _____

US DEPARTMENT OF COMMERCE, NATIONAL MARINE FISHERIES SERVICE

Date: _____

By: _____

Title: _____

TROUT UNLIMITED

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

Date: _____

By: _____

Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

Date: 9/22/15

By: Carla E Melin

Title: Director

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

Date: _____

By: _____

Title: _____

IN WITNESS WHEREOF the Parties have respectfully submit this Joint Explanatory Statement to reflect the intent of the Amended and Restated October 2015 Settlement Agreement Concerning Amendment for Fish Passage at the Opal Springs Hydroelectric Project (FERC 5891).

DESCHUTES VALLEY WATER DISTRICT

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

Date: September 22, 2015

By: Rolls White

Title: Acting State Supervisor

US DEPARTMENT OF COMMERCE, NATIONAL MARINE FISHERIES SERVICE

Date: _____

By: _____

Title: _____

TROUT UNLIMITED

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

Date: _____

By: _____

Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

Date: _____

By: _____

Title: _____

IN WITNESS WHEREOF the Parties have respectfully submit this Joint Explanatory Statement to reflect the intent of the Amended and Restated October 2015 *Settlement Agreement Concerning Amendment for Fish Passage at the Opal Springs Hydroelectric Project (FERC 5891)*.

DESCHUTES VALLEY WATER DISTRICT

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

Date: _____

By: _____

Title: _____

US DEPARTMENT OF COMMERCE, NATIONAL MARINE FISHERIES SERVICE

Date: October 1, 2015

By: William Steffy

Title: West Coast Regional Administrator

TROUT UNLIMITED

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

Date: _____

By: _____

Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

Date: _____

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

Date: _____

By: _____

Title: _____

**AMENDED AND RESTATED
SETTLEMENT AGREEMENT**

**CONCERNING LICENSE AMENDMENT FOR FISH PASSAGE AT THE
OPAL SPRINGS HYDROELECTRIC PROJECT**

FERC NO. 5891

AMONG

**DESCHUTES VALLEY WATER DISTRICT
US DOI BUREAU OF INDIAN AFFAIRS
US DOI BUREAU OF LAND MANAGEMENT
US DOI FISH & WILDLIFE SERVICE
NATIONAL MARINE FISHERIES SERVICE
OREGON DEPARTMENT OF FISH & WILDLIFE
TROUT UNLIMITED**

October, 2015

**OPAL SPRINGS HYDROELECTRIC PROJECT
FISH PASSAGE SETTLEMENT AGREEMENT**

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SECTION 1. INTRODUCTION

1.1 This Agreement and the Parties.

This Amended and Restated Opal Springs Hydroelectric Project Fish Passage Settlement Agreement (including attached Appendices) dated October 2015 amends and restates Settlement Agreement (“Original Settlement Agreement”), dated October 2011, and is made and entered into by and among the following entities that shall be referred to as “Party” or collectively as “Parties”:

- Deschutes Valley Water District (“DVWD” or “Licensee”)
- US Department of Interior, Fish and Wildlife Service (“USFWS”)
- US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (“NMFS”)
- US Department of Interior, Bureau of Indian Affairs (“BIA”)
- US Department of Interior, Bureau of Land Management (“BLM”)
- Oregon Department of Fish and Wildlife (“ODFW”)
- Trout Unlimited

Additional entities may become Parties to this Agreement following unanimous consent of all the existing Parties to this Agreement and after executing a signature page and submitting it to the existing Parties. The Confederated Tribes of the Warm Springs Reservation of Oregon have the unanimous consent of the Parties to become a Party at any time during implementation of this Settlement Agreement after executing a signature page and submitting it to the existing Parties

1.2 Recitals.

1.2.1 The Opal Springs Hydroelectric Project (“Project”) (FERC Project No. 5891) lies on the Crooked River in Oregon’s Jefferson County, and is owned and operated by DVWD. DVWD received a 50 year license from the Federal Energy Regulatory Commission (“FERC” or “Commission”) for the Project on November 2, 1982.

1.2.2 The Pelton Round Butte Hydro Project (FERC Project No. 2030) lies downstream of the Project on the Deschutes River and occupies lands of the CTWS held in trust by the United States. Pursuant to a relicensing settlement agreement and a subsequent FERC license issued in 2005, the licensees of the Pelton Project (Portland General Electric Company and CTWS) are implementing certain measures to assist in the reintroduction of anadromous fish including summer

steelhead (*Oncorhynchus mykiss*), spring chinook salmon (*O. tshawytscha*), and sockeye salmon (*O. nerka*) upstream of the Pelton Project's three dams. Summer steelhead and bull trout (*Salvelinus confluentus*) are both listed as threatened under the Endangered Species Act, 16 U.S.C 1531 et seq. (ESA), and are classified by the State of Oregon as sensitive critical and sensitive vulnerable species, respectively. All of these species are important resources to the CTWS who have treaty secured rights to fish in their usual and accustomed places.

- 1.2.3** As a component of the basin-wide reintroduction program, juvenile Chinook salmon and juvenile summer steelhead have been released in the Crooked River since 2008. They began their out-migration in 2009, which included passage through the Project. State and federal agencies, tribes and others anticipate that returning adults will begin to reach the Pelton Project in 2011. Adult releases into Lake Billy Chinook, and arrival at the Project, may begin as early as 2012.
- 1.2.4** In anticipation of the arrival of salmon and ESA-listed steelhead, and to provide connectivity for local native fish species, each of the Parties engaged in the negotiation process leading to this Agreement. The Parties have agreed to Fish Passage Facilities at the Project, monitoring and evaluation measures, and an adaptive management framework, as described in this Agreement, including its Appendices. Agreed-upon measures include:
- 1.2.4.1 a fish ladder with a hydraulic capacity of up to 50 cfs (subject to final design);
 - 1.2.4.2 a pool raise that includes one or more control weirs to help shape downstream flows;
 - 1.2.4.3 a water credit accounting system, the Bypass Flow Accrual Account (BFAA), that will provide additional water, when needed, to the bypass reach to assist upstream fish passage and/or to assist downstream fish passage;
 - 1.2.4.4 a monitoring and evaluation (M & E) plan for assessing the performance of the Fish Passage Facilities; and
 - 1.2.4.5 an adaptive management plan for reviewing M&E results and implementing additional measures or modifying current measures, if needed.
- 1.2.5** Licensee has agreed on a voluntary basis to file a license amendment application with FERC to construct Fish Passage Facilities at the Project, implement monitoring and evaluation measures, and initiate the adaptive management framework as set forth in this Agreement.

1.3 Definitions.

“Agreement” means this Opal Springs Hydroelectric Project Fish Passage Settlement Agreement, including the attached Appendices.

“Allocation Percent” means the percentage of increased hydroelectric potential to be allocated to the BFAA pursuant to the adaptive management plan.

“Traditional Licensing Process” or “TLP” means the traditional licensing process pursuant to 18 C.F.R. §4.38.

“Amended License” means the amended License to be issued by FERC in response to the Licensee’s Amendment Application.

“Amendment Application” means the license amendment application filed by the Licensee in conformance with the Settlement Agreement.

“Biological Assessment” means the biological assessment prepared by FERC as required in the ESA regulations,

“Biological Evaluation” means the draft Biological Assessment that will be prepared by the Licensee and submitted to FERC.

“Biological Opinion” means each biological opinion issued by NMFS or USFWS pursuant to the ESA for the FERC action of amending the license.

“BFAA” or “Bypass Flow Accrual Account” means the water credit accounting system that tracks the accumulation and use of water reserved for aiding fish passage.

“Consensus” means that all Parties cast a supportive or neutral vote on a decision or abstain from such decision.

“Consult” or “Consultation” means to obtain the views and attempt to reach Consensus among the Parties whenever the Opal Springs Fish Passage and Protection Plan (Appendix B), the Proposed License Articles (Appendix A) and/or the Amended License require the Licensee to consult. “Consultation” shall not mean consultation under Section 7 of the Endangered Species Act or other federal law unless such provision is specifically referenced.

“Corps of Engineers” means the U.S. Army Corps of Engineers.

“Days” means calendar days unless specifically noted.

“Endangered Species Act” or “ESA” means the Endangered Species Act, 16 U.S.C. §§ 1531 et. seq.

“FERC” or “Commission” means the Federal Energy Regulatory Commission.

“Fish Agency” or “Fish Agencies” means NMFS, USFWS, BIA, ODFW and CTWS (provided that the CTWS is a signatory to the Settlement Agreement).

“Fish Managers” means the ODFW and CTWS (provided that the CTWS is a signatory to the Settlement Agreement).

“Fish Passage Facilities” includes the construction, operation, maintenance, monitoring and evaluation, and adaptive management of the upstream volitional fish ladder and pool raise as described further in the Proposed License Articles.

“Fish Passage Work Group” or “FPWG” means all signatories to the October, 2011, SA (DVWD, NMFS, USFWS, BIA, BLM, ODFW, TU, and CTWS (provided that the CTWS is a signatory to the Settlement Agreement)). This is the working group whose purpose is to advise the Licensee on fisheries and habitat issues as specified in this Agreement and the Amended License.

“FPA” means the Federal Power Act, 16 USC §§ 791a et seq.

“Governmental Parties” means the State or Federal governmental agencies that are signatories to this Agreement.

“Incidental Take Statement” or ITS means the statement that may be issued by NMFS or USFWS pursuant to 50 C.F.R. § 402.14(i), related to the ESA consultation on amending the license consistent with this Agreement.

“Material Modification” means a modification that materially affects a Party’s bargained-for benefits under this Agreement; provided, however, Material Modification does not include the following: (a) FERC’s insertion of its approval or its reservation of authority to require changes to implementation schedules or plans set forth in any Proposed License Article; (b) FERC’s requirement to file a subsequent license amendment to implement any Proposed License Article; (c) FERC’s removal of language in any of the Proposed License Articles that sets forth the rationale for the article, provided there are not material changes to the requirements contained in the article itself; (d) FERC’s retention in the Amended License of any license articles not proposed to be modified or superseded by this Agreement; (e) NMFS and FWS reservations of authorities, and FERC’s inclusion of a reservation of FPA or ESA authorities; (f) any Party’s filing of conditions, prescriptions or recommendations pursuant to FPA authorities that are materially consistent with this Agreement, and FERC’s inclusion of those conditions in the amended license; and (g) any statements, writings or other representations regarding future applications for a new license for this Project.

“New Information” means information related to anadromous and native fish species affected by the Project or the Fish Passage Facilities that was not readily available to the Parties during development of this Settlement Agreement. New Information used to support an action by a Party that has an effect on the terms of this Agreement may constitute a Material Modification.

“M&E” means monitoring and evaluation for assessing the performance of the Fish Passage Facilities required under this Agreement and the Plan.

“ODEQ” means the Oregon Department of Environmental Quality.

“ODSL” means the Oregon Department of State Lands.

“Offer of Settlement” means an offer of settlement pursuant to Rule 602 of the Commission’s Rules of Practice and Procedure (18 C.F.R. § 385.602).

“Opal Springs Fish Passage and Protection Plan” or “Plan” means the plan set forth in Appendix B of this Agreement.

“Party” or “Parties” has the meaning set forth in Section 1.1.

“Permits” means the applicable federal, state, regional and local permits, licenses, authorizations, certifications, determinations and other governmental approvals as contemplated in Section 3.6.

“Project” means the Opal Springs Hydroelectric Project, FERC Project No. 5891.

“Proposed License Articles” means the license articles set forth in Appendix A of this Agreement of which the Parties propose FERC approval.

“Section 401 Certification” means a certification of compliance with water quality standards pursuant to Section 401 of the Clean Water Act.

“Section 404 Permit” means a dredge and fill permit under Section 404 of the Clean Water Act, 33 U.S.C. § 1344.

SECTION 2. PURPOSE AND SCOPE OF THIS AGREEMENT

2.1 General.

This Agreement constitutes an Offer of Settlement. The Parties have entered into this Agreement for the purpose of resolving all issues that have or could have been raised by the Parties in connection with the proceedings regarding the amendment of the Project license contemplated under this Agreement. The Parties intend that the scopes of this amendment proceeding and this Amended License will be limited to issues related to fish passage, including the construction, operation and maintenance of Fish Passage Facilities, and fish passage-related M&E and adaptive management. Pursuant to the Parties’ various authorities under Sections 4(e), 10(a), 10(j) and 18 of the FPA, this Agreement, including the attached Appendices, sets forth the Parties’ agreement on the Licensee’s obligations for the safe, timely and effective passage of fish affected by the Project, through the construction, operation and maintenance of the Fish Passage Facilities, M&E, and adaptive management. Each Party intends further that, except as explicitly provided for elsewhere in this Agreement, no additional fish protection or other resource measures or other license provisions, other than those provided in the Proposed License Articles, are necessary for FERC to include in this Amended License to satisfy Sections 4(e), 10(a), 10(j) and 18 of the FPA. The Parties are requesting that FERC include the attached Proposed License Articles in an Amended License without modification. This Agreement also specifies procedures to be used among the Parties regarding implementation of the Proposed License Articles and other agreed upon measures.

2.2 Satisfaction of Authority.

Except as specifically provided below, by entering into this Agreement, each Governmental Party intends that (i) the Proposed License Articles set forth in Appendix A satisfy its respective authorities under the FPA for the scope of the license amendment and operation of the Project with respect to the Fish Passage Facilities, M&E and adaptive management; and (ii) the Licensee's performance of its obligations under this Agreement shall fulfill its existing statutory and other legal obligations relating to the license amendment and pertaining to Fish Passage Facilities, M&E and adaptive management.

2.3 Other Proceedings.

This Agreement constitutes a negotiated resolution among the Parties and, as such, establishes no principle or precedent with regard to any issue addressed in this Agreement, or with regard to any Party's participation in any other pending or future licensing proceeding. Nothing in this Agreement is intended or shall be construed to be a pre-decisional determination by any of the Parties.

2.4 Public Benefit from Amendment of the License.

The Parties agree that amendment of the License in accordance with this Agreement is fair and reasonable and in the public interest because it supports resident fish, reintroduction of anadromous fish, and an increase in production of hydroelectric power. Provided that the license is amended and Fish Passage Facilities are constructed pursuant to the timeframes contained in this Settlement Agreement and Appendix A, the Parties also agree that the measures set forth in this Agreement are reasonable for providing safe, timely and effective passage.

2.5 Admissions and Waivers.

By entering into this Agreement, no Party shall be deemed to have made any admission or waived any contention of fact or law that it did make or could have made in any FERC proceeding relating to the issuance of the Amended License. This Agreement shall not be offered in evidence or cited as precedent by any Party to this Agreement in any judicial litigation, arbitration, or other adjudicative proceeding, except in a proceeding to establish the existence of or to enforce or implement this Agreement. This section shall survive any termination of this Agreement.

2.6 Compliance with Law.

Nothing in this Agreement is intended or shall be construed to affect or limit any Governmental Party from complying with its obligations under applicable laws and regulations, from complying with any applicable judicial decision or order, or from considering and responding to comments received in any environmental review or regulatory process related to the scope of this Agreement. This Agreement shall not predetermine the outcome of any environmental or administrative review or appeal process.

2.7 Structure of this Agreement.

This Agreement consists of this Agreement signed by the Parties together with three appendices, which are incorporated herein by reference:

- **Appendix A** consists of the Proposed License Articles;
- **Appendix B** consists of the Opal Springs Fish Passage and Protection Plan; and
- **Appendix C** consists of a list of the Parties executing this Agreement.

2.8 Effective Dates and Duration of Agreement.

This Agreement shall take effect immediately upon signature of DVWD, USFWS, NMFS, BIA, BLM, ODFW and Trout Unlimited, and shall remain in effect for the term of the Amended License and for any annual license issued subsequent thereto, unless this Agreement is sooner terminated pursuant to Section 9.3. The Parties recognize that the CTWS may decide to sign this Agreement after this Effective Date; when the CTWS sign, they will become a Party to this Agreement and may participate in the decision making process pursuant to the terms of this agreement and associated appendices.

SECTION 3. ACTIONS UPON EXECUTION OF THIS AGREEMENT

3.1 FERC Filings and Other Process by Licensee.

To implement this Agreement, Licensee shall take the following actions:

- 3.1.1** Unless it has already done so, within 60 days after the Effective Date of this Agreement, Licensee shall notify FERC that the licensee is initiating the Traditional Licensing Process (TLP) pursuant to 18 C.F.R. §4.38 and request that FERC designate Licensee as the non-federal representative for the purpose of ESA consultation with NMFS and USFWS with regard to the license amendment.
- 3.1.2** Once FERC has noticed Licensee's use of the TLP, and designated Licensee as the non-federal representative, Licensee shall work with the Parties in the NEPA scoping process.
- 3.1.3** Following scoping, Licensee shall prepare the preliminary Draft Environmental Assessment, in collaboration with the Parties. The Parties anticipate that there will be no need for Licensee to prepare additional studies as part of the environmental review process. To the extent additional studies may be required as a part of the environmental review process, such requirements may constitute a Material Modification. Licensee will circulate the preliminary Draft Environmental Assessment to the Parties for review for consistency with this Agreement. After allowing for Parties to comment on the preliminary Draft Environmental

Assessment, and addressing their comments, Licensee will file a final draft Environmental Assessment with FERC.

- 3.1.4** In conjunction with the NEPA Scoping Process and preparation of the Draft Environmental Assessment, Licensee shall prepare the draft Biological Evaluation in collaboration with NMFS and USFWS. After addressing the comments from NMFS and USFWS on the draft Biological Evaluation, Licensee will file a final Biological Evaluation with FERC.
- 3.1.5** Licensee is responsible for securing adequate funding to construct the Fish Passage Facilities required by the Proposed License Articles; provided, however, that Licensee shall itself contribute no less than the cost of constructing the pool raise component of the Fish Passage Facilities. Nothing herein is intended to constrain use of DVWD funds allocated to the pool raise as matching funds to obtain grants for any component of the Fish Passage Facilities.
- 3.1.6** As soon as the Licensee receives assurances of adequate funding to construct the Fish Passage Facilities as described in Section 3.1.5 and has otherwise completed its pre-license amendment processes in this Section 3.1, Licensee shall file with FERC an Amendment Application as an Offer of Settlement that includes an executed copy of this Agreement and its Appendices, the Draft Environmental Assessment, the Biological Evaluation and a Joint Explanatory Statement (collectively, the “Amendment Application”). The Amendment Application shall be consistent with this Agreement. In the Amendment Application, the Licensee shall request that FERC incorporate the Proposed License Articles contained in Appendix A to this Agreement, without modification, as conditions of the Amended License. The Licensee shall ensure that any communication, supplemental information, comments, or responses to comments filed by it with FERC in the context of the license amendment process are consistent with this Agreement.
- 3.1.7** Use reasonable efforts to obtain a FERC order approving this Agreement and issuing the Amended License in a timely manner so that Fish Passage Facilities will be operational within 5 years of the Effective Date.
- 3.1.8** Pursue all appropriate Permits necessary (as set forth in Section 3.6) for implementation of this Agreement.
- 3.1.9** Actively support, in all other relevant regulatory proceedings, implementation of this Agreement.

3.2 FERC and Other Filings by Governmental Parties.

Each Governmental Party agrees to the maximum extent practicable: (a) to act consistently with, and reasonably support, this Agreement and the Amendment Application; (b) to develop and file recommendations, conditions, and/or prescriptions pursuant to Sections 4(e), 10(a), 10(j), and 18 of the FPA consistent with this Agreement; and (c) to ensure that any communication, comments or responses to comments filed by them with FERC in the context of this license

amendment process will be consistent with this Agreement (including but not limited to the permitting processes described in Section 3.6).

3.3 FERC and Other Filings by NGOs.

Each NGO agrees to the maximum extent practicable: (a) to act consistently with, and reasonably support, this Agreement and the Amendment Application; (b) that any recommendations or comments that may be filed with FERC shall be consistent with this Agreement and (c) to ensure that any communication, comments or responses to comments filed by them with FERC in the context of this license amendment process will be consistent with this Agreement (including but not limited to the permitting processes described in Section 3.6).

3.4 Proceedings Pursuant to the Energy Policy Act of 2005.

Regarding any of the mandatory terms and conditions filed with FERC in this license amendment proceeding by USFWS, NMFS, BIA or BLM that do not contain a Material Modification of this Agreement or Proposed License Articles, each Party waives any right it may have to request a trial-type hearing on issues of material fact, and to propose alternatives under Section 33 of the FPA. The Parties shall not support any trial type hearing requested by a non-Party, and will support USFWS, NMFS, BIA and BLM, as appropriate, if a trial type hearing is requested. If a non-Party requests a trial-type hearing, the Parties may intervene to support this Agreement. The USFWS, NMFS, BIA and/or BLM will use good faith efforts to defend the challenged conditions.

3.5 New Information.

Each Party agrees to provide written notice to all other Parties as soon as practicable regarding any New Information potentially affecting, or relating to, the Settlement Agreement, its attachments (*e.g.*, Proposed License Articles and the Plan), and the Amended License.

3.6 Permits.

- 3.6.1** Licensee shall apply for and use reasonable efforts to obtain in a timely manner and in final form all Permits for purposes of implementing this Agreement and the Amended License. Such Permits shall include, but shall not be limited to, state land use and construction permits, water rights (as necessary), BLM right-of-way (if necessary), a Section 401 Certification, and a Clean Water Act Section 404 Permit. The applications for such Permits shall be consistent with the terms of this Agreement.
- 3.6.2** Subject to Section 2.2 and Section 3 of this Agreement, each Party shall, in the context of Licensee's applications for Permits, refrain from filing comments, recommending Permit conditions or taking other actions that are inconsistent with this Agreement or that add material costs, fees, or obligations to Licensee's construction or operation of the Fish Passage Facilities, provided that this sentence shall not apply to a Party that is the agency issuing the requested Permit. The Licensee shall pay all fees required by law related to such Permits. The

Parties shall work together as appropriate during the permitting and environmental review processes.

- 3.6.3** Except as expressly provided in this Agreement, the Licensee shall not be required by this Agreement to implement an action required under this Agreement until all applicable Permits required for that action are obtained. If a proceeding challenging any Permit required for the action has been commenced, the Licensee shall be under no obligation to implement the action or any related action under this Agreement until any such proceeding is terminated. In the event any proceeding is commenced, or a Permit has been issued with a Material Modification, the Parties shall confer to evaluate the effect of such proceeding on implementation of this Agreement. The Parties recognize that a Permit delay, denial, or a Permit containing a Material Modification does not alleviate the Licensee's responsibility to comply with the amended license but may be the basis for requesting FERC to amend the license.

3.7 Communications with FERC and Other Governmental Agencies.

Any communication, supplemental information, comments or responses to comments filed by the Parties with FERC or any other governmental agency in the context of the license amendment or Permit processes will be consistent with this Agreement.

3.8 Actions after Issuance of Amended License.

3.8.1 Amended License that does not Materially Modify this Agreement.

The Parties agree that if FERC approves this Agreement and incorporates the Proposed License Articles without Material Modification, none of the Parties will seek rehearing of the FERC order amending the Proposed License Articles for any issues covered by this Agreement, or support any such request for rehearing by any non-Party to this Agreement. If FERC issues an Amended License that contains a modification that is not a Material Modification, this Agreement shall be interpreted in a manner consistent with such modifications.

3.8.2 Amended License that Materially Modifies this Agreement.

If FERC issues an Amended License that contains a Material Modification, this Agreement shall be deemed modified to conform to the Material Modification unless: (a) the Material Modification results from an omission of a requirement under this Agreement that obligated the Licensee to take some action and the Licensee can still lawfully take that action pursuant to this Agreement without violating any term of the Amended License – in which case the Licensee will still implement the requirement, or (b) a Party aggrieved by the Material Modification provides notice to the other Parties that it objects and initiates dispute resolution under Section 7 of this Agreement within 30 days of the FERC order.

The disputing Party or Parties may petition FERC for rehearing or seek judicial review of any new license article, or omission of any proposed license article, that results in a Material Modification of this Agreement that adversely affects their interests. The Parties shall follow the dispute resolution process set forth in Section 7 of this Agreement while any such rehearing, appeal or request for stay or extension is pursued. Any disputing Party or Parties may ask FERC or the court to defer action on the merits of any rehearing request or appeal while dispute resolution is pursued. If all Parties subsequently agree to modify this Agreement to conform to the inconsistent action, the disputing Party or Parties shall withdraw or dismiss any administrative or judicial action, or recommend such withdrawal or dismissal, as appropriate. In the event DVWD is a disputing Party pursuant to this section, and the dispute remains unresolved upon the statutory deadline prior to which DVWD may reject the Amended License, DVWD may in its sole discretion and without consultation with any other Party reject the Amended License.

SECTION 4. IMPLEMENTATION OF FISH PASSAGE RELATED MEASURES

4.1 Proposed License Articles (Appendix A).

4.1.1 The Parties have entered into this Agreement with the express expectation and condition that FERC will approve this Agreement as an Offer of Settlement and issue a license amendment for the Project that incorporates, without Material Modification, the Proposed License Articles in Appendix A. The Proposed License Articles include:

- Article 1 - Opal Springs Fish Passage and Protection Plan
- Article 2 - Fish Passage Facilities
- Article 3 - Fish Passage Work Group
- Article 4 - Bypass Flow Accrual Account
- Article 5 - Upstream Fish Passage Monitoring, Data Collection, Fish Passage Performance, and Reporting
- Article 6 - Downstream Fish Passage Monitoring, Fish Passage Performance, Data Collection, and Reporting
- Article 7 - Fish Passage Performance Objectives
- Article 8 - Adaptive Management
- Article 9 - Annual Report
- Article 10 - Inspection and Notice
- Article 11 - Abandonment of Anadromous Fish Reintroduction
- Article 12 - Revised Exhibits

- Article 13 - Review and Approval of Final Plans and Specifications
- Article 14 - Quality Control and Inspection Program
- Article 15 - Cofferdam Construction Drawings
- Article 16 - Temporary Emergency Action Plan

4.1.2 The obligations that the Parties consider enforceable by FERC are set forth as Proposed License Articles in Appendix A..

4.2 Opal Springs Fish Passage and Protection Plan (Appendix B).

The Opal Springs Fish Passage and Protection Plan, attached hereto as Appendix B, sets forth: (1) the design goals of the Fish Passage Facilities; (2) the proposed Project modifications; and (3) Plan implementation and responsibilities, including how the FPWG will operate, how the Bypass Flow Accrual Account will be administered, how the Fish Passage Facilities will be operated and maintained, how adaptive management will work, fish passage performance objectives, and both upstream and downstream monitoring, evaluation and adjustment.

SECTION 5. COORDINATION AND DECISION MAKING

5.1 Opal Springs Fish Passage Work Group.

Within 30 days of the Effective Date, the Licensee shall establish the Fish Passage Work Group (FPWG). Each Party to this Agreement may designate a representative to the Fish Passage Work Group. The FPWG shall convene annually or more frequently if the majority of the FPWG so desire.

5.3 Decision-Making Process.

The FPWG shall strive to conduct its business by consensus, which for purpose of this Agreement shall mean when all Parties cast a supportive or neutral vote, or have abstained from the decision. Decisions of the FPWG shall not abrogate or limit the approval authority of agencies with such authorities.

5.4 Settlement Negotiations Confidential.

The Parties entered into the negotiations and discussions leading to this Agreement with the understanding that, to the extent allowed by law, all discussions relating to the development of this Agreement were confidential pursuant to a Communication's Protocol that expires with execution of this Agreement and continue to be confidential. Positions of a Party advanced or discussed during negotiation of this Agreement shall not be disclosed by any other Party in any manner, including admission into evidence, in connection with this Agreement, or in any other proceedings related to the subject matter of this Agreement, except to the extent disclosure may be required by law. This section shall survive any termination of this Agreement and shall apply to any Party that withdraws from this Agreement.

SECTION 6. COMMITMENTS OF GOVERNMENTAL PARTIES UNDER RELATED STATUTORY AUTHORITIES

6.1 General Provisions.

6.1.1 Authority under the Federal Power Act.

The Governmental Parties intend that any conditions, prescriptions, and recommendations submitted to FERC in connection with the issuance of the Amended License will be consistent with this Agreement to the maximum extent practicable and that any material inconsistency shall be addressed in accordance with Section 7 of this Agreement. In addition, each Governmental Party reserves its authorities pursuant to the FPA to, among other things, address New Information, or in the event that (1) this Agreement is not filed with FERC, (2) the Licensee fails to implement any provision of this Agreement, or (3) this Agreement is terminated for any reason whatsoever.

6.1.2 Other Statutory Authorities.

Each Governmental Party shall exercise any of its authorities that may be applicable to this Agreement in a manner consistent with the intent and purpose of this Agreement to the maximum extent practicable and that any material inconsistency shall be addressed in accordance with Section 7 of this Agreement. This Agreement shall not limit the ability of any Governmental Party to assert its authority under any statute in the event that this Agreement is not filed with FERC, the Governmental Party withdraws from this Agreement, the Licensee fails to implement any provision of this Agreement, or this Agreement is terminated for any reason whatsoever.

6.1.3 Reservation of Authority.

Each Governmental Party reserves any authorities under the FPA. In the event that any Governmental Party includes a reservation of authority in the conditions, recommendations or prescriptions that it submits to FERC, and the reservation of authority is included as a condition of the Amended License, the inclusion of such reservation shall not be considered to be materially inconsistent with this Agreement, provided that each Party shall be deemed to have reserved the right to contest the exercise of such reserved authority at any time in the future, if it is inconsistent with this Agreement and after going through this Agreement's dispute resolution process.

6.2 Endangered Species Act.

6.2.1 Applicable Procedures.

As required by Section 7 of the ESA, FERC may not issue the Amended License until it has completed consultation with NMFS and USFWS with respect to threatened and endangered species affected by the Amended License. The Amendment Application will include the Biological Evaluation prepared by the DVWD in coordination with NMFS and USFWS. The Parties anticipate FERC will use the Biological Evaluation as the basis for its Biological

Assessment needed for formal Section 7 consultation. NMFS and USFWS will file their Biological Opinions with FERC.

6.2.2 ESA Section 7 Consultation.

Licensee has worked collaboratively with NMFS and USFWS to develop the terms of this Agreement, including the Appendices attached hereto, to address specifically the needs of ESA listed Summer steelhead and bull trout which may be affected by the Project. NMFS and USFWS anticipate that it is likely that the measures contained in Appendices A and B of this Agreement will be adequate to avoid a jeopardy finding for Summer steelhead and bull trout, and to avoid destroying or adversely modifying critical habitat. If practicable, NMFS and USFWS agree to provide technical assistance to DVWD in the development of the Biological Evaluation. By signing this Agreement, NMFS and USFWS do not bind themselves to make any specific recommendations or take any particular action with respect to ESA compliance. NMFS and USFWS retain the right, consistent with federal law, to take such future actions as they may deem necessary to meet their obligations under the ESA. The Parties acknowledge that any Incidental Take Statement that may be issued by NMFS or USFWS may include terms and conditions such as use of best management practices and other minor changes to the Fish Passage Facilities consistent with 50 C.F.R. § 402.14(i)(2), which states that reasonable and prudent measures, along with the terms and conditions that implement them, cannot alter the basic design, location, scope, duration, or timing of the action and may involve only minor changes. The Incidental Take Statement terms and conditions cannot be determined by the effective date of this Agreement. If the Licensee believes that any Incidental Take Statement terms and conditions constitute a Material Modification of the Project, the Licensee may exercise its rights to dispute resolution pursuant to Section 7 of this Agreement.

Nothing in this Agreement shall limit or waive the authority of NMFS or USFWS to take whatever action each agency may deem necessary if the Amended License fails to satisfy fully the requirements of ESA Section 7. This includes FERC's failing to adopt as license conditions the terms and conditions contained in the Incidental Take Statement attached to the Biological Opinions issued by NMFS and USFWS. The Parties shall address any such inconsistency in accordance with Section 7 of this Agreement, as applicable.

6.3 Clean Water Act.

6.3.1 Section 401 Certification.

The Parties understand that, under Section 401 of the Clean Water Act, FERC may not issue the Amended License for the Project until a Section 401 Certification has been issued by the state or tribal agency responsible for certification, or the certification requirement is deemed waived. The Parties understand that a Section 404 Permit also may not be issued by the Corps of Engineers until a Section 401 Certification has been obtained, or the certification requirement has been waived. Upon application for the Amended License or Section 404 Permit, Licensee shall provide ODEQ written notices of such application. If, as a result of consideration of public comment and any new information, ODEQ issues a Section 401 Certification that requires measures that constitute a Material Modification of this Agreement, the Parties shall address any such inconsistency in accordance with Section 7 of this Agreement, as applicable.

6.3.2 Application for Delegated State Section 404 Permit for Project Activities.

In the event the State of Oregon assumes authority to administer a dredge and fill permit program under Clean Water Act Section 404 by the time a Section 404 Permit is required for Project activities, Licensee shall apply for such Section 404 Permit from ODSL or other applicable state agency. Subject to consideration of any new information at the time of the application for the Section 404 Permit and consideration of any public comment as may be required by law, if the Parties comment on the Section 404 Permit, they shall provide ODSL, or other applicable state agency, with comments or proposed conditions that are consistent with this Agreement. If the Parties provide comments or proposed conditions that would require the Licensees to undertake measures that constitute a Material Modification of this Agreement, the Parties shall address any such inconsistency in accordance with Section 7 of this Agreement, as applicable.

NMFS and USFWS will consider the effects of dredge and fill activities during their consultation with FERC to the extent these activities are included in the proposed action pursuant to Section 7 of the ESA regarding the issuance of the Amended License. If Section 7 consultation is required with the Corps of Engineers regarding issuance of any permit under Section 404, NMFS and USFWS anticipate that the analysis of the impacts of the permit issuance is not likely to differ from the analysis of the FERC action, unless the Corps of Engineers proposes to issue a Section 404 Permit that is materially different than the FERC action, or NMFS or USFWS becomes aware of new information that is materially different than the information contained in their Biological Opinions provided to FERC.

6.4 State Fish Passage Law.

ODFW agrees that the measures required by this Agreement and its Appendices constitute a valid fish passage plan for the Project within the meaning of OAR 635-412-0035 and meet the fish passage criteria of ORS 509.585 and OAR 635-412-0020 and 635-412-0035. In the event any additional modifications to the fish passage plans are required under state law, such requirements may constitute a Material Modification subject to dispute resolution.

SECTION 7. DISPUTE RESOLUTION

7.1 Actions that May Trigger Dispute Resolution.

Except where otherwise specifically provided in this Agreement or where precluded by statute or agency regulation, the Parties agree to use the following dispute resolution process to resolve disputes related to this Agreement and the Proposed License Articles.

7.2 Dispute Resolution Procedures.

7.2.1 General.

- 7.2.1.1 The Party initiating dispute resolution under this section shall notify FERC when dispute resolution proceedings are initiated relevant to an issue before FERC and related to the Proposed License Articles or Amended License. Such notice shall be made within five business days of initiating dispute resolution.

- 7.2.1.2 The Parties agree to devote such time and attention to dispute resolution as necessary and reasonable to attempt to resolve the dispute at the earliest time possible; and each Party will cooperate in good faith promptly to schedule, attend, and participate in dispute resolution. Each Party will promptly implement all final agreements reached, consistent with its applicable statutory and regulatory responsibilities.
- 7.2.1.3 The Parties acknowledge that in certain cases the statutory and regulatory deadlines with respect a Party's legal and procedural rights, such as Licensee's right to reject the Amended License pursuant to FPA, may not allow sufficient time necessary to complete the dispute resolution process under this Section 7.2. In such situations, this Section 7.2 shall not require forfeiture or compromise of such rights pending the dispute resolution process, and the Parties may take actions necessary to preserve those rights before this dispute resolution process is completed. However, Parties shall continue to work through this dispute resolution process unless precluded from doing so by other statutes or regulations.

7.2.2 Dispute Initiation Notice.

A Party claiming a dispute shall provide timely notice to the other Parties, describing the matter(s) in dispute and any proposed relief or resolution. Each Party that wishes to participate in dispute resolution shall provide written notice to the other Parties within twenty (20) days of receiving the dispute initiation notice.

7.2.3 Informal Meetings.

The disputing Parties shall hold at least two (2) informal meetings to resolve the dispute, unless agreed otherwise, commencing within thirty (30) days after the dispute initiation notice and concluding within sixty (60) days. The 60-day period may be extended upon mutual agreement of the disputing Parties. If the Parties are unable to resolve the dispute, at least one (1) meeting of the Parties at the management level will be held. The Party claiming the dispute shall be responsible for coordinating all meetings under this section and shall make good faith efforts to coordinate a meeting time and location satisfactory to all disputing Parties.

7.2.4 Mediation.

If a dispute is not resolved pursuant to Section 7.2.3, the disputing Parties may choose a mediator and allocate the costs of the mediator within thirty (30) days of the conclusion of the dispute resolution meetings. The mediation process shall be concluded not later than sixty (60) days after the mediator is selected. The outcome of the mediation process is not binding on the Parties. The above time periods may be shortened or lengthened upon mutual agreement of the disputing Parties.

7.2.5 Notice of Resolution.

The Party initially claiming the dispute shall provide notice pursuant to Section 9.11 to all Parties stating the result of the dispute resolution process.

7.2.6 Costs for Dispute Resolution.

Unless otherwise agreed among the Parties, each Party will bear its costs for its own participation in a dispute resolution process.

7.2.7 FERC Filings After Dispute Resolution.

If the Licensee is required to make a FERC filing relating to an issue that was not successfully resolved through dispute resolution, such filing will include the Licensee's reasons, based on project-specific information, for not adopting a Party's recommendation or for seeking FERC approval without obtaining agency approval. Any other Party may oppose or seek modification of the Licensee's filing.

7.2.8 Effect of Dispute Resolution on Other Proceedings.

The dispute resolution process in this section does not preclude any Party from timely filing and pursuing an action for administrative or judicial relief of any FERC order, compliance matter, or other regulatory action related to the Amended License; provided that any such Party shall initiate dispute resolution pursuant to this Section 7.2 as soon as practicable thereafter or concurrently therewith.

7.2.9 Remedies.

The Parties reserve all remedies for material breach of the Amended License or this Agreement, including seeking a license amendment or other appropriate relief from FERC.

SECTION 8. WITHDRAWAL FROM SETTLEMENT

8.1 Withdrawal of a Party from this Agreement.

8.1.1 Any Party whose interests are adversely affected by a Material Modification to the terms of this Agreement or the Amended License may withdraw from this Agreement following the completion of dispute resolution (Section 7). For clarity of intent, the Parties agree that Licensee may withdraw following the completion of dispute resolution (Section 7) if (i) Licensee is unable to receive funding for the fish ladder construction after filing the Amendment Application but before the License Amendment is issued by FERC (in which case Licensee may also withdraw the Amendment Application and/or reject the Amended License) or (ii) if the License Amendment, license conditions, Incidental Take Statement or Permit places material risks or costs to Licensee materially inconsistent with the terms of this Agreement. Following completion of the dispute resolution process, the aggrieved Party shall provide notice to the other Parties of its withdrawal from this Agreement. In addition, when a Party ceases to exist and has no successors or assigns, it will be deemed to have withdrawn from this Agreement, but such withdrawal will not automatically give any other Party the right to withdraw.

- 8.1.2** If the Licensee is required to make a FERC filing addressing an issue(s) not successfully resolved through dispute resolution pursuant to Section 7, no Party involved in that dispute may withdraw from this Agreement until FERC issues an order on the Licensee's filing. Any Party materially aggrieved by the FERC order as it relates to the disputed matter and that constitutes a Material Modification may then withdraw pursuant to this section, seek rehearing before FERC, and exercise any other remedy available under applicable law. For issues that do not require a FERC filing, the disputing Party or Parties whose interests are adversely affected by the Material Modification may withdraw from this Agreement following completion of the dispute resolution process set forth in Section 7.

8.2 Effective Date of Withdrawal.

If dispute resolution is unsuccessful and the aggrieved Party provides notice of withdrawal, the withdrawal shall become effective 10 business days after such notice.

8.3 Termination of Settlement Agreement.

- 8.3.1** This Agreement shall terminate on the second year anniversary of the Effective Date if the Licensee has not completed all material plans, specifications, designs and drawings necessary to construct Fish Passage Facilities and initiated all applicable procedures for Permits.
- 8.3.2** This Agreement shall terminate on the fourth year anniversary of the Effective Date if the Licensee has not filed the Amendment Application with the Commission pursuant to Section 3.1.6.
- 8.3.3** Upon expiration of the Amended License and any subsequent annual license(s), or upon withdrawal from this Agreement by the Licensee, this Agreement shall terminate as to all Parties and have no force or effect. The withdrawal of any Party other than the Licensee does not automatically terminate this Agreement for the remaining Parties. The remaining Parties shall meet within 30 days, or as otherwise agreed, to discuss the effect of the withdrawal and whether they will continue to operate under this Agreement. A withdrawing Party shall not be bound by any term contained in this Agreement, except Sections 2.4 and 5.4.
- 8.3.4** Upon any termination pursuant to this Section 8.3, this Agreement shall terminate as to all Parties without recourse, claim, or liability on the part of any Party and shall have no force or effect, except that all Parties shall continue to be bound by Sections 2.5 and 5.4, which shall survive termination.

SECTION 9. GENERAL PROVISIONS

9.1 Entire Agreement.

This Agreement, together with the Appendices attached to and made a part of this Agreement, sets forth the entire agreement of the Parties with regard to the subject matter of this Agreement.

This Agreement is made on the understanding that each term is in consideration and support of every other term, and that each term is a necessary part of the entire Agreement.

9.2 Modifications.

This Agreement may be modified by unanimous written consent of the Parties.

9.3 Signatory Authority.

Each signatory to this Agreement certifies that he or she is authorized to execute this Agreement and to legally bind the Party he or she represents, and that such Party shall be fully bound by the terms hereof upon such signature without any further act, approval or authorization by such party.

9.4 No Third-Party Beneficiaries.

Without limiting the applicability of rights granted to the public pursuant to applicable law, this Agreement shall not create any right or interest in the public, or any member of the public, as a third-party beneficiary of this Agreement, and shall not authorize any non-Party to maintain a suit at law or equity pursuant to this Agreement. The duties, obligations, and responsibilities of the Parties with respect to third parties shall remain as imposed under applicable law.

9.5 Successors, Transferees and Assigns.

This Agreement shall apply to, and be binding on, the Parties and their successors and assigns. No change in ownership of the Project or transfer of the Amended License by the Licensee shall in any way modify or otherwise affect any other Party's interests, rights, responsibilities, or obligations under this Agreement. Unless prohibited by applicable law, the Licensee shall provide in any transaction for a change in ownership of the Project or transfer of the existing or Amended License, that such new owner shall be bound by, and shall assume the rights and obligations of this Agreement upon completion of the change of ownership. In the event applicable law prohibits the new owner from assuming the rights and obligations of this Agreement, any Party may withdraw from this Agreement. The Licensee shall provide written notice to the other Parties at least 30 days prior to completing such transfer of license.

9.6 Force Majeure.

No Party shall be out of compliance with this Agreement as a result of a failure to perform or for delay in performance of any provision of this Agreement, due to force majeure. “Force majeure” means any cause reasonably beyond the Party’s control, which could not be avoided with the exercise of due care, whether unforeseen or foreseeable, which occurs without the fault or negligence of the Party whose performance is affected by force majeure. Force majeure may include, but is not limited to: natural disasters, labor or civil disruption, or breakdown or failure of properly maintained Project works. Increased cost for the performance of any action required by this agreement is not considered force majeure. The Party whose performance is affected by force majeure will make all reasonable efforts to promptly resume performance. The Party affected by force majeure shall notify the other Parties of the circumstances of the event that it believes constitutes force majeure by telephone, facsimile, or electronic mail, as soon as it is

reasonably possible and practical to do so. Such notice will include a description of the event causing the delay or anticipated delay, an estimate of the anticipated length of the delay, a description of the measures taken or that will be taken to minimize the delay, and a proposed timetable for the implementation of the measures or performance of the obligation. The Party affected by force majeure shall provide verbal and written notice when it resumes performance of the obligation.

9.7 No Consent to Jurisdiction.

Execution of this Agreement does not constitute a consent to jurisdiction of any state, federal or Tribal court unless such jurisdiction otherwise exists. Execution of this Agreement also does not constitute a waiver of any immunity or privilege except as provided by law.

9.8 Elected Officials Not To Benefit.

No member of or delegate to Congress shall be entitled to any share or part of this Agreement or to any benefit that may arise from it.

9.9 No Partnership.

Nothing in this Agreement shall be construed to constitute the Parties as principal and agent, employer and employee, partners, joint ventures, co-owners, or otherwise as participants in a joint undertaking. No Party shall have the right or authority to assume or create any obligation or responsibility for or on behalf of another Party except as specifically provided in this Agreement.

9.10 Reference to Statutes or Regulations.

Unless otherwise noted, any reference to any statute, regulation or other document refers to the statute, regulation or document, as it exists on the Effective Date of this Agreement.

9.11 Notices and Communications.

All written notices to be given pursuant to this Agreement shall be mailed by electronic mail and facsimile, first class mail, or overnight express service, to each Party at the addresses listed in Appendix C or to such subsequent address as a Party shall by written notice identify. Notices shall be deemed to be given on the same business day as any electronic mail or facsimile transmitted before 5:00 p.m., Pacific time, unless the intended recipient demonstrates that the electronic mail or facsimile was not timely received, or on date of receipt if overnight express or other receipt-notification service is used.

For purposes of implementing this Agreement, the Parties agree that the individuals listed in Appendix C shall be designated to be the primary contact person and all written notices shall be posted to these individuals at the addresses listed in Appendix C. Notification of changes in the contact persons or addresses must be made in writing and delivered to all other contact persons as described above. The Licensee will make reasonably available copies of this Agreement, together with all amendments including changes to the Parties' contact information, to the extent that such changes have been provided in writing to the Licensee, upon the request of a Party.

9.12 Counterparts.

This Agreement may be executed in any number of counterparts, and each executed counterpart shall have the same force and effect as an original instrument as if all the signatory Parties to all of the counterparts had signed the same instrument. Any signature page of this Agreement may be detached from any counterpart of this Agreement without impairing the legal effect of any signatures, and may be attached to another counterpart of this Agreement identical in form having attached to it one or more signature pages.

9.13 Waiver.

The failure of any Party to insist, on any occasion, upon strict performance of any provision of this Agreement, shall not be considered a waiver of any obligation, right or duty of, or imposed upon, such Party.

9.14 Responsibility for Costs.

Unless otherwise provided in this Agreement, each Party shall bear its own costs of implementing this Agreement.

9.15 Review of Other Agency Actions.

To the extent provided by applicable law, any Party may seek administrative rehearing and judicial review of any action by a Governmental Party that is materially inconsistent with this Agreement.

IN WITNESS WHEREOF the Parties have entered into this Agreement as of the date first above written.

DESCHUTES VALLEY WATER DISTRICT

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

By: _____

Title: _____

US DEPARTMENT OF COMMERCE,
NATIONAL MARINE FISHERIES SERVICE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

By: _____

Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

By: _____

Title: _____

TROUT UNLIMITED

By: _____

Title: _____

Appendix A
Proposed License Articles

**APPENDIX A:
PROPOSED LICENSE ARTICLES
OPAL SPRINGS HYDROELECTRIC PROJECT (FERC NO. 5891)**

Article 1: Opal Springs Fish Passage and Protection Plan

The Licensee shall implement the Opal Springs Fish Passage and Protection Plan (Attached).

Article 2: Fish Passage Facilities

The Licensee shall provide safe, timely, and effective fish passage at the Opal Springs Hydroelectric Project (Project) through implementation of the Amended License.

The Licensee shall design, construct, operate, maintain and monitor a volitional upstream fish ladder located at the Project dam structure to provide salmon and steelhead access to historic spawning and rearing habitats in the Crooked River basin and to provide native fish with foraging and migratory opportunities above the project. The fish ladder shall adhere to the National Marine Fisheries Service (NMFS) 2008 Anadromous Salmonid Passage Facility Design Manual.

The Licensee shall also design, construct, operate, maintain and monitor facilities at the Project to increase the normal maximum diversion pool elevation up to 2,010.31 feet National Geodetic Datum 1929. The increased diversion pool elevation will make water available for bypassing juvenile fish around the turbine penstock and for attracting adult fish up through the bypass reach to the fish ladder entrance.

The Licensee shall develop final design plans and specifications for the installation, operation, maintenance, and monitoring of the fish passage facilities in consultation with and for review by the Fish Passage Work Group (FPWG). Specifically, the detailed fish ladder design phases (50 percent and 90 percent completion stages) will be completed in consultation with the FPWG. Final design plans and specifications shall include: (1) final construction drawings; (2) construction schedule; and (3) a preliminary operation and maintenance (O&M) plan that includes daily, above water visual inspections of all areas within the fish ladder that are accessible to fish and annual dewatered fish ladder inspections. The Licensee shall file the final O&M Plan with the Commission within 120 days after construction is completed, following review and approval of the FPWG. The Licensee shall, within 60 days after issuance of the Amended License, provide the final design plans and specifications to the appropriate Fish Agencies for their approval pursuant to their statutory authority.

The Licensee shall, within 120 days after issuance of the Amended License, file the final design plans and specifications with the Commission for approval. When filing final plans and specifications with the Commission, the Licensee shall include documentation of consultation with the FPWG, copies of comments and recommendations, and specific descriptions of how comments and recommendations from FPWG members have been accommodated. If the Licensee does not adopt an FPWG recommendation, the filing shall include its reasons based on project specific information. If the Licensee files final plans and specifications without first obtaining approvals by the appropriate Fish Agencies pursuant to their statutory authorities, the Licensee shall include specific reasons for doing so.

The Commission reserves the right to require changes to the final fish facility design plans and specifications. Any such changes required by the Commission may also require additional approvals by the appropriate Fish Agencies pursuant to their statutory authorities.

The Licensee shall complete construction of the fish passage facilities within two years of Commission approval.

Article 3: Fish Passage Work Group

The Licensee shall, within 30 days after issuance of the Amended License, establish and convene a Fish Passage Work Group (FPWG) for the purpose of consulting on all aspects of the Settlement Agreement, associated license articles and the Fish Passage and Protection Plan. The Licensee shall convene the FPWG annually, or more frequently if a majority of the FPWG so desire, by no later than February 1 to review the Bypass Flow Accrual Account Allocation Plan and proposed actions for the coming year. The Licensee shall bear all costs associated with conducting FPWG meetings.

The Licensee shall arrange, administer, and chair all meetings. Upon request of a majority of the FPWG members, the Licensee shall provide a meeting facilitator. The facilitator shall be selected by consensus of the FPWG. The Licensee shall provide no fewer than 14 days prior notice of any meeting, unless otherwise agreed to by the FPWG or required to meet a license deadline or other emergency circumstance.

The Licensee shall, within 30 days of each meeting, provide draft meeting minutes for concurrence by the FPWG prior to final distribution. Meeting minutes will include FPWG action items, a summary of issues discussed, decisions reached, and member concerns.

For fish passage related purposes, consultation or consult means that the Licensee shall obtain the views of, and attempt to reach consensus among members of the FPWG. Consultation does not mean consultation under section 7 of the Endangered Species Act or other federal laws requiring consultation unless specifically provided.

Article 4: Bypass Flow Accrual Account

Upon completion of the fish passage facilities, the Licensee shall establish a Bypass Flow Accrual Account (BFAA). The BFAA will identify “water credits” (in acre-feet) which will be used to identify water available for aiding upstream and downstream fish passage. Water credits will be accrued in lieu of actual stored water, given that the Project has no storage capacity, and turbine discharge will be reduced when exchanging water credits for actual bypass flows. The Licensee shall administer the BFAA for the term of the amended license as follows:

1. Accumulating Credits

The Licensee shall accrue water credits in the BFAA beginning concurrently with the start of Project operations under the new diversion pool elevation and shall continue to accrue water credits in the BFAA for the License Term. Water credits will accrue as a percentage of instantaneous turbine flow (initially 2.89% and hereinafter referred to as the “Accrual Rate”) under all flow conditions up to the maximum controlled hydraulic capacity of the Project. The maximum controlled hydraulic capacity of the Project is initially 1,913 cfs [the sum of hydraulic capacity at new head (estimated at 1,600 cfs), the license required bypass flow (50 cfs), and spring water and ground water accreting into the bypass reach (263 cfs)]. Water credits will not accrue at total river discharge greater than the maximum controlled hydraulic capacity of the Project.

The Licensee shall, within one year of commencing operations at the new diversion pool elevation, verify all estimates used for determining the maximum controlled hydraulic capacity of the Project. The Licensee shall provide this information to the FPWG at least 45 days prior to filing any proposed modifications with the Commission. The Licensee shall not file with the Commission any proposed modifications of the information used to calculate water credits until any disputes raised by the FPWG have been addressed under the dispute resolution provisions of the Settlement Agreement. Upon Commission approval of any modifications to the information used for calculating water credits, the Licensee shall calculate all subsequent BFAA credits pursuant to the new information.

The Licensee shall periodically reassess spring water and ground water accretion estimates throughout the license term as requested by the FPWG. Any future changes recommended by the Licensee pursuant to periodic review of these parameters, will be further approved by the FPWG prior to the Licensee submitting the new information to the Commission. Upon Commission approval, the Licensee shall calculate all subsequent BFAA credits pursuant to the new information.

The Licensee shall calculate all BFAA credits based on: 1) direct measurements of the hourly turbine discharge data and 2) the gage data from USGS Gage No. 14087400, near Culver, Oregon, below Opal Springs.

The Licensee shall accrue water credits in the BFAA at a rate of between 25% and 45% (“Allocation Percent”) of the increase in power generation attributable to the head increase at the Project. Adjustments to the Allocation Percent will only occur following each successive 5-year Performance Assessment Interval, and only if necessary, pursuant to the Adaptive Management program. The potential for asynchronous monitoring periods notwithstanding, the BFAA Allocation Percent will not be increased more than one time every five years. Allocation Percent increases above 45% may only occur with the approval of the Licensee.

The Licensee shall, until the turbine performance calculation is modified, accrue water credits at a rate of 2.89% of instantaneous turbine flow [(25% Allocation Percent) X (11.54% increase in power generation) = 2.89% Accrual Rate]. The Licensee shall convert real-time accruals into acre-feet for purposes of developing a BFAA Annual Allocation Plan. The Licensee shall develop the BFAA Annual Allocation Plan in consultation with and for approval by the FPWG. The BFAA Annual Allocation Plan will include a current accounting of BFAA water credits (less any water credits advanced the prior year for emergency purposes); a flow forecast for the upcoming year; and an estimate of the water credits that will be accrued over the coming year. The Licensee shall include the BFAA Annual Allocation Plan in its Annual Reports.

The Licensee shall maintain a record of withdrawal requests and actual discharged bypass flows, and shall provide a monthly status of available BFAA water credits to the FPWG within two business days of a request by Oregon Department of Fish and Wildlife and the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWS) (“Fish Managers”) (provided that the CTWS is a signatory to the Settlement Agreement). Water credits not used within a given year will be carried over from year to year until expended, but will not extend beyond the term of the Amended License. The Licensee shall include this information in its Annual Reports.

2. Bypass Flow Releases

The Licensee shall provide bypass flows from the BFAA within two business days of receiving a request from the liaison designated by the Fish Managers within the limitations of the approved BFAA Annual Water Plan. The Licensee shall make 10% of the forecasted annual accrual in the BFAA available for emergency use if insufficient water credits are available in the BFAA. Otherwise, only water credits accrued in the BFAA will be available for release. Any water credits advanced to the BFAA by the Licensee will be offset by a debit to the BFAA as soon as possible but by no later than one year from disbursement, unless otherwise agreed to by the Licensee.

The Licensee shall be exempted from providing BFAA flows that would result in a Critical Circumstance, which is potential damage or excess wear and tear to project equipment. The Licensee shall, within one year of initial operations at the new diversion pool elevation and periodically during the term of the amended license, in consultation with the FPWG and supported by engineering concerns, determine specific turbine unit loading that would result in a

Critical Circumstance. If the Licensee determines that a request for flow releases will cause a Critical Circumstance, the Fish Managers may request a lower BFAA flow release that will not cause a Critical Circumstance, or the Fish Managers may request and the Licensee shall shut down the powerhouse and direct all river flows into the bypass reach as long as sufficient water credits are available in the BFAA. The Licensee shall not be required to shut down the powerhouse in response to a BFAA flow request more than one time per week.

If the Project shuts down for other operational, safety, or maintenance reasons resulting in spill, water credits will not be removed from the BFAA.

Article 5: Upstream Fish Passage Monitoring, Data Collection, Fish Passage Performance, and Reporting

The Licensee shall use accepted scientific practices as approved by NMFS, USFWS, BIA, and ODFW for all data collection and monitoring, and shall ensure that data collection standards are being met. The Licensee shall provide raw monitoring data to the FPWG within two business days of a Fish Manager request. The Licensee shall include all data in its Annual Reports.

1. Fish Ladder Monitoring

The Licensee shall, upon completion of the fish passage facilities, continuously monitor the passage of adult fish >12” in length through the fish ladder for the term of the Amended License (Table 1). The Licensee shall identify and enumerate fish migrating through the fish ladder using video, electronic counter and/or adult trapping as determined by the FPWG, to identify species, passage date, and passage time. The Licensee shall provide this information to the FPWG within two business days of a Fish Manager request and shall include all fish passage information (for example, number by species, passage date, and passage time) in its Annual Reports.

2. Fish Migration Delay

The Licensee shall, for the initial five years after the release of adult steelhead or Chinook salmon upstream of the Pelton Round Butte Project, unless otherwise agreed to by the FPWG, implement observational techniques (in addition to radio-telemetry monitoring, as specified in this article) to identify any potential adult fish migration delays in the Project tailrace and bypass reach. The Licensee shall make direct observations on foot, by snorkel and/or through hydroacoustic spot-checks of the Project tailrace and bypass reach at least every two to three days, as determined by the FPWG, during the steelhead and Chinook salmon upstream passage seasons and shall provide this information to the FPWG within two business days of a Fish Manager request. The Licensee shall include all information from these observations in its Annual Reports. The Licensee shall report any indications of fish delay to the FPWG within 24 hours of the observation.

3. Fish Passage Performance

The Licensee shall, for the duration of the three 5-year Performance Assessment Intervals identified in the Adaptive Management program, or until any 5-year Performance Assessment Interval demonstrates that the 97% upstream fish passage Performance Goals have been met for adult steelhead and Chinook salmon, monitor adult steelhead and Chinook salmon passing through the lower Crooked River, Project tailrace, bypass reach, fish ladder, and diversion pool (either as upstream migrants or fish that fall back after passing upstream using the ladder). The Licensee shall calculate the percent passage success for adult steelhead and Chinook salmon as the number of fish that passed upstream through the fish ladder and diversion pool, minus any fish killed during fallback, divided by the number that entered the Project tailrace (after subtracting fish known to have exited the Crooked River or to have spawned successfully below the Project).

The Licensee shall monitor upstream fish passage performance during the initial 5-year Performance Assessment Interval using radio-telemetry. For radio-telemetry, the Licensee shall monitor at least 25 radio-tagged adult salmon (adult steelhead, adult Chinook salmon, or a combination of adult steelhead and Chinook salmon), annually. Should the FPWG make a determination that fewer than 25 radio-tagged adult steelhead and Chinook salmon are expected to enter the Crooked River from downstream radio-tagging studies during any annual monitoring period, the Licensee shall radio tag a sufficient number of adult steelhead and Chinook salmon, if available from a trap located within the Project fish ladder, to make up the anticipated short fall.

The Licensee shall release the radio-tagged fish downstream of the Project tailrace within the Crooked River. The Licensee shall monitor these radio-tagged adult steelhead and Chinook salmon, and any additional adult steelhead and Chinook salmon that are radio-tagged downstream of the Project by other parties, through an array of fixed-station antennae installed, operated, and maintained by the Licensee to record fish movements through the Project tailrace, bypass reach, fish ladder and diversion pool.

The Licensee shall assess the fish passage Performance Objectives during the second and third 5-year Performance Assessment Intervals using external tags and a mark and recapture protocol, or, by agreement of the FPWG, through some other appropriate method.

Once the Licensee has demonstrated, through the results of any of the 5-year Performance Assessment Intervals, that the 97% upstream fish passage Performance Goals for adult steelhead and Chinook salmon have been met, upstream fish passage performance assessment monitoring shall be limited to a one year fish passage performance monitoring assessment every five years to determine if the goals are continuing to be met. If the upstream fish passage Performance Goals for adult steelhead and Chinook salmon fall below the required fish passage Performance Goals, as determined by a one year fish passage performance monitoring assessment, the

Licensee shall resume annual monitoring assessments and Adaptive Management as described in this Amended License.

The Licensee is solely responsible for implementing the upstream fish passage performance monitoring requirements. Costs incurred by the Licensee above an annual amount of \$50,000 solely for implementation of the monitoring required in section 3 of this license article to assess the fish passage performance standards may be off-set by a reduction in the BFAA annual Allocation Percent under the following conditions: 1) available monitoring information must demonstrate that the 90% upstream and downstream fish passage Performance Standards for steelhead and Chinook salmon are being met, and will continue to be met under the proposed BFAA reduction; 2) reductions in the BFAA annual Allocation Percent may be up to, and shall not exceed 5% in any one year; and 3) the Licensee shall provide the FPWG an accounting of the capital, expense, and labor costs incurred on an annual basis for upstream fish passage monitoring, and a determination of the value of the BFAA Allocation Percent reduction in then current dollars, to account for any reduction of the annual BFAA Allocation Percent.

At a minimum, the Licensee shall provide an assessment of the following adult steelhead and Chinook salmon metrics in the applicable Annual Reports: 1) total Project passage; 2) percent passage success, number of fallback fish, and cumulative passage timing of steelhead and Chinook salmon; and, 3) travel time through the bypass reach, fish accumulation (if any) within the bypass reach, variation in rates of ladder passage, and the time elapsed from first entering the Project tailrace until exiting the diversion pool.

For bull trout, the Licensee shall provide in its Annual Reports, an assessment of the number, size, and passage timing (diel and seasonal) of bull trout passing through the fish ladder.

Following each 5-year Performance Assessment Interval the Licensee shall, in that year's Annual Report, provide a 5-year assessment of its status in meeting the fish passage Performance Objectives.

Table 1: Upstream Monitoring Schedule

Monitoring Term	Monitoring Start Time	
	Upon Completion of Fish Passage Facilities	Upon Release of Adult Fish at Pelton Round Butte
Duration of Amended License	Continuous monitoring of fish >12" in length migrating through the fish ladder to identify species, passage date, and passage time.	
Five Years		Implement observational techniques to identify any potential adult fish migration delays in the Project tailrace and bypass reach every other day during the steelhead and Chinook salmon upstream passage seasons.
Duration of Adaptive Management Program		Monitor steelhead and Chinook salmon passing through the lower Crooked River, Project tailrace, bypass reach, fish ladder, and diversion pool, through radio-telemetry or other methods as necessary to assess fish passage Performance Objectives.

Article 6: Downstream Fish Passage Monitoring, Fish Passage Performance, Data Collection, and Reporting

The Licensee shall use accepted scientific practices as approved by NMFS, USFWS, BIA, and ODFW for all data collection and monitoring and shall ensure that data collection standards are being met. The Licensee shall provide raw monitoring data to the FPWG within two business days of a Fish Manager request. The Licensee shall include all data in its Annual Reports.

1. Diurnal, Seasonal, and Inter-Annual Variation

The Licensee shall, for the initial seven years following fish facility construction, or as otherwise agreed to by the FPWG, monitor by acoustic detection, or other appropriate method as agreed to by the FPWG, diurnal, seasonal and inter-annual variation in the relative abundance and timing of juvenile salmonids (particularly smolts) emigrating downstream through Project facilities.

This information is intended to provide the FPWG sufficient information to manage the BFAA for downstream fish passage and to establish migration trends over time. The Licensee shall include annual assessments of juvenile fish relative abundance and emigration timing in its Annual Reports, and shall provide this information to the FPWG within two business days of a Fish Manager request.

2. Fish Passage Performance

The Licensee shall, for the duration of the three 5-year Performance Assessment Intervals required by the Adaptive Management program, monitor at least 25 radio-tagged steelhead smolts annually. The Licensee's monitoring program may utilize radio-tagged juvenile steelhead that are radio-tagged upstream by other parties. Should the FPWG make a determination that less than 25 radio-tagged steelhead smolts will pass through the Project by May 1 of any given year, the Licensee shall tag a sufficient number of smolts to make up the shortfall. The Licensee shall monitor these juvenile steelhead as they enter the diversion pool, enter the turbine penstock or fish ladder, pass over each operable spillway gate, exit the bypass reach, exit the Project tailrace, and exit the lower Crooked River. The Licensee shall include this information in its Annual Reports.

The Licensee shall install, operate, and maintain fixed-station antennae positioned to record these fish movements. Antennae will be capable of differentiating between individual spillway gates, the turbine penstock, tailrace, and bypass reaches, and exit from the Crooked River into Lake Billy Chinook.

Following each 5-year Performance Assessment Interval the Licensee shall, in that year's Annual Report, provide a 5-year assessment of its status in meeting the fish passage Performance Objectives. The Licensee shall calculate percent survival estimates for downstream migrants from aggregated 5-year telemetry data as the number of radio-tagged fish that passed through the Project area to reach Lake Billy Chinook (minus any mortalities) divided by the number that originally entered the Project diversion pool, with possible adjustments to this algorithm dependent on agreement by the FPWG.

Table 2: Downstream Monitoring Schedule

Monitoring Term	Monitoring Requirements to Begin Upon Completion of Fish Passage Facilities
Seven Years	Monitor by acoustic detection, or other appropriate method, diurnal, seasonal and inter-annual variation in the relative abundance and timing of juvenile salmonids (particularly smolts) emigrating downstream through Project facilities.
Duration of Adaptive Management Program	Monitor at least 25 radio-tagged steelhead smolts annually.

Article 7: Fish Passage Performance Objectives

The Licensee shall strive to achieve the following fish passage Performance Objectives through the implementation of the Adaptive Management program. The License shall be considered in compliance with this license article so long as the fish passage Performance Objectives are met, or the Licensee is working towards meeting the fish passage Performance Objectives through implementation of the Adaptive Management program.

Upstream Fish Passage Performance Objectives:

<u>Species</u>	<u>Standard</u>	<u>Goal</u>
Steelhead and Chinook salmon adults	≥90% successful upstream passage of migratory adults, with ≥90% of those adults that do successfully pass the Project doing so by a specified date each year (date to be determined by FPWG through project evaluations). Fish that perish when falling-back after dam passage will be considered unsuccessful migrants.	≥97% successful upstream passage of migratory adults destined for areas above the Project. Fish that perish when falling-back after dam passage will be considered unsuccessful migrants.
Bull trout adults and sub-adults	≥90% successful upstream passage, with the standard assumed to be met if the standard for steelhead adults is met at the Project.	≥97% successful upstream passage, with the goal assumed to be met if the goal for steelhead adults is met at the Project.

Downstream Fish Passage Performance Objectives:

<u>Species</u>	<u>Standard</u>	<u>Goal</u>
Steelhead and Chinook salmon smolts	≥90% passage survival	≥97% passage survival
Bull trout adults and sub-adults	Assumed to be met if the ≥90% passage survival standard for steelhead smolts is met and levels of upstream passage by bull trout >12” at the Project do not exceed 1,000 fish on an annual basis.	Assumed to be met if the ≥97% passage survival goal for steelhead smolts is met.

Following each 5-year Performance Assessment Interval the Licensee shall, in that year's Annual Report, provide a 5-year assessment of its status in meeting the fish passage Performance Objectives.

Article 8: Adaptive Management

The Licensee shall implement this Adaptive Management program for the term of the Amended License to help it meet or exceed the fish passage Performance Objectives.

The Adaptive Management program includes: (1) increases to the BFAA at specified intervals if the fish passage Performance Objectives are not met; (2) two tiers of fish passage improvement measures (Tier 1 and Tier 2) that may be necessary to improve fish passage efficiency or to meet the fish passage Performance Objectives; (3) Monitoring, Data Collection, and Reporting as required in this amended license; and (4) modification of Project turbine intake trash racks if necessary to address adult steelhead turbine mortality.

The Licensee shall implement the Adaptive Management program in three 5-year Performance Assessment Intervals and shall provide an assessment of its status in meeting the fish passage Performance Objectives following each 5-year Performance Assessment Interval. The Licensee shall continue upstream and downstream fish passage monitoring for the duration of the three 5-year Performance Assessment Intervals regardless of whether it has met the fish passage Performance Objectives. If any of the fish passage Performance Goals have not been met by the end of the third 5-year Performance Assessment Interval, additional fish passage improvement measures and related monitoring activities will be determined by the FPWG, and implemented by the Licensee. The Licensee shall include annual monitoring information and 5-year assessments in its Annual Reports.

1. Implementation

The Licensee shall implement additional fish passage measures based on information collected during project monitoring and the status of achieving the fish passage Performance Objectives. Additional measures are organized into two tiers (Tier 1 and Tier 2 - see part 3 of this license article). The Licensee shall implement specific Tier 1 measures at any time as directed by the FPWG (or as required through Dispute Resolution as defined in the Settlement Agreement) in response to Obvious Fish Passage Problems (for example, indications that upstream or downstream fish migrants are not effectively bypassing the Project) or, in response to any 5-year performance assessment if needed to achieve the applicable fish passage Performance Objective.

If additional Tier 1 measures are directed by the FPWG in response to upstream or downstream Obvious Fish Passage Problems, the Licensee shall implement the measures within one year of FPWG approval, unless otherwise agreed to by the FPWG. With the exception of modifications to Project trash racks, implementation of Tier 1 measures will neither re-start nor increase the

then current 5-year Performance Assessment Interval. However, any modifications to Project trash racks will automatically restart the then current 5-year Performance Assessment Interval.

If Tier 1 measures are required to meet an applicable fish passage Performance Objective following a complete 5-year Performance Assessment Interval, the Licensee shall implement the measures as soon as possible but in no case shall implementation take longer than one year unless otherwise agreed to by the FPWG. The next 5-year Performance Assessment Interval shall begin following implementation of the Tier 1 measures. The Licensee shall continue annual monitoring regardless of its status in implementing Tier 1 measures.

The Licensee shall implement Tier 2 measures following the third 5-year Performance Assessment Interval if the fish passage Performance Goals have not been met.

2. Required Actions

Following each 5-year Performance Assessment Interval the Licensee shall, in that year's Annual Report, provide a 5-year assessment of its status in meeting the fish passage Performance Objectives. The assessment will rely upon information collected annually from upstream and downstream fish passage monitoring.

2.1 1st 5-year Performance Assessment Interval: The Licensee shall, following the first 5-year Performance Assessment Interval, take actions in one of the following categories based on the point estimate of the aggregated annual data:

- 97 percent or greater passage effectiveness or survival. No additional Tier 1 measures and no increase to the BFAA Allocation Percent will occur at this time.

The Licensee may, at its discretion, develop a study of BFAA effectiveness, for approval by the FPWG, to determine whether the BFAA has been over-allocated (less water is needed to meet fish passage Performance Goals or, for resident species, to ensure safe, timely, and effective passage). If it is determined by the FPWG that the BFAA is over-allocated, the Allocation Percent will be reduced consistent with the level of over allocation, upon agreement of the FPWG.

- 90 percent or greater, but less than 97 percent passage effectiveness or survival. The Licensee shall implement applicable Tier 1 measures, as required by the FPWG, in an effort to achieve the Fish Passage Performance Standards.
- Less than 90 percent passage effectiveness or survival. The Licensee shall implement applicable Tier 1 measures, as required by the FPWG, and shall increase the BFAA Allocation Percent to 35%.

- If more than 1,000 bull trout use the ladder annually, and measured performance of downstream steelhead smolt survival is less than 97%, the Licensees shall implement Tier 1 measures as required by the FPWG.

2.2 2nd 5-year Performance Assessment Interval: The Licensee shall, following the second 5-year Performance Assessment Interval, take actions in one of the following categories based on the point estimate of the aggregated annual data:

- 97 percent or greater passage effectiveness or survival. No additional Tier 1 measures and no increase to the BFAA Allocation Percent will occur at this time.

The Licensee may, at its discretion, develop a study of BFAA effectiveness over a range of flow conditions, for approval by the FPWG, to determine whether the BFAA has been over-allocated (less water is needed to meet fish passage Performance Goals or, for resident species, to ensure safe, timely, and effective passage). If it is determined by the FPWG that the BFAA is over-allocated, the Allocation Percent will be reduced consistent with the level of over allocation, upon agreement of the FPWG.

- 90 percent or greater, but less than 97 percent passage effectiveness or survival. The Licensee shall implement all remaining and applicable Tier 1 measures, as required by the FPWG, in an effort to achieve the Fish Passage Performance Standards.
- Less than 90 percent passage effectiveness or survival. The Licensee shall implement all remaining and applicable Tier 1 measures, as required by the FPWG, and shall increase the fisheries BFAA Allocation Percent to 45%.
- If more than 1,000 bull trout use the ladder annually, and measured performance of downstream steelhead smolt survival is less than 97%, the Licensees shall implement Tier 1 measures as required by the FPWG.

2.3 3rd 5-year Performance Assessment Interval: The Licensee shall, following the third 5-year Performance Assessment Interval, take actions in one of the following categories based on the point estimate of the aggregated annual data:

- If all Fish Passage Performance Goals have been met: No additional Tier 1 measures and no increase to the BFAA Allocation Percent will occur at this time. The Licensee shall continue monitoring fish passage for the term of the Amended License and shall provide summaries of this monitoring information, and other salmonid data that may be available from other sources within the project area, annually.

The Licensee may, at its discretion, develop a study of BFAA effectiveness over a range of flow conditions, for approval by the FPWG, to determine whether the BFAA has been

over-allocated (less water is needed to meet Fish Passage Performance Goals or, for resident species, to ensure safe, timely and effective passage). If it is determined by the FPWG that the BFAA is over-allocated, the Allocation Percent will be reduced consistent with the level of over allocation, upon agreement of the FPWG.

- If one or more of the Fish Passage Performance Goals have not been met: The Licensee shall meet with the FPWG as soon as possible, but by no later than February 1 of the next year, to determine: (1) whether implementation of any remaining Tier 1 measures is likely to meet the applicable Goal; or (2) whether major improvements are required (a “Tier 2 Determination”).
 - If the FPWG determines that additional Tier 1 measures are warranted, the Licensee shall implement the relevant measures as soon as possible and shall resume monitoring as described for upstream and downstream fish passage for a period of 3 years. Following this 3-year monitoring cycle, the Licensee shall meet again with the FPWG to determine whether the applicable Goals have been met, or whether additional major improvements are required.
 - If the FPWG determines that Tier 2 major improvements are required, the Licensee shall, in consultation with and subject to the approval of the FPWG, identify specific Tier 2 measures and a necessary monitoring and evaluation plan for implementation. The Licensee shall, within 90 days of this determination, propose an action plan and schedule for implementing the Tier 2 measures. After review and approval by the FPWG, the Licensee shall file the action plan with the Commission for its approval.
 - The Commission reserves the right to require changes to any Tier 2 measure. Any such changes required by the Commission may also require additional approvals by the appropriate Fish Agencies pursuant to their statutory authorities. The Licensee shall implement the Tier 2 measures and the monitoring and evaluation plan upon Commission approval.
- If more than 1,000 bull trout use the ladder annually, and measured performance of downstream steelhead smolt survival is less than 97%, the Licensees shall implement additional measures as required by the FPWG.

3. Tier 1 Measures

Upstream Passage Measures:

- Remove peninsula that currently separates the tailrace from the bypass channel in order to reduce unacceptable adult delay at the powerhouse.
- Construct structures in the bypass channel to concentrate flows and provide necessary cues to help adult migrants reach and find the fish ladder entrance.
- Move rocks and boulders in the bypass reach downstream of the fish ladder entrance to provide for adult passage in most flow conditions.
- Other enhancements to the bypass channel.
- Adjustments or minor (“fit and finish”) modifications to the ladder to optimize performance.
- Install and operate behavioral deterrents to fish movement toward and into the Project intake.
- Modify spill gate operations.
- Other measures proposed by the FPWG, and approved by the Licensee.

Downstream Passage Measures:

- Install or modify flow guidance devices on the downstream face of the dam to concentrate flow or otherwise improve smolt survival.
- Other enhancements to the bypass channel.
- Install and operate behavioral deterrents, which could include experimental technologies, to guide fish away from the Project intake.
- Other physical modifications that may be suggested by the FPWG, and agreed to by the Licensee, in lieu of additional BFAA water.
- Predation control in the impoundment; the need for which will be determined by periodic assessments as agreed to by the FPWG.
- Modify spill gate operations.
- Other measures proposed by the FPWG, and approved by the Licensee.

4. Trash Rack Modifications

If the adult steelhead or the downstream bull trout fish passage Performance Standard is not likely to be met due to high turbine mortality in any two of three years of a 5-year assessment interval, the Licensee shall modify its trash racks in an effort to reduce adult turbine mortality, unless the FPWG decides otherwise or identifies an alternative solution. The following guidelines will govern trash rack modifications:

- New racks will be located in the existing stop-log slots and will be supplemental to the existing racks unless otherwise agreed to by the Licensee.
- New racks will only be deployed seasonally, during the applicable adult migrations, as determined by FPWG.
- The then current Performance Assessment Interval will restart once the new trash racks are installed.

5. Tier 2 Measures

- Increase water allocated to the BFAA.
- Modify powerhouse turbines to include a more fish friendly configuration.
- Install training walls between the fish ladder exit and the turbine intake.
- Extend the fish ladder upstream into the forebay.
- Install fish barriers or deterrents in the trailrace.
- Install experimental devices in the Project diversion pool to facilitate guidance of fish downstream past the project.
- Other measures proposed by the FPWG, and approved by the Licensee.

The Licensee may, at any time, propose to implement Tier 2 measures. After review and approval by the FPWG, the Licensee shall develop a plan and schedule in consultation with the FPWG and shall implement the proposed measure following all required approvals. Implementation of Tier 2 measures will be followed by a continuation of the Adaptive Management program described above.

Article 9: Annual Report

The Licensee shall file Annual Reports for the term of this Amended License. The Licensee shall, by December 15 annually, provide a draft Annual Report to the FPWG and provide at least 30-days for review and approval. The Annual Report will address all activities within that calendar year and will include: (1) Operations and Maintenance (O&M) relating to the fish passage facilities and planned O&M for the upcoming year; (2) annual BFAA Allocation Plan; (3) Monitoring and Evaluation (M&E) relating to the Adaptive Management program and the Fish Passage and Protection Plan; (4) description of planned monitoring activities for the upcoming year; (5) status of the Adaptive Management program and related measures; (6) the 5-year assessments required by the Adaptive Management program; and (7) any proposed changes to the Fish Passage and Protection Plan.

The Licensee shall file Annual Reports with the Commission by March 1. When filing Annual Reports with the Commission, the Licensee shall include documentation of consultation; copies of comments and recommendations; and specific descriptions of how comments and recommendations from FPWG members have been accommodated. If the Licensee does not adopt a recommendation, the filing shall include its reasons based on Project specific information. If the Licensee files an Annual Report without obtaining concurrence from the FPWG, the Licensee shall include specific reasons for doing so.

The Licensee shall implement planned O&M measures, requests for releases of BFAA accumulated water, M&E measures, and Tier 1 and Tier 2 measures as described in its Annual Reports.

Article 10: Inspection and Notice

The Licensee shall permit members of the Fish Passage Work Group, at any reasonable time, access to, through, and across Project lands and works for the purpose of inspecting fish passage facilities and related records pertaining to the operation of the Project and implementation of the Amended License. The Licensee shall require reasonable notice of such inspections and shall establish reasonable safety and security procedures for parties engaged in such inspections.

Article 11: Abandonment of Anadromous Fish Reintroduction

In the event that the NMFS, U.S. Fish and Wildlife Service, and ODFW, each notify the Commission that all efforts to re-introduce anadromous fish to the Upper Deschutes River Sub-basin have failed and have been discontinued, the Licensee's responsibilities to achieve steelhead and Chinook salmon performance standards shall cease and any associated monitoring and evaluation responsibilities shall terminate. The Licensee shall continue to operate the ladder for use by native resident fish, including bull trout, conduct associated monitoring for native resident fish, and provide water credits to the Bypass Flow Accrual Account for purposes of providing an

ongoing benefit to native resident fish. The allocation shall be 25% of the increased hydroelectric potential resulting from the new diversion pool elevation.

The Licensee may, at its discretion, develop a study of BFAA effectiveness over a range of flow conditions, for approval by the FPWG, to determine whether the BFAA has been over-allocated (less water is needed) to meet fish passage needs of resident native fish. If it is determined by the FPWG that the BFAA is over-allocated, the allocation rate will be reduced consistent with the level of over allocation, upon agreement of the FPWG.

Article 12: Revised Exhibits

Within 90 days of the completion of any construction of facilities, modification of project boundaries, or any other action required by this license that results in changes to Exhibits A, F and G, the Licensee shall file for Commission approval revised Exhibits A, F, and G, as appropriate, to show those project facilities and lands as built or modified. The exhibits shall have sufficient detail to adequately delineate the relative location of project features. The Licensee shall submit six copies to the Commission, one copy to the Commission's Portland Regional Engineer, and one to the Director, Division of Hydropower Administration and Compliance.

Article 13: Review and Approval of Final Plans and Specifications

At least 60 days before starting any license-related construction activities, the Licensee shall submit one copy to the Division of Dam Safety and Inspections, Portland Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of a supporting design report and final contract plans and specifications. Construction may not commence until authorized by the Regional Engineer.

Article 14: Quality Control and Inspection Program

At least 60 days before starting any license-related construction activities, the Licensee shall submit one copy to the Division of Dam Safety and Inspections, Portland Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the Quality Control and Inspection Program (QCIP) for the Commission's review and approval. The QCIP shall include a sediment and erosion control plan.

Article 15: Cofferdam Construction Drawings

Before starting construction, the Licensee shall review and approve the design of contractor designed cofferdams and deep excavations. At least 30 days before starting construction of the cofferdams, the Licensee shall submit one copy to the Division of Dam Safety and Inspections, Portland Regional Engineer and two copies to the Commission (one of these copies shall be a

courtesy copy to the Director, Division of Dam Safety and Inspections), of the approved cofferdam construction drawings and specifications and the letters of approval.

Article 16: Temporary Emergency Action Plan

At least 60 days before starting construction, the Licensee shall submit one copy to the Division of Dam Safety and Inspections, Portland Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the Temporary Emergency Action Plan (TEAP) for the Commission's review and approval. The TEAP shall describe emergency procedures in case failure of a cofferdam, large sediment control structure, or any other water retaining structure could endanger construction workers or the public. The TEAP shall include a notification list of emergency response agencies, a plan drawing of the proposed cofferdam arrangement, the location of safety devices and escape routes, and a brief description of testing procedures.

IN WITNESS WHEREOF the Parties have entered into this Agreement as of the date first above written.

DESCHUTES VALLEY WATER DISTRICT

Date September 23, 2015

By: [Signature]

Title: Chairman

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

By: _____

Title: _____

US DEPARTMENT OF COMMERCE,
NATIONAL MARINE FISHERIES SERVICE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US
BUREAU OF INDIAN AFFAIRS

By: _____

Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US
BUREAU OF LAND MANAGEMENT

By: _____

Title: _____

TROUT UNLIMITED

By: _____

Title: _____

IN WITNESS WHEREOF the Parties have entered into this Agreement as of the date first above written.

DESCHUTES VALLEY WATER DISTRICT

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

By: _____

Title: _____

US DEPARTMENT OF COMMERCE,
NATIONAL MARINE FISHERIES SERVICE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US
BUREAU OF INDIAN AFFAIRS

By:  Stanley Speaks

Title: Northwest Regional Director

SEP 21 2015

OREGON DEPARTMENT OF FISH AND WILDLIFE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US
BUREAU OF LAND MANAGEMENT

By: _____

Title: _____

TROUT UNLIMITED

By: _____

Title: _____

IN WITNESS WHEREOF the Parties have entered into this Agreement as of the date first above written.

DESCHUTES VALLEY WATER DISTRICT

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

By: _____

Title: _____

US DEPARTMENT OF COMMERCE,
NATIONAL MARINE FISHERIES SERVICE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

By: _____

Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

By: Michelle Melwan

Title: Field Mgr, Deschutes RA,

Acting

TROUT UNLIMITED

By: _____

Title: _____

IN WITNESS WHEREOF the Parties have entered into this Agreement as of the date first above written.

DESCHUTES VALLEY WATER DISTRICT

By: _____
Title: _____

US DEPARTMENT OF COMMERCE,
NATIONAL MARINE FISHERIES SERVICE

By: _____
Title: _____

OREGON DEPARTMENT OF FISH AND
WILDLIFE

By: Curtis E. Miller
Title: Director

TROUT UNLIMITED

By: _____
Title: _____

US DEPARTMENT OF INTERIOR, FISH AND
WILDLIFE SERVICE

By: _____
Title: _____

US DEPARTMENT OF INTERIOR, US
BUREAU OF INDIAN AFFAIRS

By: _____
Title: _____

US DEPARTMENT OF INTERIOR, US
BUREAU OF LAND MANAGEMENT

By: _____
Title: _____

IN WITNESS WHEREOF the Parties have entered into this Agreement as of the date first above written.

DESCHUTES VALLEY WATER DISTRICT

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

By: _____

Title: _____

US DEPARTMENT OF COMMERCE,
NATIONAL MARINE FISHERIES SERVICE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

By: _____

Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

By: _____

Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

By: _____

Title: _____

TROUT UNLIMITED

September 25, 2015

By: Chander Senan

Title: OR Water Policy Advisor

IN WITNESS WHEREOF the Parties have entered into this Agreement as of the date first above written.

DESCHUTES VALLEY WATER DISTRICT

By: _____
Title: _____

US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE

September 22, 2015
By: [Signature]
Title: Acting State Supervisor

US DEPARTMENT OF COMMERCE,
NATIONAL MARINE FISHERIES SERVICE

By: _____
Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF INDIAN AFFAIRS

By: _____
Title: _____

OREGON DEPARTMENT OF FISH AND WILDLIFE

By: _____
Title: _____

US DEPARTMENT OF INTERIOR, US BUREAU OF LAND MANAGEMENT

By: _____
Title: _____

TROUT UNLIMITED

By: _____
Title: _____

Appendix B

Opal Springs Fish Passage and Protection Plan



Opal Springs Fish Passage and Protection Plan

Appendix B to August 2011 Settlement Agreement for Fish
Passage at Opal Springs Hydroelectric Project (FERC No. 5891)

September, 2015

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ACRONYMS

BFAA	Bypass Flow Accrual Account
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BoR	U.S. Bureau of Reclamation
cfs	Cubic feet per second
CRWC	Crooked River Watershed Council
CTWS	Confederated Tribes of the Warm Springs Reservation of Oregon
DIDSON	Dual Frequency Identification Sonar
DVWD	Deschutes Valley Water District
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FPWG	Fish Passage Work Group
FWS	U.S. Fish and Wildlife Service
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organization
NOAA	U.S. National Marine Fisheries Service
ODFW	Oregon Department of Fish and Wildlife
PGE	Portland General Electric
PLA	Proposed License Article
PRB	Pelton Round Butte
CMP	Corrugated Metal Pipe
SA	Settlement Agreement
SWW	Selective Water Withdrawal Facility
USGS	U.S. Geological Survey
WSEL	Water Surface Elevation

DEFINITIONS

Accrual Rate (<i>Arate</i>)	Percentage of instantaneous turbine flow allocated to the BFAA, under all flow conditions up to the maximum controlled hydraulic capacity of the Project. The maximum controlled hydraulic capacity of the Project is initially 1,913 cfs [the sum of hydraulic capacity at new head (estimated at 1,600 cfs), the license required bypass flow (50 cfs), and spring water and ground water accreting into the bypass reach (263 cfs)]. Water credits will not accrue at total river discharge greater than the maximum controlled hydraulic capacity of the Project.
Allocation Percent	Percentage of increased hydroelectric potential to be allocated to the BFAA under this plan's adaptive management provisions.
Agencies	US Department of Interior, Fish and Wildlife Service (USFWS); US Department of Commerce, National Marine Fisheries Service (NMFS); US Department of Interior, Bureau of Indian Affairs (BIA); US Department of Interior, Bureau of Land Management BLM; and, Oregon Department of Fish and Wildlife (ODFW); Confederated Tribes of the Warm Springs Reservation of Oregon (CTWS), provided that the CTWS is a signatory to the Settlement Agreement.
Consultation or Consult	To obtain the views and attempt to reach consensus among the parties whenever the Opal Springs Fish Passage and Protection Plan, the proposed License Articles (Appendix A) and/or the Amended License requires the DVWD to consult. "Consultation" shall not mean consultation under Section 7 of the Endangered Species Act or other federal law unless specifically required.
Critical Circumstance	A situation in which load on the generating unit drops, as a result of BFAA releases, to less than that which is necessary to avoid risks of equipment damage or excessive wear as a result of reducing flows through the intake.
Effective Date	Effective Date of the Settlement Agreement, as provided for under Section 2.8 of the Opal Springs Hydroelectric Project Fish Passage Settlement Agreement
Fish Agency	NMFS, USFWS, BIA, ODFW and CTWS (provided that the CTWS is a signatory to the Settlement Agreement).
Fish Managers	ODFW and CTWS (provided that the CTWS is a signatory to the Settlement Agreement).

Licensee	DVWD and its successors
Increased Hydroelectric Potential (Δp)	Increase in hydroelectric potential resulting from increasing the generating head of the Project, where Δp is adjusted to account for the change in hydroelectric potential of water, such that allocation of 100% to BFAA could not result in a net loss of hydroelectric generation potential from current operations
Performance Assessment Interval	5-year interval identified within the Adaptive Management Program for accumulating annual information into a robust data set whereby point estimates are intended to meet a 95% confidence interval for that 5-year period. Changes in BFAA allocations will be based on the point estimate generated during each Performance Assessment Interval. A Performance Assessment Interval will restart every five years or in response to trash rack modifications.
Project	Opal Springs Hydroelectric Project (FERC No. 5891)
Tier 2 Determination	A determination made by the FPWG, after completion of all 3, 5-year Performance Assessment Intervals and completion of all applicable Tier 1 physical and operational modifications identified in this Plan, regarding the need for implementation of Tier 2 measures if fish passage Performance Goals established for the Project have not been met and cannot be met without additional major improvements.
Performance Objectives	Suite of indices to measure Project performance.
Obvious Fish Passage Problems	A qualitative assessment for purposes of determining immediate need to implement Tier 1 modifications. Obvious Fish Passage Problems include indications that upstream migrants are searching for but having trouble finding and successfully utilizing the fish ladder in a timely manner. It may also include indications that downstream migrants are having trouble successfully utilizing downstream passage alternatives.

1 INTRODUCTION AND BACKGROUND

The Opal Springs Hydroelectric Project (Project), located south-west of the town of Culver in Jefferson County on the Crooked River in Central Oregon presents a fish passage barrier for extant populations of native redband trout and migratory bull trout. Anadromous fish have been extirpated for over 40 years above the downstream Pelton Round Butte Hydroelectric Project, FERC No. 2030 (PRB Project); therefore, fish passage was not a requirement of the 1982 license granted to the Deschutes Valley Water District (DVWD, or Licensee) to construct and operate the Opal Springs Hydroelectric Project, FERC No. 5891 (Project), located near River Mile (RM) 0.7 of the Crooked River. The Project's license expires in 2032.

With the re-licensing of the PRB Project, restoration of anadromous fish to the upper Deschutes basin is currently underway; there is a need to systematically address fish passage barriers within the three major tributary systems in the upper basin. A mechanism to reconnect fish migration between the upper and lower Deschutes basins has been provided at the PRB Project; the Selective Water Withdrawal (SWW) facility is modifying surface currents in the reservoir above Round Butte Dam to attract, collect, and sort outward migrating fish for transportation below a total of three dams on the lower Deschutes River. The facility commenced operation in December of 2009. A fish trap-and-haul operation, already in place below the lowest dam, will transport returning adults above these dams.

Steelhead and Chinook fry from disease-free adults are reared through a propagation program run by the Round Butte Hatchery and Confederated Tribes of the Warm Springs Reservation of Oregon (CTWS), in collaboration with state and private hatcheries in the region. Beginning in 2007 with steelhead plantings in Whychus Creek, both steelhead and more recently Chinook fry are being reintroduced to all the major drainages above Lake Billy Chinook, including the Crooked River. More than 400,000 steelhead fry, and more than 100,000 Chinook fry will continue to be planted in the Crooked River each year for the foreseeable future. Additionally, approximately 7,000 smolts of each species will be released each year. As of June, 2011, 70 spring Chinook adults had been captured in the Pelton upstream trap. Of these, 19 were from the 17,500 Chinook smolts that were moved directly to the lower Deschutes River and released in 2009. These fish have not been passed upstream over the PRB Project dams, but have been moved to holding ponds pending a decision on whether to pass them upstream. It is likely that some spring Chinook jacks from 2009 smolt releases will also arrive at the Pelton trap in June 2011, and some returning steelhead will arrive in the fall and winter of 2011. The objective of the Opal Springs Fish Passage and Protection Plan (Plan) is to provide upstream and downstream fish passage at the Project for resident native species and any adult fish passed above the PRB Project that choose to migrate up the Crooked River.

The upper basin habitat available to migrating adult salmon and steelhead and to resident fish species is also being improved, particularly in spawning areas, by increasing stream complexity, enhancing stream function, and restoring riparian vegetation. Article 37 of the Opal Springs license provides for hatchery production at the Project. In 2008 DVWD agreed to direct this production towards the rearing of steelhead smolts to be used in the reintroduction program.

Five barriers to fish passage in the lower Crooked River subbasin (Figure 1) are being addressed systematically by the Lower Crooked River Fish Passage and Protection Group, a coalition of agencies and other interested organizations that include the ODFW, USFWS, NOAA, CTWS, CRWC, and others. Passage structures have been installed at two diversion dams, Crooked River Central, and People's Irrigation District reconnecting 50.4 miles of river. In the next biennium, remaining passage barriers in the lower Crooked River subbasin are expected to be addressed.

The passage barrier posed by the Project is significant, since it blocks access by migrating fish to the entire lower Crooked River subbasin. Providing passage around the dam at Opal Springs will provide access to approximately 108 miles of upstream habitat, including those reconnected by the improvements at the Crooked River Central and Peoples' Irrigation District dams.

Parties to this Settlement Agreement (Agreement) have agreed on an approach to developing and implementing fish passage at the Project. With respect to fish passage measures, the Agreement provides for the following:

1. a fish ladder with a hydraulic capacity of up to 50 cfs (subject to final design);
2. a pool raise that includes one or more control weirs to help shape downstream flows;
3. a water credit accounting system known as the Bypass Flow Accrual Account (BFAA) that will provide for additional water, when needed, to the bypass reach to assist upstream fish passage and/or to assist downstream fish passage;
4. Monitoring and Evaluation (M&E) relating to the Adaptive Management Program and this Fish Passage and Protection Plan; and,
5. a tiered adaptive management framework for reviewing fish passage monitoring data and implementing additional measures, if needed.

A Fish Passage Work Group (FPWG), comprised of Parties to the Agreement, will be established to cooperate with the DVWD on the implementation of the amended license envisioned by the Agreement.

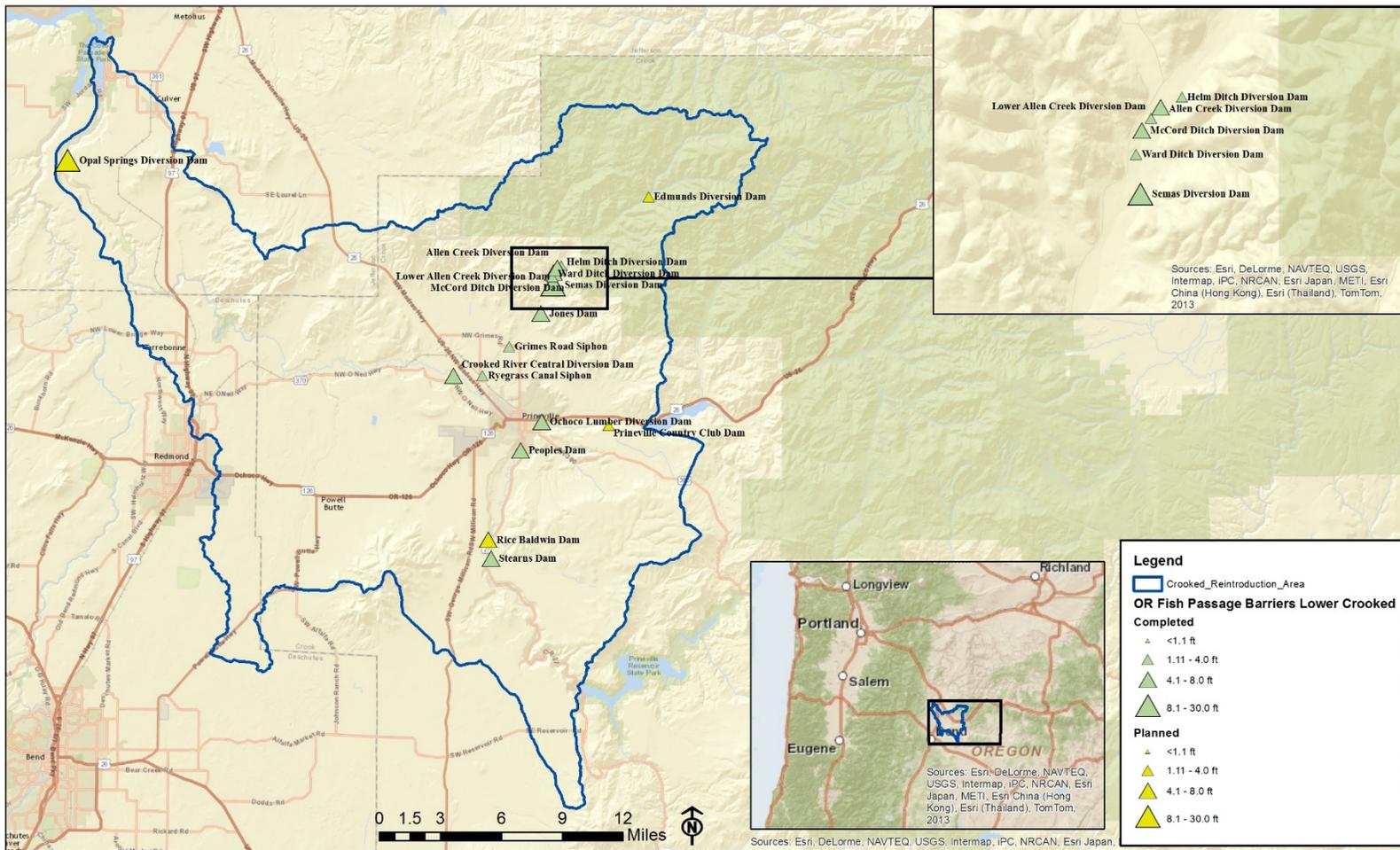


Figure 1. Map of the Lower Crooked River Watershed, featuring barriers to anadromous fish migration, showing that provision of passage around the facility at Opal Springs is crucial for providing access by fish to the entire sub-basin (source, CRWC, 2015).

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2 FISH PASSAGE DEVELOPMENT PLAN

The Proposed License Articles described in Appendix A to the Settlement Agreement (PLAs) submitted to FERC as part of the Application to Amend License require that DVWD implement this Fish Passage and Protection Plan (Appendix B to the Settlement Agreement). This plan is intended to supplement the PLAs, which cover:

1. Opal Springs Fish Passage and Protection Plan
2. Fish Passage Work Group
3. Fish Passage Facilities
4. Upstream Passage Monitoring, Data Collection and Reporting
5. Downstream Passage Monitoring, Data Collection and Reporting
6. Bypass Flow Accrual Account
7. Adaptive Management
8. Annual Report and Implementation
9. Inspection and Notice
10. Abandonment of Anadromous Fish Reintroduction
11. Revised Exhibits
12. Review and Approval of Final Plans and Specifications
13. Quality Control and Inspection Program
14. Cofferdam Construction Drawings
15. Temporary Emergency Action Plan

The anticipated FERC Order Amending License and associated license conditions will set forth the Licensee's enforceable obligations. However, nothing in the FERC documents will carry any legal obligation to similarly compel other Parties to act in a specific manner with respect to ensuring fish passage at the Project is a success. Thus, this Plan is intended to capture responsibilities of all Parties, and describe more fully those aspects of the Plan that are reliant on activities and responsibilities that fall outside of FERC jurisdiction.

This Plan is intended to be consistent with the PLAs. To the extent that Parties perceive a conflict between language in this Plan and the PLAs, the PLAs will be the guiding document until issuance of the Amended License. To the extent that the Amended License may conflict with the Plan the Amended License will be the guiding document.

2.1. Design goals of the fish passage and protection facilities

Agencies, Fish Managers, and other interested parties have identified incorporating upstream passage facilities at the Project as a priority to: 1) provide passage for migratory bull trout, which are a Federally listed Endangered Species Act (ESA) threatened species, into the Crooked River subbasin; and 2) provide passage for adult anadromous summer steelhead (ESA Threatened) and

spring Chinook, consistent with the Oregon Department of Fish and Wildlife (ODFW) / CTWS reintroduction plan (ODFW and CTWS 2008) at the downstream PRB Project. Additionally, the facilities will reconnect populations of native redband trout upstream and downstream of the Project. The design goal for the ladder is to provide safe, timely, effective passage of adult salmonids, including redband trout and bull trout. Construction of passage and other new structures at the Project will be monitored for consistency with design criteria and water quality rules.

The design of the upstream passage facilities, the civil engineering aspects of a pool raise, and a BFAA water credit system for providing targeted delivery of augmented bypass flow from the water bank are being developed to provide safe, timely, and effective passage for downstream migrating smolts at the Project. There are no conventional fish screens being contemplated for the powerhouse intake as part of the proposed license amendment for the Project. The BFAA water bank will also provide additional water, when needed, to the bypass reach to facilitate upstream passage.

Thus the scope of the fish passage and protection measures includes both downstream passage and upstream passage. The adaptive management framework identified in Section 5 of this plan will allow the FPWG to respond to new information regarding both upstream and downstream passage.

2.2. Description of Project Modifications

2.2.1. Fish Ladder Entrance

The ladder is designed to pass both salmon and trout. An entrance approximately 1 foot 10 inches wide by 3 feet high was selected to deliver 30 cfs with 12 inches of differential. The ladder entrance was located based on field observations with the resource agencies and flow testing that occurred in late August 2012. During testing, the spill flow varied from approximately 30 cfs to 1,030.0 cfs, which encompasses the 95 to 5 percent exceedance streamflow range for bypass flows.

The ladder entrance is positioned to take advantage of a back eddy pool that forms on the downstream side of a large boulder located on the right bank adjacent to the stilling basin. It is anticipated that spill flows will create a whitewater shear zone near the boulder that will guide fish moving upstream from the stilling basin tailout over the short distance to the fishway entrance. The maximum length of this whitewater shear zone was estimated to be between approximately 5 to 40 feet long for Chute No. 4 flow rates ranging from 20 cfs to 300 cfs. The water jet discharging from the fish ladder entrance will intersect the Chute No. 4 flows at a large angle with the resultant velocity vectors directed towards the stilling basin tailout and downstream boulder field.

2.2.2. Fish Ladder

The Project includes construction of a vertical slot fish ladder on the right abutment of Opal Springs Dam to provide volitional upstream passage of fish. The ladder will include six key features:

- Fish ladder entrance
- Attraction spill
- Pools and transport channel
- Exit structure
- Temporary adult trap
- Other provisions for monitoring and evaluation

The fish ladder will accommodate a static forebay water surface elevation that may range from elevation 2007.21 to 2010.21ft. NGVD 29¹. Given the tailwater surface elevation at 50 cfs of 1980.8, the maximum hydraulic differential between headwater and tailwater will be approximately 31.2 feet. The minimum hydraulic differential will be approximately 28.2 feet. As a result, 42 pools with hydraulic drops of 9 inches each are required.

2.2.3. Exit Structure

The fish ladder will have five exit pools located within the forebay to accommodate the full range of potential static forebay water surface elevations from 2007.21 to 2010.21ft. NGVD 29 feet in 3-inch increments, resulting in 13 discrete setpoints. A hybrid exit structure was developed to accommodate two different types of exit-pool configurations. This approach includes both side exit gates (orifice flow) and an end exit slot (open-channel flow) to provide flexibility during testing of the hydro-mechanical equipment and operation of the fishway. Each configuration (set of side gates and single end gate) is designed to independently accommodate the full range of forebay elevations.

¹ All elevations are reported in National Geodetic Vertical Datum of 1929 (NGVD 29), except construction drawings that are in a local project datum (LPD), which is greater than NGVD 29 by 1.79 feet. For purposes of keeping the construction and engineering simple, this LPD is used in an engineering context.

The OSHP is authorized to operate at a maximum pool elevation of 2,005 feet NGVD 29; surveys conducted in 2009 by DVWD indicate that the current elevation of the impoundment is at 2,004.21 feet. The proposal is to increase the impoundment elevation by 6 feet, making the new maximum operating elevation 2,010.21 NGVD 29 (2,012 feet LPD).

2.2.4. **Attraction Spill**

A piped auxiliary water supply system will not be provided. The minimum bypass flow of 50 cfs will be supplied by the 30 cfs fish ladder flow and 20 cfs of spill flow, which may be provided from either Gates No. 1 or 4. It is anticipated that the spill flow will normally be supplied by Gate No. 4 adjacent to the fish ladder; however, this spill flow may also be provided by Gate No. 1 to enhance downstream fish passage on a seasonal basis.

2.2.5. **Temporary Adult Trap**

A temporary adult trap will be provided as part of the M&E requirements to assess the performance of the fish passage facilities and demonstrate that the requirements of the settlement agreement have been met. The temporary adult trap will be an in-channel adult fish trap located upstream of a transport channel and before the five exit pools. The trap will consist of a trapping mechanism, holding pool, upstream diffuser and a brail with hopper. The trapping mechanism will be an in-ladder removable vee-trap with brail.

2.2.6. **Pneumatic Crest Gates**

The increased pool elevation would be established and controlled by 4 inflatable weirs (or “gates”) that span the crest of the dam. These gates would provide alternate passage routes to the powerhouse intake, which some fish would use as they migrate downstream through the Project area. Both the fish ladder and gate(s) have been designed improve upstream and downstream passage conditions for migratory fish.

The four gates are provided as follows, listed from left to right looking downstream:

- Gate No. 1 – BFAA releases and primary gate for downstream fish passage
- Gate No. 2 – BFAA releases and downstream fish passage
- Gate No. 3 – Auxiliary spillway for flood releases (split into Bay 3a and Bay 3b)
- Gate No. 4 – BFAA releases, downstream fish passage, attraction flow adjacent to the fish ladder entrance, and primary gate for instream flow releases

Table 1 below summarizes the gate specifications:

Table 1: Gate Summary –Pool Raise and Fish Passage Improvements (note: elevations are in NGVD '29, which convert to the Local Project Datum (LPD) with a conversion of (+1.79))

Gate No.	Gate Dimensions (H x W, feet)	Maximum Forebay (WSEL = 2010.21.0)				Minimum Forebay (WSEL = 2007.21.0)			
		Maximum Flow (cfs)	Water Depth		Velocity at Critical (fps)	Maximum Flow (cfs)	Water Depth		Velocity at Critical (fps)
			Total Head (ft)	Critical Depth (ft)			Total Head (ft)	Critical Depth (ft)	
1	6 x 8	287	6	3.8	11.1	106	3.0	1.8	7.7
2	9 x 12	727	9	5.4	13.2	419	6.0	3.6	10.8
3	2 each at 9 x 67.25	9,295	9	5.4	13.2	5,106	6.0	3.6	10.8
4	9 x 12	791	9	5.7	13.6	442	6.0	3.7	11.0

Fish bypass releases would enter a stilling basin adjacent to the proposed fish ladder entrance (under Alternative A). Detailed protocols for gate operations and for utilizing BFAA releases to facilitate fish passage will be developed by the Fish Passage Working Group (FPWG) following Project construction as part of the adaptive management effort. Facilities for Monitoring and Evaluation

The fish ladder will include other provisions for fish M&E, including designated space, conduit, and electrical and instrumentation and control (I&C) connections for a future fish counting installation (designed by the District) and the possible future addition of passive integrated transponder (PIT)-tag detection devices. It is anticipated that fish counting and identification will be via a VAKI Riverwatcher system with digital video camera. This equipment would be placed at the downstream end of the transport channel. A conduit embedded in the sides and invert of the transport channel and/or other provisions will be made to facilitate future installation of a PIT-tag detector.

2.3. Plan implementation and responsibilities

This section identifies and describes how fish passage will be implemented at the Project, including the role of the Fish Managers, and the DVWD.

2.3.1. Fish Passage Workgroup (FPWG)

The purpose of the Fish Passage Work Group (FPWG) is to advise the Licensee on fish passage issues as specified in the Amended Project License for the Opal Springs Hydroelectric Project (Federal Energy Regulatory Commission Project No. 5891).

2.3.1.1. *Membership and Participation*

Membership of the FPWG may be amended based on the consensus of the group, but will include signatories to the Settlement Agreement, including:

- Deschutes Valley Water District (“DVWD” or “Licensee”)
- U.S. Department of Interior, U.S. Fish and Wildlife Service (“USFWS”)
- U.S. Department of Commerce, National Marine Fisheries Service (“NMFS”)
- U.S. Department of Interior, Bureau of Indian Affairs (“BIA”)
- Oregon Department of Fish and Wildlife (“ODFW”)
- Confederated Tribes of the Warm Springs Reservation of Oregon (“CTWS” provided that the CTWS is a signatory to the Settlement Agreement)
- Trout Unlimited (“TU”)

The CTWS may participate in the FPWG as a non-voting member if they are not a signatory to the Settlement Agreement. The U.S. Bureau of Land Management (BLM), and entities that are not signatories to the settlement agreement, including the Oregon Watershed Enhancement Board (OWEB), the Crooked River Watershed Council (CRWC) may participate in the FPWG as non-voting members with the approval of the FPWG. The DVWD will maintain a distribution and contact list showing membership of the FPWG.

Each member may designate a primary representative to the FPWG within 30 days after the Effective Date of the settlement agreement, or at any time thereafter with five (5) business days’ notice. Designation shall be by Notice to the Parties in accordance with Section 9 of the Settlement Agreement. Each member or category of members may name alternate representatives to the FPWG. Failure to designate a representative shall not prevent the FPWG from convening or conducting its functions in accordance with the time schedules set forth in specific license articles in the Amended Project License or as otherwise established in the Settlement Agreement. Each member should select a representative who has relevant training or experience with natural resource management.

Committee participation by state or federal agencies does not affect their statutory responsibilities and authorities. Issues involving the exercise of agencies’ specific authorities can be discussed, but decisions are not delegated to the FPWG. The FPWG does not provide consensus advice to any federal agency.

2.3.1.2. Meeting Provisions

The Licensee shall, within 30 days after the effective date of the Settlement Agreement, establish and convene the FPWG. The meetings shall be administered as follows:

- a) The Licensee shall arrange, administer, and chair all meetings. Upon request of the other parties, the Licensee shall provide a meeting facilitator. The facilitator shall be selected by consensus of the FPWG. The Licensee shall provide no fewer than 14 days prior notice of any meeting, unless otherwise agreed to by the FPWG or required to meet a license deadline or other emergency circumstance.
- b) The Licensee, or the facilitator, shall within 30 days of each meeting, provide draft meeting minutes for concurrence by the FPWG prior to final distribution. Meeting minutes will include FPWG action items, a summary of issues discussed, decisions reached, and member concerns.
- c) The FPWG will establish protocols for meetings such as agenda development, timely distribution of materials, location and scheduling. Scheduling of meetings should be informed by milestone events contained within specific license articles. The Licensee shall convene the FPWG annually (or more frequently if a majority of the FPWG so desire) by no later than February 1 to review the Bypass Flow Accrual Account Allocation Plan and proposed actions for the coming year.
- d) Meeting agendas will list specific license articles and all other topics for action or discussion.
- e) The Licensee shall bear all costs associated with conducting meetings.
- f) Each member will bear its own cost of attendance.
- g) The role and procedures of the FPWG will be evaluated five (5) years after issuance of the Amended Project License at which time the FPWG will determine if it should remain the same, be modified or discontinued. The FPWG will reevaluate its role and procedures periodically thereafter, throughout the term of the Amended Project License and any annual licenses.

2.3.1.3. *Decision Making*

The FPWG will make its decisions as follows:

- a) The FPWG shall seek to reach consensus. Consensus is achieved when all FPWG members cast a supportive or neutral vote or have abstained from the decision. When any vote is taken at a meeting, the Licensee or facilitator shall provide the results to and seek the vote of non-present members within three (3) business days. FPWG members not present must inform the Licensee or facilitator of their vote within ten (10) business days after the meeting or they will be deemed to have abstained from the decision. Alternatively, a vote may be cast by written proxy that is specific to the proposed action or required decision.
- b) Federal agencies with approval authority under the Amended Project License may exercise their authorities through this consensus process. If a specific federal agency approves a plan, measure or action through this consensus process, the Licensee will not have to seek additional approvals from that federal agency regarding that specific plan, measure or action. Agency approval may also be through email or on agency letterhead. If an agency with approval authority does not respond within 30 days, the Licensee will reissue notice of the action requiring approval. If an agency with approval authority does not respond within 14 days, the agency will be deemed to have approved the subject action.
- c) The position of other members does not override an agency's approval, which is an independent authority. The agency with such approval authority will convey its determination to the Licensee, the FPWG, and the Commission. Notwithstanding, agencies do not waive or relinquish in any respect any approval authorities under the Federal Power Act or other applicable law through its participation in the FPWG consensus process and any subsequent dispute resolution process.
- d) While the goal of the FPWG is consensus decision-making where possible, nothing in the Settlement is intended to transfer legal authority or jurisdiction from any party to any other.
- e) The Licensee shall implement any action where consensus by the FPWG has been reached, subject to the requirements of the Amended Project License such as filing for Commission approval, and any necessary regulatory approval. In the absence of consensus, the Licensee may proceed to file plans or make any required filings necessary to meet a License deadline. Unless otherwise noted, the Licensee shall file with the Commission any plans or other required actions within thirty (30) days of FPWG approval or of an agency decision in case of dispute resolution. Prior to implementing a plan or other required action, the Licensee shall obtain the Commission's approval and any necessary agency approval. Where a license article in the Amended Project License assigns a decision to an agency for approval, the Licensee shall proceed in a manner consistent with that approval.

- f) The Licensee shall file with the Commission documentation of all consultations with the FPWG or specific agencies as required by a specific license article in the Amended Project License, any member's concerns and responses thereto, and any other written comments provided to the Licensee. Consultation shall not mean consultation under Section 7 of the Endangered Species Act or other federal laws requiring consultation unless specifically provided.
- g) Unless otherwise noted in a specific license article in the Amended Project License, the Licensee shall allow a minimum of thirty (30) days for FPWG member comments and recommendations before submitting the document to the federal agencies for approval. When filing the document with the Commission, the Licensee shall include documentation of consultation, copies of comments and recommendations, and specific descriptions of how comments and recommendations from FPWG members are accommodated by the Licensee's plan. If the Licensee files final plans and specifications without first obtaining approvals from the USFWS and NMFS, the Licensee shall include specific reasons for doing so.
- h) If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons based on project-specific information.
- i) The Licensee may seek review from the federal and state fish and wildlife agencies on matters in which they have expertise prior to seeking consensus of the FPWG.

2.3.2. DVWD responsibilities

This Plan will be implemented by the DVWD in coordination with the FPWG. The DVWD will be responsible for:

- FPWG meeting administration as described in Section 2.3.1;
- Funding and administrative support as described in Section 2.3.1;
- Final design and construction of the fishway and pool raise;
- Development of an Operations and Maintenance Plan for the fish passage facilities;
- Development of the Annual Report (Section 2.3.4), including three 5-year assessments;
- Developing the Annual BFAA Allocation Plan (as part of the Annual Report);
- Implementation of measures as described in Section 5.2 of this Plan; and
- Performance Monitoring, Evaluation and Adjustment as described in Section 5.4 of this Plan.

If the FPWG determines through the Adaptive Management Program that DVWD has met and maintains safe, timely, and effective passage at the Project, as described in this Plan, there will be no additional requirements for structural or operational modifications at the Project to address fish passage during the term of the amended license.

2.3.3. Responsibilities of the Fish Passage Work Group

The FPWG shall have the following duties:

- 1 Review and approval of facility designs, as needed.
- 2 Review and approval of annual monitoring actions as described in this Plan, as needed;
- 3 Review the draft Annual Report, including monitoring results, prepared by the DVWD on fish passage related activities in the previous year and submitted to the FPWG by December 15 annually.
- 4 Within 5 years of radio tagged adults arriving at the Project, or as otherwise determined by the FPWG, identify a migration window by which time the seasonal cumulative upstream passage goals (see Section 5.3, footnote 1) should be met. This migration window may be reviewed and modified by the FPWG as more basin-wide data becomes available. Consensus of all FPWG members, as defined in the Settlement Agreement, will be required for determining changes in the migration window and other seasonal fish passage determinations.
- 5 Review fish passage monitoring information and make determinations of whether:
 - Monitoring results are sufficient to conclude that the Project is performing or making progress towards performing within the limits of the fish passage Performance Goals for safe, timely, and effective passage established by the Agreement and in this Fish Passage and Protection Plan;
 - Modifications should be made to the monitoring approach;
 - Modifications to this Plan are appropriate as described within the structure of the adaptive management framework (Section 5, below).
- 6 Meet annually (or more frequently if a majority of FPWG so desire) by no later than February 1 to review the draft Annual Report and determine what fish passage related activity(s) is anticipated for the coming year.
- 7 Review information regarding fisheries in the Crooked River, and specifically, information regarding adult fish passage at the Project through the upstream fish passage facilities.

- 8 Review and approve the BFAA Annual Allocation Plan.
- 9 Inspect fish passage facilities as needed and review annual operations and maintenance plan and schedule.
- 10 Review all proposed project modifications that may affect safe, timely, and effective fish passage.

Non-Licensee members of the FPWG will also continue to provide communication links with their respective management-level personnel regarding the progress of the fish passage program. Routine (day-to-day) decisions regarding operation of the water-credit system as described in Section 3.2.2 will be made by the Fish Managers, consistent with the BFAA Annual Allocation Plan, and with appropriate involvement of NOAA Fisheries and the USFWS for ESA species. These decisions will be consistent with any requirements of NOAA and USFWS biological opinions.

2.3.4. **Annual Report**

DVWD will, by December 15 annually, provide a draft Annual Report to the FPWG for review and approval. The Annual Report will address all activities within that calendar year and will include: (1) Operations and Maintenance (O&M) relating to the fish passage facilities and planned O&M for the upcoming year; (2) annual BFAA Allocation Plan; (3) Monitoring and Evaluation (M&E) relating to the Adaptive Management program and this Fish Passage and Protection Plan; (4) description of planned monitoring activities for the upcoming year; (5) status of the Adaptive Management program and related measures; (6) the 5-year assessments required by the Adaptive Management program; and (7) any proposed changes to the Fish Passage and Protection Plan.

DVWD will file Annual Reports with the Commission by March 1. When filing Annual Reports with the Commission, DVWD will include documentation of consultation; copies of comments and recommendations; and specific descriptions of how comments and recommendations from FPWG members have been accommodated. If DVWD does not adopt a recommendation, the filing shall include its reasons based on Project specific information. If DVWD files an Annual Report without obtaining concurrence from the FPWG, DVWD will include specific reasons for doing so.

DVWD will implement planned O&M measures, requests for releases of BFAA accumulated water, M&E measures, and Tier 1 and Tier 2 measures as described in its Annual Reports.

The calendar for preparation of the Annual Report is outlined in Table 1 below.

Table 1. Calendar for preparation of the Annual Report.

Date	Activity	Responsible Party
December 15	Draft Annual Report to FPWG	DVWD
January 15	Comments due to DVWD	Parties
February 1	Annual Meetings	FPWG
February 15	Approve BFAA Annual Allocation Plan	FPWG
March 1	File Annual Report with FERC	DVWD
March 2	Implement actions identified in Annual Report	DVWD

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3 BYPASS FLOW ACCRUAL ACCOUNT (BFAA)

The increased impoundment elevation provides opportunities for the DVWD to generate additional hydropower and for improving fish passage at the Project. Through the creation of the BFAA, DVWD will forego the full power potential of the pool raise in order to deliver supplemental water to the bypass reach as directed by the Fish Managers.

The primary goal of the BFAA is to provide behavioral cues to upstream and downstream migrant fish that will help them pass the Project in good condition and thus enable the Project to meet or exceed any applicable fish passage Performance Objectives for safe, timely, and effective passage described in this Plan or the Settlement Agreement (see Section 5.3). This section describes how the BFAA will be established and administered and the principles by which it will be utilized to improve fish passage at the Project.

3.1. Establishment and administration of the Bypass Flow Accrual Account (BFAA)

The Licensee shall accrue water credits in the BFAA at a rate of between 25% and 45% (“Allocation Percent”) of the increase in power generation (Δp) attributable to the head increase at the Project), where Δp is adjusted to account for the change in hydroelectric potential of water, such that allocation of 100% to BFAA could not result in a net loss of hydroelectric generation potential from current operations. For the proposed pool raise at Opal Springs, the preliminary estimate of Δp is 11.54%.

As envisioned in the Adaptive Management Provisions (see Section 5), the Allocation Percent will be adjusted following each successive 5-year Performance Assessment Interval pursuant to the Adaptive Management program. The potential for asynchronous monitoring periods notwithstanding, the BFAA Allocation Percent will not be increased more than one time every five years. The allocation percent may be decreased as provided for under Section 3.1.2 below. Allocation Percent increases above 45% may only occur with the approval of the Licensee.

3.1.1. Accrual Rate

Assuming an Allocation Percent of $x\%$ of Δp to BFAA, then the Accrual Rate (*Arate*) will be the water equivalent of ($x\% * 11.54\%$) instantaneous turbine flow, except when total river flow at the Project exceeds its maximum hydraulic capacity (1,600 cfs, subject to confirmation) and the 50 cfs bypass requirement. The *Arate* may change once the pool raise is completed and actual unit performance is measured, although the Allocation Percent is based on success at meeting the fish passage Performance Objectives.

The source data for managing and reporting will be: 1) direct measurements of the hourly turbine discharge data; and 2) the gage data from USGS Gage No. 14087400, near Culver below Opal Springs². A simple spreadsheet formula will calculate the allocation to the BFAA based on turbine discharge and a conditional formula will specify that when flows at the USGS Gage exceed 1,913 cfs [the sum of hydraulic capacity at new head (1600 cfs, subject to confirmation), the FERC required bypass flow (50 cfs) flow, and spring water and ground water accreted into the bypass reach (263 cfs)] the *Arate* is zero. Potential changes in spring water and ground water accretions over time will be addressed as provided in Section 3.1.4 below.

3.1.2. BFAA Allocations

BFAA allocations will begin at 25% of the increase in hydroelectric potential at the Project resulting from the pool raise, per the equation given in Section 3.1.1 (Accrual Rate or *Arate* = 2.89% [(25%) X (11.54%) = 2.89%]). The Allocation Percent will remain at 25% for the entirety of the 1st 5-year Performance Assessment Interval (taking into account any reset as described in Section 5).

3.1.2.1. Increases in BFAA Allocations

The Allocation Percent will increase by 10% after each successive 5-year Performance Assessment Interval (including any reset as may be triggered) until the fish passage Performance Standards have been met. The total BFAA Allocation shall not exceed 45% for the three 5-year Performance Assessment Interval. However, if all fish passage Performance Goals have not been met by completion of the 3rd 5-year Performance Assessment Interval, an increase in the BFAA allocation may be considered as a Tier 2 measure. BFAA releases will occur pursuant to the BFAA Annual Allocation Plan as discussed in Section 3.2.1, below.

The BFAA will only use water that has been credited to the account based on actual flows through the powerhouse, once the pool raise has been completed and powerhouse operations have commenced at the new elevation. The DVWD will be responsive to short-term emergency use of water in the event that the available water in the BFAA is not sufficient to meet the needs of the BFAA Annual Allocation Plan. This emergency water will be capped at 10% of the forecasted annual accumulation in the BFAA and is to be used within the same water year. The BFAA balance of water must be restored and reconciled as part of the subsequent BFAA Annual Allocation Plan. There is no requirement on the part of the Fish Managers to utilize all water allocated; surplus water will accumulate from year to year.

² This USGS gage data will inflate observed flows by approximately 263 cfs because of flows from the springs and that accrete into the bypass reach from groundwater flows.

3.1.2.2. *Decreases in BFAA Allocations*

The PLAs provide a mechanism to decrease BFAA allocations to offset costs incurred by DVWD above \$50,000 annually associated with upstream monitoring requirements as specified in PLA 5. Additionally a mechanism exists for the Licensee determine whether the BFAA has been over-allocated (less water is needed to meet fish passage Performance Goals or, for resident species, to ensure safe, timely, and effective passage). If it is determined by the FPWG that the BFAA is over-allocated, the Allocation Percent will be reduced consistent with the level of over allocation, upon agreement of the FPWG.

3.1.3. **Reporting on BFAA Balances**

The DVWD will maintain a record of requests for water, actual bypass flows and the outstanding balance of available water credits in the BFAA, measured in acre-feet. Available BFAA water credits will be updated at least annually in the Annual Report. The DVWD will provide a monthly accrual of BFAA waters upon request and will be in regular communication with the Fish Managers about available water during targeted migration periods. The DVWD will provide a report on BFAA accounting as part of the Annual Report described in Section 2.3.4.

3.1.4. **BFAA Verification and Modification**

The Licensee shall, within one year of commencing operations at the new diversion pool elevation, verify all estimates used for determining the maximum controlled hydraulic capacity of the Project. The Licensee shall provide this information the FPWG at least 45 days prior to filing any proposed modifications with the Commission. The Licensee shall not file with the Commission any proposed modifications of the information used to calculate water credits until any disputes raised by the FPWG have been addressed under the dispute resolution provisions of the Settlement Agreement.

Upon Commission approval of any modifications to the information used for calculating water credits, the Licensee shall calculate all subsequent BFAA credits pursuant to the new information. The Licensee shall periodically reassess spring water and ground water accretion estimates throughout the license term as requested by the FPWG. Any future changes to spring water and ground water accretion estimates, recommended by the Licensee pursuant to periodic review of these parameters, will also be approved by the FPWG prior to the Licensee submitting the new information to the Commission. Upon Commission approval, the Licensee shall calculate all subsequent BFAA credits pursuant to the new information.

3.2. Implementing Bypass Flow Releases

3.2.1. Forecasting and adjustment of flow release schedule for upcoming year

Flows accrued in the BFAA will be managed adaptively and discharged into the Project's bypass reach by the DVWD at the request of the Fish Managers, pursuant to an approved BFAA Annual Allocation Plan. The BFAA Annual Allocation Plan will be developed on the basis of flow forecasts for the upcoming year, the FPWG's growing understanding of relationships between fish migration timing and river conditions, and accumulated understanding of how augmentation releases into the bypass reach affect fish passage through the Project. Key considerations in developing the BFAA Annual Allocation Plan will include:

- terms of any biological opinions;
- a current accounting of the BFAA flow accruals, withdrawals, scheduling adjustments, and fish responses to augmentation flows;
- specific operational considerations for the upcoming year; and the rationale(s), timing, magnitude, and,
- duration of the BFAA discharges intended to augment flows in the bypass reach.

The FPWG may elect to periodically meet to review hydrograph information, flow forecasts and any available fish passage information. These meetings may be used to update the BFAA Annual Allocation Plan. It is anticipated that as experience is gained the FPWG will develop a suite of specific intra-day or multi-day patterns for augmenting bypass flows in ways that are intended to help migratory fish pass the Project in good condition.

3.2.2. Request to DVWD for BFAA Releases

The Licensee shall provide bypass flows from the BFAA within two business days of receiving a request via email or by phone from the Fish Managers within the limitations of the approved BFAA Annual Allocation Plan.

If the Fish Managers intend to request BFAA releases that are significantly different (for example, the hydrologic year develops differently than that forecasted) from those recommended by the FPWG in the BFAA Annual Allocation Plan, the Fish Managers will first seek approval from the FPWG. The Fish Managers will only request BFAA releases that are consistent with the goal of achieving the fish passage Performance Objectives.

ODFW will be the designated liaison for the Fish Managers for purposes of this section. At such time that the CTWS becomes a signatory to the Agreement, ODFW and the CTWS will determine the designated liaison. The Fish Managers' designated liaison will communicate to the

DVWD their specific desired pattern and duration of flow releases on a given day or over a given range of days. The DVWD will make best effort to follow these flow requests unless the incremental flow removed from power generation until such time as load on the generating unit drops to less than that which is necessary to avoid risks of equipment damage (herein after referred to as a “Critical Circumstance”). DVWD will communicate to the FPWG any concerns or problems with the request. The Licensee shall, within one year of initial operations at the new diversion pool elevation and periodically during the term of the amended license, in consultation with the FPWG and supported by engineering concerns, determine specific turbine unit loading that would result in a Critical Circumstance.

3.2.3. Limitations on use of BFAA

In order to minimize impacts of water releases from the BFAA on Project operations and to prevent damage to the generating equipment, the following limitations on the use of the BFAA are recognized:

- 1 Consistent with the BFAA Annual Allocation Plan, Fish Managers may request any amount of water until such reductions cause a Critical Circumstance. If the Licensee determines that a request for flow releases will cause a Critical Circumstance, the Fish Managers may request a lower BFAA flow release that will not cause a Critical Circumstance, or the Fish Managers may request and the Licensee shall shut down the powerhouse and direct all river flows into the bypass reach as long as sufficient water credits are available in the BFAA. The Licensee shall not be required to shut down the powerhouse in response to a BFAA flow request more than one time per week.
- 2 The forecast may request intraday variation (for example, a diurnal cycle that may interact favorably with known or anticipated fish migratory behavior). The DVWD will meet this request to the best of its ability within the limitations described in this section during the hours of staffed operation at the Project.
- 3 In order to minimize wear on equipment, the DVWD will not be required to shut down and restart the powerhouse in response to a BFAA flow request more than once per week. Plant shutdowns more frequent than once per week in response to requests from Fish Managers will be at the discretion of the DVWD.
- 4 The Fish Managers may make or alter a specific flow request on two business days advance notice to the DVWD; the Fish Managers may request an alteration of the flow releases on less than a 48 hour notice, in which case the DVWD will provide a “best effort” response.

- 5 Since there is no pool to draw down in response to requests for water, the ability of the DVWD to provide requested flow is subject to the available river flow to support such flows.
- 6 The Licensee shall make 10% of the forecasted annual accrual in the BFAA available for emergency use if insufficient water credits are available in the BFAA to achieve the BFAA flows desired by the Fish Managers. Otherwise, only water credits accrued in the BFAA will be available for release. Any water credits advanced to the BFAA by the Licensee will be offset by a debit to the BFAA as soon as possible but by no later than one year from disbursement, unless otherwise agreed to by the Licensee.

If the Project shuts down for other operational, safety, or maintenance reasons resulting in spill, water credits will not be removed from the BFAA.

4 FISH PASSAGE FACILITIES OPERATION AND MAINTENANCE

4.1. Maintenance of the fish ladder

DVWD is responsible for operation, maintenance, and repair of fish facilities described herein. DVWD, or its agent, will develop an O&M Plan for approval by the Agencies (see Section 2.2).

4.2. Seasonality of fish passage

The precise migration timing of anadromous salmonids that will pass the Project is uncertain, and will affect the pattern of use of the BFAA. Adult steelhead may attempt to pass upstream through the Project area during much of the year, with passage occurring primarily from fall through late winter or early spring and peaking toward the latter portion of this period, just prior to spawning. Adult spring Chinook salmon may pass the Project from spring through early fall, with passage peaking either in the spring or just prior to spawning in late-summer or early fall. Upstream passage timing of both steelhead and Chinook will depend in part on whether or not these adults hold downstream or upstream of the Project before spawning.

Given the strong moderating effect that large groundwater springs have on the thermal regime of the lower-most Crooked River, adult steelhead and/or adult Chinook may historically have held in the river downstream of the Project site for extended periods of time before completing their migration toward spawning areas farther upstream. Discerning whether such behavior, if it occurs in the future, reflects a Project-related migratory delay or a response of the fish to desirable holding conditions will be a matter of judgment and may, at times, prove difficult. For this reason, efforts to manage the BFAA for upstream passage will focus primarily on assuring that adult fish can and do pass the Project in good condition and at times conducive to successful spawning in the drainage basin upstream.

Out-migrations of smolts, both steelhead and spring Chinook, are anticipated to build to a peak during April and/or May at the Project. Downstream passage of smolts will then be expected to decline by early summer and to remain at relatively lower levels until the following spring. This seasonal pattern may allow some efficiency in managing the BFAA, because augmentation water released into the bypass reach during spring to encourage the upstream passage of adult fish may also be helpful to downstream migrating smolts (and steelhead kelts). Additionally, the increase in generation potential resulting from the higher pool elevation means that the maximum hydraulic capacity of the project will be lower than the current capacity of 1,800 cfs. Separate from any BFAA flow, the Project will begin to spill at lower river flows than under current operations. The new maximum hydraulic capacity at the higher head is currently unknown, and will be confirmed following completion of the pool raise. This supplemental water will likely be available at times of the year that coincide with downstream migration.

It is assumed that the majority of downstream migration will occur in the spring when the flow is greatest. Water released to augment bypass flows at times of the year other than spring are likely to be focused primarily on encouraging the upstream passage of adult fish, and will be assumed to affect relatively smaller numbers of downstream migrant fish when compared to the numbers that will be affected during spring. Through information collected through PGE's testing and verification program at the PRB Project as well as monitoring at Opal Springs, these assumptions may be revisited. Such changes in timing would affect management of the BFAA. Bull trout migration timing is unknown, but this species may use the ladder throughout the year.

4.3. Operation of Fish Monitoring Facilities

Fish monitoring devices associated with the Project and required for monitoring and evaluation activities under Section 5.4 will be maintained and operated by the DVWD or its contractors, which will also provide for the management, analysis, and reporting of data collected by these devices to the FPWG. The DVWD will utilize the services of qualified contractors to develop appropriate guidelines and procedures for approval by the Agencies; the FPWG will also provide oversight and guidance to the DVWD on the operation and maintenance of this equipment. The Licensee shall use accepted scientific practices as approved by NMFS, USFWS, BIA, ODFW, and CTWS (provided that the CTWS is a signatory to the Settlement Agreement) for all data collection and monitoring and shall ensure that data collection standards are being met.

5 ADAPTIVE MANAGEMENT

5.1. Scope of Adaptive Management

The Adaptive Management component of the Agreement includes: (1) increases to BFAA allocations at specified intervals based on lack of compliance with the fish passage Performance Objectives; (2) two tiers of fish passage improvement measures (Tier 1 and Tier 2) that may be necessary to improve fish passage efficacy or meet fish passage Performance Objectives; and (3) modification of Project turbine intake trash racks if necessary to address adult turbine mortality.

The Licensee shall implement the Adaptive Management program as described in Appendix A of the Settlement Agreement and shall include annual monitoring information and 5-year assessments in its Annual Reports. Monitoring information will include:

- adult counts through the Project area;
- adult migration timing;
- real-time adult passage effectiveness;
- aggregate adult fish passage performance;
- juvenile relative abundance;
- juvenile emigration timing;
- real-time juvenile passage effectiveness; and,
- aggregate smolt passage performance

Obvious Fish Passage Problems, as discussed in Section 5.4 below, will trigger implementation of Tier 1 measures. Any modifications to project trash racks will automatically restart the 5-year Performance Assessment Interval in which the modifications are implemented.

Tier 1 measures, described in Section 5.2.1, include a variety of actions that have already been identified as potential future actions such that additional ESA consultation between agencies and FERC will not be necessary following issuance of the amendment order. Tier 1 measures include changes in operation of the new fish ladder as needed to ensure safe, timely and effective passage; implementation of the BFAA; and minor physical modifications at the Project and in the bypass reach. Tier 2 measures are described in Section 5.2.6 and may require additional approvals from the Agencies and FERC.

The Licensee shall implement additional fish passage measures based on information collected during project monitoring and the status of achieving the fish passage Performance Objectives. Additional measures are organized into two tiers (Tier 1 and Tier 2). The Licensee shall implement specific Tier 1 measures at any time as directed by the FPWG (or as required through Dispute Resolution as defined in the Settlement Agreement) in response to Obvious Fish Passage Problems (for example, indications that upstream or downstream fish migrants are not effectively bypassing the Project) or, in response to any 5-year Performance Assessment Interval if needed to achieve the applicable fish passage Performance Objective.

5.2. Fish Passage Measures

If additional Tier 1 measures are directed by the FPWG in response to upstream or downstream Obvious Fish Passage Problems, the Licensee shall implement the measures within one year of FPWG approval, unless otherwise agreed to by the FPWG. With the exception of modifications to Project trash racks, implementation of Tier 1 measures will neither re-start nor increase the then current 5-year Performance Assessment Interval. However, any modifications to Project trash racks will automatically restart the then current 5-year Performance Assessment Interval.

If Tier 1 measures are required to meet an applicable fish passage Performance Objective following a complete 5-year Performance Assessment Interval, the Licensee shall implement the measures as soon as possible but in no case shall implementation take longer than one year unless otherwise agreed to by the FPWG. The next 5-year Performance Assessment Interval shall begin following implementation of the Tier 1 measures. The Licensee shall continue annual monitoring regardless of its status in implementing Tier 1 measures. The Licensee shall implement Tier 2 measures following the third 5-year Performance Assessment Interval if the fish passage Performance Goals have not been met.

5.2.1. Tier 1 Measures

Over a period of at least 15 years (consistent with ~4 steelhead lifecycles) following completion of the fish ladder and pool raise, the DVWD will implement, monitor, and adjust Tier 1 fish passage measures at the direction of the FPWG, subject to constraints identified in this Plan, the amended Project license, and federal biological opinions. Tier 1 measures include specific physical modifications at the dam or in the bypass reach.

The following set of upstream and downstream measures will be implemented, as agreed to by the FPWG, during any 5-year Performance Assessment Interval or in response to any 5-year Performance Assessment Interval (described in Section 5.4 below) in order to achieve the relevant fish passage Performance Objective (Section 5.3).

Upstream Passage Measures:

- Remove peninsula that currently separates the tailrace from the bypass channel in order to reduce unacceptable adult delay at the powerhouse.
- Construct structures in the bypass channel to concentrate flows and provide necessary cues to help adult migrants reach and find the fish ladder entrance.
- Move rocks and boulders in the bypass reach downstream of the fish ladder entrance to provide for adult passage in most flow conditions.
- Other enhancements to the bypass channel.
- Adjustments or minor (“fit and finish”) modifications to the ladder to optimize performance.
- Install and operate behavioral deterrents to fish movement toward and into the Project intake.
- Modify spill gate operations.
- Other measures proposed by the FPWG, and approved by the Licensee.

Downstream Passage Measures:

- Install or modify flow guidance devices on the downstream face of the dam to concentrate flow or otherwise improve smolt survival.
- Other enhancements to the bypass channel.
- Install and operate behavioral deterrents, which could include experimental technologies, to guide fish away from the Project intake.
- Other physical modifications that may be suggested by the FPWG, and agreed to the Licensee, in lieu of additional BFAA water.
- Predation control in the impoundment; the need for which will be determined by periodic assessments as agreed to by the FPWG.
- Modify spill gate operations.
- Other measures proposed by the FPWG, and approved by the Licensee.

5.2.2. Utilization of the BFAA

The BFAA described in Section 3, above, is an important adaptive management tool available to the FPWG. Accumulated water credits are available to assist both upstream and downstream migrant fish. Over time, the FPWG will use information available from the monitoring and evaluation program to inform decisions on how best to use the water accrued in the BFAA to

meet the fish passage Performance Objectives established for the Project. Management of the BFAA may be modified to respond to:

- information on the timing of upstream and downstream fish passage;
- year-to-year variation in the Crooked River hydrograph;
- adult behavior at the tailrace, including responses to changing the relative proportions of water being discharged from the powerhouse and the bypass reach;
- adult behavior at the base of the dam in response to spill over the two weirs; and
- juvenile migrant behavior in response to changing flow conditions around the intake, the fish ladder, and the spillway.

5.2.3. **Initiation of Upstream and Downstream Monitoring**

The 5 year Performance Assessment Intervals for downstream and upstream passage monitoring may not be synchronous. For example, the pool raise and fish ladder may be operational before adult fish are passed above the Pelton-Round Butte Project. The potential for asynchronous monitoring periods notwithstanding, the BFAA Allocation Percent will not be increased more than one time every five years.

5.2.4. **Modification of spill gate operation**

As currently proposed, there will be two controllable non-turbine routes for bypassing water in addition to the fish ladder. They are:

- The 16 ft long “west” weir positioned near the exit cell of the fish ladder can deflate to 2002 elevation and has a maximum capacity of 1,230 cfs; and
- The 175 ft long “east” weir that spans the majority of the dam crest of the Project.

In addition to the quantity of water discharged into the bypass reach, the route by which water is delivered to the base of the dam may affect upstream and downstream fish passage behavior and could play a significant role helping the Project comply with fish passage objectives defined in the Agreement and in this Plan. In some instances, how these routes are used may benefit one life stage of migrating salmonids while potentially impairing passage by another; therefore a significant aspect of the Project’s adaptive management approach will be to determine, through the monitoring and evaluation program, how to strike an appropriate balance between the needs of the upstream and downstream migrants.

5.2.5. Trash rack modifications

As described under Sections 5.4.1 and 5.4.2, trash racks at the Project may be modified in an effort to reduce the adult fallback rate. If the adult steelhead or the downstream bull trout fish passage Performance Standard is not likely to be met due to high turbine mortality in any two of three years of a 5-year Performance Assessment Interval, the DVWD will modify its trash racks in an effort to reduce adult turbine mortality, unless the FPWG decides otherwise or identifies an alternative solution. The following guidelines will govern trash rack modifications:

- New racks will be located in the existing stop-log slots and will be supplemental to the existing racks unless otherwise agreed to by DVWD;
- New racks will only be deployed seasonally during applicable upstream migrations, as determined by FPWG;
- The current Performance Assessment Interval will restart once the new trash racks are installed.

5.2.6. Tier 2 Fish Passage Measures

If the Biological Goals, as described in Section 5.3, have not been met after three 5-year Performance Assessment Intervals, the FPWG shall meet to discuss possible implementation of Tier 2 measures pursuant to Section 5.4.3. Tier 2 measures will be considered after all applicable Tier 1 measures have been implemented, or if the FPWG determines that further implementation of Tier 1 measures are unlikely to enable the Project to meet the Biological Goals. Examples of potential Tier 2 fish passage measures include (but are not limited to) the following:

- Increase water allocated to the BFAA.
- Modify powerhouse turbines to include a more fish friendly configuration.
- Install training walls between the fish ladder exit and the turbine intake.
- Extend the fish ladder upstream into the forebay.
- Install fish barriers or deterrents in the tailrace.
- Install experimental devices in the Project diversion pool to facilitate guidance of fish downstream past the Project.
- Other measures proposed by the FPWG, and approved by the Licensee.

The Licensee may, at any time, propose to implement Tier 2 measures. After review and approval by the FPWG, the Licensee shall develop a plan and schedule in consultation with the FPWG and shall implement the proposed measure following all required approvals.

Implementation of Tier 2 measures will be followed by a continuation of the Adaptive Management program described above.

5.3. Fish Passage Performance Objectives

The primary purpose of installing the new fish ladder, increasing pool elevation and creating the BFAA is to provide safe, timely and effective passage for migratory and resident fish species in the Crooked River at the Project site. Conditions that meet the objectives will accommodate the natural timing of key life-history events (such as spawning) of the migratory species present, and will not cause excessive injury, mortality, or a high frequency of aberrant migratory behaviors by the salmonids entering the area (for example, false attraction of adults to the powerhouse tailrace, extended holding immediately above or below the dam, or unintended adult fall-back after passing upstream over the dam).

Specific fish passage Performance Objectives for safe, timely, and effective upstream passage at the Project are as follows:

Upstream Fish Passage Performance Objectives

<u>Species</u>	<u>Standard (to be met)</u>	<u>Goal (to be strived for)</u>
Steelhead and Chinook Salmon adults	≥90% successful upstream passage of migratory adults, with ≥90% of those adults that do successfully pass the Project doing so by a specified date each year ³ . Fish that perish when falling-back after dam passage will be considered unsuccessful migrants.	≥97% successful upstream passage of migratory adults destined for areas above the Project. Fish that perish when falling-back after dam passage will be considered unsuccessful migrants.
Bull trout adults and subadults	≥90% successful upstream passage, with the standard assumed to be met if that for steelhead adults is met at the Project.	≥97% successful upstream passage, with the goal assumed to be met if that for steelhead adults is met at the Project.

³ This objective implies that there is a target date each year by which the specified proportion of adult spawners should have passed the project in order for the run to reach the spawning grounds above the project at an appropriate time of year. The target date is unknown, and will be the subject of ongoing research as part of the reintroduction plan. As described in Section 2.3.3 the FPWG will strive to establish this date within five years of adult release upstream of the PRB Project.

Specific fish passage Performance Objectives for safe, timely, and effective downstream passage at the Project are as follows:

Downstream Fish Passage Performance Objectives

<u>Species</u>	<u>Standard</u>	<u>Goal</u>
Steelhead and Chinook Salmon smolts	≥90% passage survival	≥97% passage survival
Bull trout adults and subadults	Assumed to be met if the ≥90% passage survival standard for steelhead smolts is met and levels of upstream passage by bull trout >12” at the Project do not exceed 1,000 fish on an annual basis.	Assumed to be met if the ≥97% goal for steelhead smolts is met.

The identified Standards will be met by the end of the 3rd 5-year Performance Assessment Interval and the Goals by the end of the current license period as described in Section 5.4.2. The Licensee shall achieve the fish passage Performance Objectives through the implementation of the Adaptive Management program. The Licensee shall be considered in compliance with these requirements so long as the fish passage Performance Objectives are met or the Licensee is working towards meeting the fish passage Performance Objectives through implementation of the Adaptive Management program. The process for determining appropriate next steps in lieu of meeting these biological objectives at the specified times is also addressed in Section 5.4.3.

5.4. Fish Passage Performance Monitoring, Evaluation, and Adjustment

Fish migrating through the Project area will be monitored to evaluate the performance of the new fish ladder, to inform adaptive management of the BFAA and to determine whether other fish passage measures might be needed to achieve the fish passage Performance Objectives outlined in Section 5.3. Determinations relative to compliance with fish passage Performance Objectives will be based on point estimates of aggregated data at the end of each 5-year Performance Assessment Interval.

Upstream and downstream fish passage monitoring will be implemented in 5-year Performance Assessment Intervals to help ensure point estimates have an appropriate level of precision and represent a range of environmental conditions. Although data from any one year may identify an Obvious Fish Passage Problem triggering implementation of a Tier 1 measure, assessment of the Biological Objectives will only occur following completion of an entire 5-year Performance Assessment Interval.

5.4.1. Biological Monitoring of Upstream Fish Passage

Upstream fish passage monitoring at the Project is intended to identify Obvious Fish Passage Problems within a few years or less, provide the FPWG sufficient information to manage the BFAA for upstream passage, and to inform decisions regarding fish passage improvements that may be needed to meet the explicit fish passage Performance Objectives outlined in Section 5.3.

Enumeration of fish use of the ladder will begin upon completion of the fish ladder and pool raise for resident fish, however, the monitoring period for purposes of determining compliance with the fish passage Performance Objectives will begin when migrating adult salmonids are passed over the PRB Project and the DVWD has commenced operations at the new pool elevation. Uncertainties these monitoring efforts will resolve over time include species-specific run timing, the potential for migratory delay at the tailrace and at the base of the dam due to false attraction, rates of successful upstream fish passage, rates of adult fall-back, and how or whether these are affected by management of the BFAA.

Key elements of the monitoring program for upstream fish passage are given below:

Adult counts (M&E element 1A).

- The Licensee shall, upon completion of the fish passage facilities, continuously monitor the passage of adult fish >12” in length through the fish ladder for the term of the Amended License. The Licensee shall identify and enumerate fish migrating through the fish ladder using video, electronic counter and/or adult trapping as determined by the FPWG, to identify species, passage date, and passage time. The Licensee shall provide this information to the FPWG within two business days of a Fish Manager request and shall include all fish passage information (for example, number by species, passage date and passage time) in its Annual Reports. The counts will continue through the amended license period, documenting successful fish entry into the drainage basin above the Project and providing information on population abundance that will be critical to monitoring the success of species reintroduction efforts and bull trout movement.
- Adult migration timing (M&E element 1B). The seasonal timing of successful adult fish passage through the new ladder (based on the count data described above) will be monitored by the DVWD to aid in BFAA management and to help document compliance with the relevant fish passage Performance Objective. Ladder count data may also be evaluated for inter-daily variation in adult passage rates related to BFAA spills of water into the bypass reach or other short-term actions intended to aid upstream fish passage.
- Real-time adult passage effectiveness (M&E element 1C). The Licensee shall, for the duration of the three 5-year Performance Assessment Intervals identified in the Adaptive Management program, or until any 5-year Performance Assessment Interval demonstrates

that the 97% upstream fish passage Performance Goals have been met for adult steelhead and Chinook salmon, monitor adult steelhead and Chinook salmon passing through the lower Crooked River, Project tailrace, bypass reach, fish ladder, and diversion pool (either as upstream migrants or fish that fall back after passing upstream using the ladder). The Licensee shall calculate the percent passage success for adult steelhead and Chinook salmon as the number of fish that passed upstream through the fish ladder and diversion pool, minus any fish killed during fallback, divided by the number that entered the Project tailrace (after subtracting fish known to have exited the Crooked River or to have spawned successfully below the Project).

The Licensee shall monitor upstream fish passage performance during the initial 5-year Performance Assessment Interval using radio-telemetry. For radio-telemetry, the Licensee shall monitor at least 25 radio-tagged adult salmon (adult steelhead, adult Chinook salmon, or a combination of adult steelhead and Chinook salmon), annually. Should the FPWG make a determination that fewer than 25 radio-tagged adult steelhead and Chinook salmon are expected to enter the Crooked River from downstream radio-tagging studies during any annual monitoring period, the Licensee shall radio tag a sufficient number of adult steelhead and Chinook salmon, if available from a trap located within the Project fish ladder, to make up the anticipated shortfall.

The Licensee shall release the radio-tagged fish downstream of the Project tailrace within the Crooked River. The Licensee shall monitor these radio-tagged adult steelhead and Chinook salmon, and any additional adult steelhead and Chinook salmon that are radio-tagged downstream of the Project by other parties, through an array of fixed-station antennae installed, operated, and maintained by the Licensee to record fish movements through the Project tailrace, bypass reach, fish ladder and diversion pool.

The Licensee shall assess the fish passage Performance Objectives during the second and third 5-year Performance Assessment Intervals using external tags and a mark and recapture protocol, or, by agreement of the FPWG, through some other appropriate method. Once the Licensee has demonstrated, through the results of any of the 5-year Performance Assessment Intervals, that the 97% upstream fish passage Performance Goals for adult steelhead and Chinook salmon have been met, upstream fish passage performance assessment monitoring shall be limited to a one year fish passage performance monitoring assessment every five years to determine if the goals are continuing to be met. If the upstream fish passage Performance Goals for adult steelhead and Chinook salmon fall below the required fish passage Performance Goals, as determined by a one year fish passage performance monitoring assessment, the Licensee shall resume annual monitoring assessments and adaptive management as described in this Amended License.

During at least the first 5 years of adult passage at the Project, unless otherwise agreed to by the FPWG, observational techniques will be used to supplement the radio-tag data with additional information on the presence and movements of up-migrant salmonids in the Opal Springs tailrace and bypass reach. Direct observations will be made on foot, by snorkel survey and/or through hydroacoustic spot-checks (possibly using DIDSON) of the Project tailrace and bypass reach at least every two to three days, as determined by the FPWG, during the steelhead and Chinook salmon upstream passage seasons and shall provide this information to the FPWG within two business days of a Fish Manager request. The Licensee shall include all information from these observations in its Annual Reports. The licensee shall report any indications of fish delay to the FPWG within 24 hours of the observation.

- Aggregate adult fish passage performance (M&E element 1D). Data accumulated through annual adult fish passage monitoring at Opal Springs will be thoroughly examined in the first few years after ladder construction, after adult salmonids have been released into Lake Billy Chinook as part of the reintroduction program, and on a regular five-year interval so that measured or observed conditions can be compared to the established fish passage Performance Objectives. Rates of fish passage, potential fish accumulation points, fish delays, possible occurrences of anomalous migratory behaviors, evidence of fish injuries (if any), and possible failures of fish to pass upstream, will all be evaluated.
- At a minimum, the Licensee shall provide a brief summary of the following metrics in its Annual Reports for adult steelhead and Chinook salmon: 1) total Project passage; 2) percent passage success, number of fallback fish, and cumulative passage timing of steelhead and Chinook salmon; 3) travel time through the bypass reach, fish accumulation (if any) within the bypass reach, variation in rates of ladder passage, and the time elapsed from first entering the Project tailrace until exiting the diversion pool. For bull trout, the Licensee shall provide in its Annual Reports, an assessment of the number, size, and passage timing (diel and seasonal) of bull trout passing through the fish ladder.
- The Licensee shall calculate the percent passage success for adult steelhead and Chinook salmon as the number of fish that passed upstream through the fish ladder and diversion pool, minus any fish killed during fallback, divided by the number that entered the Project tailrace (after subtracting fish known to have exited the Crooked River or to have spawned successfully below the Project).

DVWD will provide detailed assessments of this data every five years.

5.4.3. Biological Monitoring of Downstream Fish Passage

Efforts to monitor downstream fish passage at the Project are intended to provide the FPWG sufficient information to manage the BFAA for downstream passage, and to inform decisions on improvements to downstream fish passage conditions that may be needed in order to meet the established fish passage Performance Objectives outlined in Section 5.3. Uncertainties that this monitoring will resolve over time include species-specific run timing, route selection by fish passing downstream and how this may be affected by the BFAA, and fish survival rates through the Project.

Monitoring downstream fish passage at the Project will commence when the fish ladder and pool raise are completed and the DVWD is producing power at the new elevation. Monitoring will yield data to inform decisions on whether and what additional Tier 1 improvement measures are warranted. Specific elements of the monitoring effort for downstream fish passage at the Project are outlined below:

- *Juvenile relative abundance and emigration timing (M&E element 2A).* For the first seven years following fish ladder completion, or as otherwise agreed to by the FPWG, seasonal and inter-annual variation in the relative abundance of juvenile salmonids (particularly smolts) emigrating downstream will be monitored by set-interval trapping of fish and possibly acoustic detection at the Project. This effort will inform the FPWG and DVWD as to the annual timing and potential variation in the annual timing of smolt emigration through the Project. Sampling frequency may occasionally be higher during periods of elevated smolt passage, to help inform real-time decisions on BFAA management or to gather data on fish responses to BFAA spill events. This information will be critical to managing spills of BFAA water to help attract emigrants away from the powerhouse intake, and to developing BFAA management strategies that will optimize fish passage benefits. DVWD shall provide this information to the FPWG within two business days of a Fish Manager request. One factor to be considered in this regard will be the degree to which water year types affect the annual magnitude and timing of smolt arrivals at the Project. The Licensee shall include annual assessments of juvenile fish relative abundance and emigration timing in its Annual Reports.
- *Real-time juvenile passage effectiveness (M&E element 2C).* The Licensee shall, for the duration of the three 5-year Performance Assessment Intervals required by the Adaptive Management program, monitor at least 25 radio-tagged steelhead smolts annually. The Licensee may utilize radio-tagged juvenile steelhead that are tagged upstream by other parties. Should the FPWG make a determination that less than 25 radio-tagged steelhead smolts will pass through the Project by May 1 of any given year, the Licensee shall tag a sufficient number of smolts to make up the shortfall. The Licensee shall monitor these radio-tagged juvenile steelhead as they enter the diversion pool, enter the turbine penstock

or fish ladder, pass over each operable spillway gate, exit the bypass reach, exit the Project tailrace, and exit the lower Crooked River. The Licensee shall include this information in its Annual Reports.

The Licensee shall install, operate, and maintain fixed-station antennae positioned to record these fish movements. Antennae will be capable of differentiating between individual spillway gates, the turbine penstock, tailrace, and bypass reaches, and exit from the Crooked River into Lake Billy Chinook.

Telemetry data gathered within individual years will be interpreted with caution, but used to the degree practicable to help inform BFAA management.

- Aggregate smolt passage performance (M&E element 2D). Data accumulated through annual smolt passage monitoring (from M&E element 2C) will be assessed at five-year intervals to provide a basis for deciding upon needs for additional downstream fish passage improvements at the Project. Percent survival estimates for downstream migrants will be calculated from aggregated five-year telemetry data as the number of radio-tagged fish that passed through the project area to reach Lake Billy Chinook (minus any mortalities) divided by the number that originally entered the Opal Springs diversion pool, with possible adjustments to this algorithm dependent on agreement by the FPWG. These estimates will inform decisions as to whether the Project is meeting fish passage Performance Objectives identified in Section 5.3. Radio telemetry data may also help to determine how spills and river discharge at the Project affect smolt route selection and whether there is a substantial survival difference for fish bypassing the project via spill or through the powerhouse. Juvenile relative abundance, emigration timing, and downstream passage effectiveness data collected at the Project will be compiled by DVWD annually into a brief summary report. Detailed evaluations of the data accumulated in these reports will occur every five years.

5.4.4. **Monitoring Results and Decisions on Additional Fish Passage Measures**

The adaptive nature of the Agreement provides for specific changes that may occur at discreet time intervals, as well as measures that may be implemented at any time. Tier 1 measures are examples of the latter: at any time, the FPWG may agree to implement Tier 1 measures in response to Obvious Fish Passage Problems at the Project. Similarly, optimizing the timing of BFAA releases and the manner in which BFAA water is distributed and delivered via control of the inflatable weirs will be an ongoing effort.

Other measures will be implemented only under specific circumstances. For example, increases to BFAA *Arate* will only occur following a complete 5-year Performance Assessment Interval and only if a point estimate falls below any of the upstream or downstream fish passage Performance Standards as described below.

Trash rack modification is another measure that may only occur under specific circumstances. If “anticipated” adult steelhead survival does not meet the fish passage Performance Standard in any two of three years within any of the three 5-year Performance Assessment Intervals and unless the FPWG decides otherwise or identifies alternative solutions, DVWD will modify trash racks. Trash rack modification will be implemented pursuant to Section 5.2.5 and would reset the Performance Assessment Interval in which the modifications are implemented.

To the extent that any measures reduce turbine efficiency (for example, reducing trash rack clear space), DVWD may re-evaluate the actual turbine performance increase from the dam height increase associated with the Opal Springs pool-raise. Although the percentage of BFAA allocations would not change, the amount of water that percentage constitutes could be reduced based on new performance calculations, upon agreement of the FPWG. Otherwise, monitoring will simply continue as described in Sections 5.4.1 and 5.4.2 to accumulate data on up- and downstream passage until reaching a decision point on the potential need for changes to the BFAA Allocation Percent. Following each 5-year Performance Assessment Interval, the Licensee shall provide an assessment of its status in meeting the fish passage Performance Objectives in its Annual Reports. The assessment will rely upon information collected annually from upstream and downstream fish passage monitoring.

5.4.5. Required Actions

The Licensee shall file Annual Reports as required by the Amended License. Following each 5-year Performance Assessment Interval the Licensee shall, in that year’s Annual Report, provide a 5-year assessment of its status in meeting the fish passage Performance Objectives. The assessment will rely upon information collected annually from upstream and downstream fish passage monitoring.

1st 5-year Monitoring Interval: The Licensee shall, following the first 5-year Performance Assessment Interval, take actions in one of the following categories based on the point estimate of the aggregated annual data:

- 97 percent or greater passage effectiveness or survival. No additional Tier 1 measures and no increase to the BFAA Allocation Percent will occur at this time.

The Licensee may, at its discretion, develop a study of BFAA effectiveness, for approval by the FPWG, to determine whether the BFAA has been over-allocated (less water is needed to meet fish passage Performance Goals or, for resident species, to ensure safe, timely and effective passage). If it is determined by the FPWG that the BFAA is over-allocated, the Allocation Percent will be reduced consistent with the level of over allocation, upon agreement of the FPWG.

- 90 percent or greater, but less than 97 percent passage effectiveness or survival. The Licensee shall implement applicable Tier 1 measures, as required by the FPWG, in an effort to achieve the biological Performance Standards.
- Less than 90 percent passage effectiveness or survival. The Licensee shall implement applicable Tier 1 measures, as required by the FPWG, and shall increase the BFAA Allocation Percent to 35%.
- If more than 1,000 bull trout greater than 12 inches use the ladder annually, and measured performance of downstream steelhead smolt survival is less than 97%, the Licensees shall implement Tier 1 measures as required by the FPWG.

2nd 5-year Monitoring Interval: The Licensee shall, following the second 5-year Performance Assessment Interval, take actions in one of the following categories based on the point estimate of the aggregated annual data:

- 97 percent or greater passage effectiveness or survival. No additional Tier 1 measures and no increase to the BFAA Allocation Percent will occur at this time.

The Licensee may, at its discretion, develop a study of BFAA effectiveness over a range of flow conditions, for approval by the FPWG, to determine whether the BFAA has been over-allocated (less water is needed to meet fish passage Performance Goals or, for resident species, to ensure safe, timely and effective passage). If it is determined by the FPWG that the BFAA is over-allocated, the Allocation Percent will be reduced consistent with the level of over allocation, upon agreement of the FPWG.

- 90 percent or greater, but less than 97 percent passage effectiveness or survival. The Licensee shall implement all remaining and applicable Tier 1 measures, as required by the FPWG, in an effort to achieve the biological Performance Standards.
- Less than 90 percent passage effectiveness or survival. The Licensee shall implement all remaining and applicable Tier 1 measures, as required by the FPWG, and shall increase the fisheries BFAA Allocation Percent to 45%.
- If more than 1,000 bull trout greater than 12 inches use the ladder annually, and measured performance of downstream steelhead smolt survival is less than 97%, the Licensees shall implement Tier 1 measures as required by the FPWG.

3rd 5-year Monitoring Interval: The Licensee shall, following the third 5-year Performance Assessment Interval, take actions in one of the following categories based on the point estimate of the aggregated annual data:

- If all Biological Performance Goals have been met: No additional Tier 1 measures and no increase to the BFAA Allocation Percent will occur at this time. The Licensee shall continue monitoring fish passage for the term of the Amended License and shall provide summaries of this monitoring information, and other salmonid data that may be available from other sources within the project area, annually.

The Licensee may, at its discretion, develop a study of BFAA effectiveness over a range of flow conditions, for approval by the FPWG, to determine whether the BFAA has been over-allocated (less water is needed to meet biological Performance Goals or, for resident species, to ensure safe, timely and effective passage). If it is determined by the FPWG that the BFAA is over-allocated, the Allocation Percent will be reduced consistent with the level of over allocation, upon agreement of the FPWG.

- If one or more of the Biological Performance Goals have not been met: The Licensee shall meet with the FPWG as soon as possible, but by no later than February 1 of the next year, to determine: (1) whether implementation of any remaining Tier 1 measures is likely to meet the applicable Goal; or (2) whether major improvements are required (a “Tier 2 Determination”).
 - If the FPWG determines that additional Tier 1 measures are warranted, the Licensee shall implement the relevant measures as soon as possible and shall resume monitoring as described for upstream and downstream fish passage for a period of 3 years. Following this 3-year monitoring cycle, the Licensee shall meet again with the FPWG to determine whether the applicable Goals have been met, or whether additional major improvements are required.
 - If the FPWG determines that Tier 2 major improvements are required, the Licensee shall, in consultation with and subject to the approval of the FPWG, identify specific Tier 2 measures and a necessary monitoring and evaluation plan for implementation. The Licensee shall, within 90 days of this determination, propose an action plan and schedule for implementing the Tier 2 measures. After review and approval by the FPWG, the Licensee shall file the action plan with the Commission for its approval.
 - The Commission reserves the right to require changes to any Tier 2 measure. Any such changes required by the Commission may also require additional approvals by the appropriate Fish Agencies pursuant to their statutory authorities. The

Licensee shall implement the Tier 2 measures and the monitoring and evaluation plan upon Commission approval.

If more than 1,000 bull trout greater than 12 inches use the ladder annually, and measured performance of downstream steelhead smolt survival is less than 97%, the Licensees shall implement additional measures as required by the FPWG.

5.5. Monitoring and evaluation quality assurance / quality control

Monitoring and evaluation commitments in this plan will require an investment in field deployment, data management, and analysis that are currently beyond the capabilities of the DVWD. It is important to provide the FPWG with data and analysis that meets standards of quality, accuracy and consistency sufficient to meet the needs of the adaptive management program. As well, management of the BFAA by Fish Managers will require support from the DVWD. DVWD shall use accepted scientific practices as approved by NMFS, USFWS, BIA, ODFW, and CTWS (provided that the CTWS is a signatory to the Settlement Agreement) for all data collection and monitoring and shall ensure that data collection standards are being met. The Licensee shall provide raw monitoring data to the FPWG within two business days of a Fish Manager request. The Licensee shall include all data in its Annual Reports. DVWD will hire, contract, or otherwise provide for sufficient capabilities to meet FPWG and Fish Manager needs, and all Fish Passage Plan and Amended License Article requirements.

5.6. Abandonment of Anadromous Fish Reintroduction

In the event that the NMFS, USFWS, ODFW, and the CTWS each notify the Commission that all efforts to re-introduce anadromous fish to the Upper Deschutes River Sub-basin have failed and have been discontinued, the Licensee's responsibilities to achieve steelhead and Chinook salmon fish passage Performance Standards shall cease and any associated monitoring and evaluation responsibilities shall terminate. The Licensee shall continue to operate the ladder for use by native resident fish, including bull trout, conduct associated monitoring for native resident fish, and provide water credits to the Bypass Flow Accrual Account for purposes of providing an ongoing benefit to native resident fish. The allocation shall be 25% of the increased hydroelectric potential resulting from the new diversion pool elevation.

The Licensee may, at its discretion, develop a study of BFAA effectiveness over a range of flow conditions, for approval by the FPWG, to determine whether the BFAA has been over-allocated (less water is needed) to meet fish passage needs of resident native fish. If it is determined by the FPWG that the BFAA is over-allocated, the allocation rate will be reduced consistent with the level of over allocation, upon agreement of the FPWG.

Citations

Oregon Department of Fish and Wildlife and the Confederated Tribes of the Warm Springs Reservation of Oregon (ODFW and CTWS). 2008. Reintroduction and Conservation Plan for Anadromous Fish in the Upper Deschutes River Sub-basin, Oregon, Edition 1: Spring Chinook Salmon and Summer Steelhead. October 2008.

Appendix C

Primary Contacts

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**AMENDMENT OF LICENSE
OPAL SPRINGS HYDROELECTRIC PROJECT
FERC PROJECT NUMBER 5891-000**

REVISIONS TO EXHIBIT A

Below is a tabulation of the Opal Springs Hydroelectric Project facilities. Refer to the revised Exhibit F and G drawings for additional details.

Note on project elevations: All elevations are reported in National Geodetic Vertical Datum of 1929 (NGVD 29), except construction drawings that are in a local project datum (LPD), which is greater than NGVD 29 by 1.79 feet.

Diversion Structure

Type	Concrete-capped rockfill
Height from toe of Dam	25.5
Crest Elevation with pneumatic gates Lowered	
Elevation of normal water surface	2001.21 ft. NGVD '29
Estimated pool area	9.2 acres
Estimated pool storage	67.2 acre-feet
Crest Elevation at minimal fish ladder operations	
Elevation of normal water surface	2007.21 ft. NGVD '29
Estimated pool area	145.5 acres
Estimated pool storage	13.1 acre-feet
Crest Elevation at maximum pool	
Elevation of normal water surface	2010.21 ft NGVD '29
Estimated pool area	15 acres
Estimated pool storage	184.8 acre-feet

Pneumatic Crest Gates

Gate Type	Obermeyer			
Gate Number	1	2	3	4
Size	6 x 8	9 x 12	2 each at 9 x 67.25	9 x 12
Hydraulic capacity (cfs)	287	727	9295	791

Fish Ladder

Type	Vertical Slot
Height	31.2
Number of cells	42
Design flow (cfs)	30
Jump Height (inches)	12
Operating Range	2007.21-2010.21 ft. NGVD '29

Intake Structure

Type Concrete
Size 44 x 33 feet in plan
Height 32 ft
Parapet Elevation 2012.2178 ft. NGVD '29

Conduits

Type Corrugated metal
Number Two
Diameter 12.5 feet
Length 1,157 feet each
Lining Full cement mortar
Cover Minimum 5 feet of earth and rock for protection from falling rock

Bifurcation

Type Concrete
Size 52 x 33 feet in plan
Height 19 feet
Transition Two 12.5 foot diameter to one 16 foot diameter

Surge Tank

Type Steel
Diameter 30 feet
Height 37 feet
Orifice Diameter 6 feet

Penstock

Type Steel
Diameter 16 feet
Length 160 feet

Powerhouse

Type Indoor, two level
Size 99 feet x 63 feet
Turbine Type 3-meter horizontal tube type
Turbine Manufacturer Allis Chalmers
Gross Head 52 feet
Generator 4.3 MW 4,160 V synchronization
Speed 150 rpm
Generator manufacturer Siemens-Allis

Turbine Water Driven Pumps

Description
Rating (hp)
Turbine flow capacity (cfs)

Pump Units	
Unit 1	Unit 3
175	480
65	140

Pumping capacity (gpm)
Penstock Dimensions

600	1,400
4 feet diameter x 64 feet long	6' feet diameter x 100 feet long

Project Operations

The Project will operate as a run-of-river facility, and the minimum instream flow requirement of the current license (License Article 36) will be maintained. Gates No. 1, 2, and 4 and the associated concrete-lined spill channels are sized to provide a minimum total flow of 864.5 cfs, which, combined with the ladder flow of 30 cfs and the maximum turbine flow of 1,772.5 cfs, is equal to the 5% annual exceedance streamflow of 2,667 cfs. At this point, the dam crest could be lowered as needed to provide sufficient cushioning flow over the roughened dam face to minimize injury and mortality to fish and to avoid impinging on the Wild and Scenic Area boundary.

Pool level is maintained with the aid of level sensor and computer. Changes in flow are automatically sensed and the turbine wicket gates adjust to maintain the pool level. The setting of the pool level is calibrated to the nearest tenth of a foot in elevation. The limits of pool elevation are set at a low elevation of 2007.21 and a high elevation of 2010.21 feet.

EXHIBIT F

GENERAL DESIGN DRAWINGS

This section of the Application for Non-Capacity Amendment contains the Draft Exhibit F drawings for the proposed Opal Springs Fish Passage Project. The primary components of Exhibit F are:

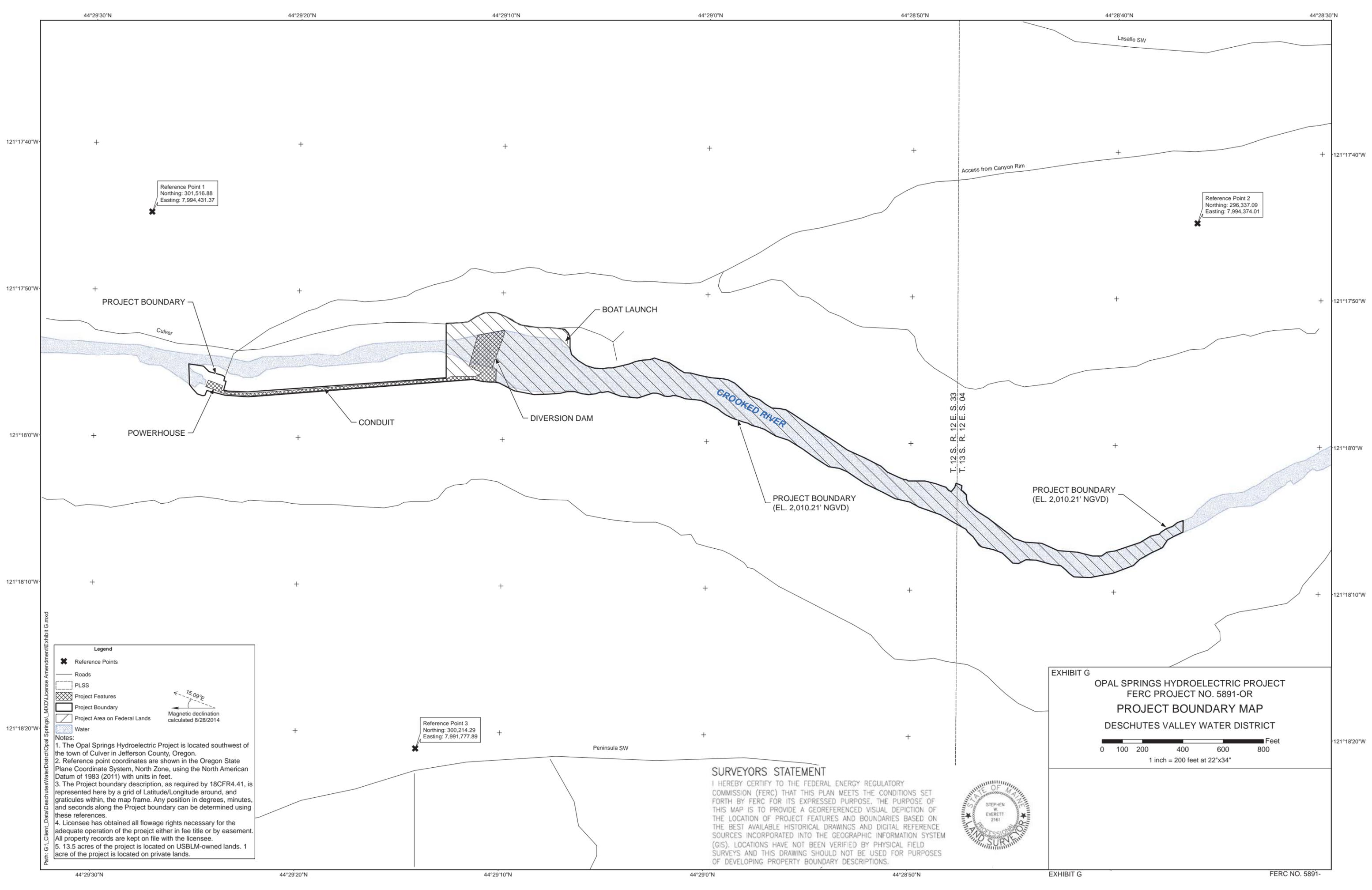
Sheet Number	Title
F-5	Overall Site Plan [replaces existing Sheet F-5 from 1985]
F-14	Site Plan
F-15	Fish Ladder – Plan and Profile
F-16	Fish Ladder – Plan and Profile
F-17	Spillway Chute #2 – Plan and Profile
F-18	Spillway Chute #4 – Plan and Profile
F-19	Gate #4 Spillway Details
F-20	Gate #1 and Gate #2 Sections
F-21	Gate # 3 and Gate #4 Sections

Pursuant to 18 CFR §4.39(e), Exhibit F design drawings showing major structures are being withheld and filed separately as Critical Energy Infrastructure Information (CEII). Procedures for obtaining access to CEII may be found at 18 CFR §388.113. Requests for access to CEII should be made to the Federal Energy Regulatory Commission's (FERC) CEII Coordinator.

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EXHIBIT G

PROJECT BOUNDARY MAPS



Reference Point 1
 Northing: 301,516.88
 Easting: 7,994,431.37

Reference Point 2
 Northing: 296,337.09
 Easting: 7,994,374.01

Reference Point 3
 Northing: 300,214.29
 Easting: 7,991,777.89

Path: G:\Client_Data\Deschutes\Water\District\Opal_Springs\MXD\License Amendment\Exhibit G.mxd

Legend

- Reference Points
- Roads
- PLSS
- Project Features
- Project Boundary
- Project Area on Federal Lands
- Water

Notes:

1. The Opal Springs Hydroelectric Project is located southwest of the town of Culver in Jefferson County, Oregon.
2. Reference point coordinates are shown in the Oregon State Plane Coordinate System, North Zone, using the North American Datum of 1983 (2011) with units in feet.
3. The Project boundary description, as required by 18CFR4.41, is represented here by a grid of Latitude/Longitude around, and graticules within, the map frame. Any position in degrees, minutes, and seconds along the Project boundary can be determined using these references.
4. Licensee has obtained all flowage rights necessary for the adequate operation of the project either in fee title or by easement. All property records are kept on file with the licensee.
5. 13.5 acres of the project is located on USBLM-owned lands. 1 acre of the project is located on private lands.

15.09°E
 Magnetic declination
 calculated 8/28/2014

SURVEYORS STATEMENT

I HEREBY CERTIFY TO THE FEDERAL ENERGY REGULATORY COMMISSION (FERC) THAT THIS PLAN MEETS THE CONDITIONS SET FORTH BY FERC FOR ITS EXPRESSED PURPOSE. THE PURPOSE OF THIS MAP IS TO PROVIDE A GEOFERENCED VISUAL DEPICTION OF THE LOCATION OF PROJECT FEATURES AND BOUNDARIES BASED ON THE BEST AVAILABLE HISTORICAL DRAWINGS AND DIGITAL REFERENCE SOURCES INCORPORATED INTO THE GEOGRAPHIC INFORMATION SYSTEM (GIS). LOCATIONS HAVE NOT BEEN VERIFIED BY PHYSICAL FIELD SURVEYS AND THIS DRAWING SHOULD NOT BE USED FOR PURPOSES OF DEVELOPING PROPERTY BOUNDARY DESCRIPTIONS.



EXHIBIT G

OPAL SPRINGS HYDROELECTRIC PROJECT
FERC PROJECT NO. 5891-OR
PROJECT BOUNDARY MAP
DESCHUTES VALLEY WATER DISTRICT

0 100 200 400 600 800 Feet
 1 inch = 200 feet at 22"x34"