



August 28, 2014

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

Subject: Spokane River Hydroelectric Project, FERC Project No. 2545, Appendix A, Section V, Revised Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection Plan

Dear Secretary Bose:

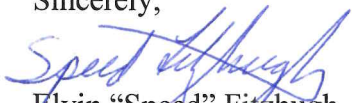
The Spokane River Project License (License) Appendix A, Section V of the Idaho Section 401 Water Quality Certification requires Avista to comply with the Post Falls Hydroelectric Development (HED) discharge levels as outlined in the 2005 "Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection Plan" (Plan). Avista has implemented the Plan to determine and maintain target flows from the Post Falls HED between April 16 and June 7 each year.

Section 5 of the Plan states that it will be reviewed in consultation with Idaho Department of Fish and Game (IDFG) and the Washington Department of Fish and Wildlife (WDFW) at least once every five years, and revised if necessary. No previous changes were made to the 2005 Plan. Avista consulted with the IDFG and WDFW on July 14, 2014 to request minor editorial revisions to the Plan. Neither agency commented on the proposed changes which Avista incorporated into the enclosed August 2014 "Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection Plan. Appendix A of the Plan includes the consultation record and the redlined edits are enclosed for reference.

With this, Avista is submitting the enclosed 2014 Plan, which supersedes the 2005 Plan, to FERC.

If you have any questions about this filing, please feel free to call me at (509) 495-4998 or Tim Vore at (509) 495-8612.

Sincerely,


Elvin "Speed" Fitzhugh
Spokane River License Manager

Enclosures: Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection Plan
Redlined Version of the Plan

cc: Jim Fredericks, IDFG
Karin Divens, WDFW
Tim Vore, Avista

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AVISTA CORPORATION

UPPER SPOKANE RIVER RAINBOW TROUT SPAWNING AND FRY EMERGENCE PROTECTION PLAN

Spokane River Hydroelectric Project
FERC Project No. 2545

Prepared By:
Avista Corporation

August 28, 2014

Table of Contents

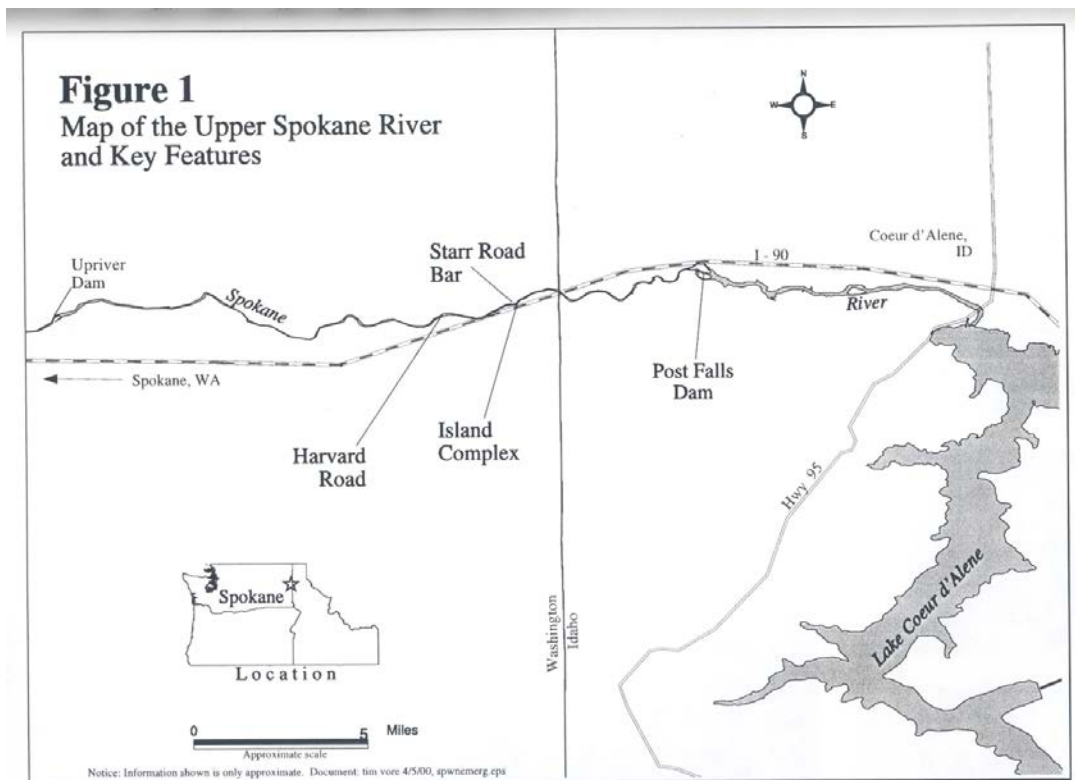
1.0	Introduction and Background	1
2.0	Goal and Objectives	4
3.0	Target Post Falls HED Discharge for Effective Incubation Flow	5
3.1	Determine the Spawning Period Flow and Forecasted Stream Flows each year	5
3.2	Determine a Target Post Falls HED Discharge for Effective Incubation Flow to be Maintained through the Fry Emergence Period	5
4.0	Reporting.....	7
5.0	Plan Review	7
	REFERENCES	8

APPENDIX A: Consultation Record

1.0 Introduction and Background

Avista Corporation (Avista) owns and operates the Spokane River Hydroelectric Project (Project) located on the Spokane River in eastern Washington and northern Idaho. The Project is licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 2545. Appendix A of the license requires Avista to comply with the discharge levels as outlined in this Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection Plan (Plan). Avista has implemented the Plan since receiving the FERC license in 2009, and in each year since then has maintained Post Falls Hydroelectric Development (Post Falls HED) discharge levels above the established effective incubation flows as identified below in Section 3.

The Project has five generating developments and associated dams: Post Falls, located in Idaho, and Upper Falls, Monroe Street, Nine Mile, and Long Lake, which are located downstream in Washington. Post Falls HED is located approximately nine miles downstream of the outlet of Coeur d'Alene Lake, which is the beginning of the Spokane River (Figure 1).



During certain times of the year, the Post Falls HED has the ability to control Spokane River flows. Johnson (1997), Avista (2000), and Parametrix (2003) determined that rainbow trout (*Oncorhynchus mykiss*) spawning, incubation, and subsequent fry emergence in the free-flowing reach of the Spokane River downstream of the Post Falls HED (upper Spokane River) occurs between April first and the first part of June, potentially overlapping the timeframe when the Post Falls HED typically begins to control Spokane River flow. Earlier studies have suggested that river flows are a key factor in determining the success of rainbow trout fry recruitment in the upper Spokane River each year (Bailey and Saltes 1982; Bennett and Underwood 1988; IDFG et al. 1990). The Idaho Department of Fish and Game (IDFG et al. 1990) stated that rainbow trout year class in the upper Spokane River is related to river flow based on comparisons of age class strength and the corresponding flow volumes during the year of age class origin. River flows and associated water levels that allow the majority of rainbow trout redds to remain wetted until fry emerge from the gravel would presumably help maximize egg and pre-emergence fry survival, and therefore fry recruitment.

Extensive redd surveys conducted in 1995 and 1996 suggested that 85-90 percent of the rainbow trout spawning in the upper Spokane River occurred in three areas: just downstream of Harvard Road, a gravel bar located near Starr Road, and the Island Complex near the Washington and Idaho state line (Figure 1) (Johnson 1997). In 2003, Parametrix confirmed that much of the rainbow trout spawning in the upper Spokane River is occurring in these three established spawning sites (Parametrix 2003; 2004).

Since 1995, Avista, in cooperation with state and federal resource agencies, has been monitoring rainbow trout spawning activity and subsequent fry emergence in the upper Spokane River. This monitoring has been focused on three spawning sites (Harvard Road, Starr Road Bar, and the Island Complex) referred to as “index spawning sites” (Figure 1). Although spawning is occurring in other areas of the Spokane River, annual surveys in the three established index spawning sites provided a good indicator of spawning and subsequent fry emergence activity and allows for year-to-year comparisons and assessment of long-term trends.

Monitoring of the index spawning sites determined that rainbow trout spawning in the upper Spokane River peaks during the first week of April and typically concludes by the second week of April, when water temperatures are 4-5⁰C, and that emergence of fry usually occurs in early June (Johnson 1997; Avista 2000; Parametrix 2003). This monitoring has also determined that redd locations within the index spawning sites varies in the river channel each year depending on the annual flow conditions. Johnson (1997) and Avista (2000) determined that the amount of spawning area that remains wetted throughout the fry emergence period also varies each year. Annual variation in water runoff conditions can result in a rapid decline in Spokane River flow during the incubation and fry emergence period. These conditions, together with the Post Falls HED withholding water to achieve or maintain Coeur d'Alene Lake water levels, can dewater redds or strand emerged rainbow trout fry.

Johnson (1997), Avista (2000), and Parametrix (2003) concluded that emergence of rainbow trout fry in the Spokane River was observed from late May to early June. Protection of incubation and Fry emergence in the upper Spokane River is important through the first week of June each year (WDFW and IDFG recommendation June 30, 2004).

Bennett and Underwood (1988) also discussed variable year class strength of rainbow trout in the Spokane River. The WDFW and the IDFG suggested that to protect a healthy population of rainbow trout in the Spokane River it is important to maximize spawning and fry emergence following two years of lower recruitment (Chris Donley WDFW, Ned Horner IDFG personal communication July 1, 2004). To protect the population of rainbow trout in the Spokane River and recruit a strong year class would require a prioritization of flows following no more than two years of lower recruitment.

Instream flow studies report that in the upper Spokane River the total available spawning and incubation area peaks over a flow range of about 7,000 to 8,500 cubic feet per second (cfs) at the Harvard Road transect site, with redd desiccation becoming more likely as flows drop below 4,500 cfs (nhc and HDI 2004). At the Starr Road Bar transect site, spawning area is highest at 9,500 cfs with incubation area showing a steep decline as flows fall below 7,000 cfs. No instream flow transects were located at the Island Complex site. HDI also

determined the amount of spawning area that would remain suitable for incubation and fry emergence at the combined Harvard Road and Starr Road Bar spawning sites depending on Post Falls HED discharge flow (Table 1).

The timing and variability of rainbow trout spawning and fry emergence, the inherent annual and shorter term variability in Spokane River flows and water temperatures, and the potential to adversely affect summer lake levels and/or summer river flows often prevent maintaining optimal flow conditions through the fry emergence period and suggests that a set minimum flow during the spawning and fry emergence period is not appropriate. The instream flow information on the amount of spawning area available for successful incubation at various stream flows, combined with forecasted stream flows, can be used to determine the Spokane River flow that maintains a majority of the spawning site redds wetted through the fry emergence period. Redd survival and successful fry emergence can be protected through the first week of June by establishing a Post Falls HED discharge to preserve an effective incubation flow for the Spokane River. Maintaining this “effective incubation flow,” while also considering other factors, is important to ensure that the Post Falls HED is operated in a manner that best accommodates annual variability in river flows while maximizing potential fry emergence and survival.

2.0 Goal and Objectives

The goal of this Plan is to help protect rainbow trout spawning and fry emergence in the upper Spokane River by providing adequate Post Falls HED discharge flow. The following objectives are established to meet this goal:

- Determine a spawning period flow for April 1 through April 15 each year.
- Determine forecasted stream flows for April - July each year.
- Determine a target Post Falls HED discharge for effective incubation flow to be maintained through the fry emergence period of April 16 to June 7 each year.

3.0 Target Post Falls HED Discharge for Effective Incubation Flow

3.1 Determine the Spawning Period Flow and Forecasted Stream Flows Each Year

The spawning period flow for April 1 – April 15 and the forecasted stream flows for the Spokane River each year will be determined using the following methods:

- The spawning period flow will be determined as the highest 5-day running average (consecutive days) of the daily discharge flows from the Post Falls HED for April 1 – April 15 each year.
- Forecasted stream flows for the Spokane River near Post Falls will be determined as the most probable average (%AVG.) for April – July from the Streamflow Forecasts, Idaho Water Supply Outlook Report April 1, (by year) NRCS (by year).

The spawning period flow and the forecasted stream flows for the Spokane River near Post Falls will be communicated to IDFG and WDFW by April 30 each year.

3.2 Determine a Target Post Falls HED Discharge for Effective Incubation Flow to be Maintained through the Fry Emergence Period

The target Post Falls HED discharge for effective incubation flow for the period of April 16 – June 7 each year will be determined using the annual spawning period flow and the average forecasted stream flow using the following method:

- When forecasted stream flows for the Spokane River near Post Falls for April - July are 90% of average or greater, the spawning period flow will be used to determine the target Post Falls HED discharge for effective incubation flow that will preserve 70 percent of the combined index spawning sites wetted through the fry emergence period as identified from Table 1.
- When forecasted stream flows for the Spokane River near Post Falls are 80% to 89% of average the spawning period flow will be used to determine the target Post Falls HED discharge for effective incubation flow that will preserve 60 percent of the

combined index spawning sites wetted through the fry emergence period as identified from Table 1.

- When forecasted stream flows for the Spokane River near Post Falls are less than 80% of average the spawning period flow will be used to determine the target Post Falls HED discharge for effective incubation flow that will preserve 50 percent of the combined index spawning sites wetted through the fry emergence period as identified from Table 1.

Table 1. Post Falls HED discharge flow (cfs) to maintain a percent of the combined Harvard Road and Starr Road spawning sites wetted for effective incubation flow based on the spawning period flow (HDI 2004).

Percent of Site	Spawning Period Flow (cfs)						
	6000	7000	8000	9000	10000	11000	12000+
70%	3087	3369	3640	3701	4291	4450	5034
60%	2872	3087	3272	3487	3696	3809	4265
50%	2614	2837	2987	3126	3258	3335	3538

Annual spawning period flow will be rounded to the nearest whole table value

The target Post Falls HED discharge for effective incubation flow through the fry emergence period reflect the minimum flows that Avista will attempt to maintain each year. Avista will also attempt to maximize flow for effective incubation and fry emergence above the established target as conditions allow.

Several circumstances, including the annual and shorter-term variability in Spokane River flows and the desire to minimize the effects on Coeur d’Alene Lake summer recreation water levels, may require that Post Falls HED discharge be reduced below the target effective incubation flow. If circumstances require that the target effective incubation flow of that year cannot be maintained, Avista will consult with the IDFG and the WDFW to determine appropriate actions and/or determine an “alternative target flow” that will be maintained through June 7 of that year.

If the target Post Falls HED discharge for effective incubation flow that preserves 50 percent of the combined index spawning sites wetted through June 7 is not achieved during any two

consecutive years then the following year will be prioritized and preserve 70 percent or greater of the combined index spawning site wetted through June 7 of that year.

4.0 Reporting

Annual results of the spawning period flow, the forecasted stream flows, the target Post Falls HED discharge for effective incubation flow, and any pertinent and relevant information or other circumstances will be summarized by September 30 of each year. The summary will also contain the recorded average daily discharge flow from the Post Falls HED for the period of April 1 – June 7 of the given year. The summary will be distributed to the IDFG and the WDFW and retained at Avista.

5.0 Plan Review

This Plan will be reviewed in consultation with IDFG and WDFW at least once every five years, and revised if necessary. Avista provided minor editorial revisions to the Plan to IDFG and WDFW on July 14, 2014. Neither agency provided comments to the revisions that Avista proposed. This Plan (August 28, 2014) supersedes the original 2005 Plan and includes the revisions. Avista will begin implementing the Plan (August 28, 2014) beginning in 2015.

REFERENCES

- Avista. 2014. Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection 2014 Annual Summary. Avista Corporation. Spokane, WA.
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- Idaho Department of Fish and Game, Washington Department of Fish and Wildlife, and Washington Water Power. 1990. Unpublished study. Spokane River Fishery Evaluation.
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- Nhc and HDI. 2004. Instream Flow and Fish Habitat Assessment. Northwest Hydraulic Consultants, North Vancouver, British Columbia and Hardin-Davis, Inc., Corvallis, Oregon. Avista Corporation, Spokane, Washington.
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APPENDIX A
Consultation Record

Avista's Letter to the Idaho Department of Fish and Game



July 14, 2014

Jim Fredericks
Panhandle Region Fishery Manager
Idaho Department of Fish and Game
2885 W. Kathleen Ave.
Coeur d'Alene, Idaho 83815

Subject: Spokane River Hydroelectric Project, FERC Project No. 2545, Appendix A, Section V, Revised Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection Plan and Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection 2014 Annual Summary

Dear Mr. Fredericks,

The Spokane River Project License (License) Appendix A, Section V of the Idaho Section 401 Water Quality Certification requires Avista to comply with the Post Falls Hydroelectric Development (HED) discharge levels as outlined in the "Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection Plan" (Plan). Avista has implemented the Plan to determine and maintain target flows from the Post Falls HED between April 16 and June 7 each year.

Section 5 of the Plan states that it will be reviewed in consultation with Idaho Department of Fish and Game and the Washington Department of Fish and Wildlife at least once every five years, and revised if necessary. Avista has implemented the Plan since 2010 and in each year since then we have maintained discharge flows above the established effective incubation target flow. Avista believes that the goal of the Plan, to help protect rainbow trout spawning and fry emergence in the Upper Spokane River, is being met and recommends no substantive changes. Avista has made minor editorial revisions to update the Plan since the License was issued and is providing a copy of the redlined revisions and the Revised Plan for your review. Please provide any comments that you may have by August 14, 2014.

In regard to this year, Avista was able to maintain the discharge flow from the Post Falls HED above the established effective incubation target flow level. Please find enclosed for your records the "Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection 2014 Annual Summary."

If you have any questions about these documents, please feel free to call me at (509) 495-8612.

Sincerely,

A handwritten signature in black ink that reads "Tim Vore".

Tim Vore
Environmental Specialist

Enclosure

cc: Robert Steed, IDEQ
Speed Fitzhugh, Avista

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No comments received on the editorial changes from the Idaho Department of Fish and Game.

Avista's Letter to the Washington Department of Fish and Wildlife



July 14, 2014

Karin Divens
Habitat Program
2315 N Discovery Place
Spokane Valley, WA 99216

Subject: Spokane River Hydroelectric Project, FERC Project No. 2545, Appendix A, Section V, Revised Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection Plan and Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection 2014 Annual Summary

Dear Ms. Divens,

The Spokane River Project License (License) Appendix A, Section V of the Idaho Section 401 Water Quality Certification requires Avista to comply with the Post Falls Hydroelectric Development (HED) discharge levels as outlined in the "Upper Spokane River Rainbow Trout Spawning and Fry Emergence Protection Plan" (Plan). Avista has implemented the Plan to determine and maintain target flows from the Post Falls HED between April 16 and June 7 each year.

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Tim Vore
Environmental Specialist

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