Final
Bull Trout Redd Monitoring Report for the Wallowa Falls Hydroelectric Project

Upper East Fork Wallowa River
photo courtesy of Kendrick Moholt

(FERC No. P-308)

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1.0 INTRODUCTION

The United States Fish and Wildlife Service (USFWS) issued a new Biological Opinion (BiOp) for the Wallowa Falls Hydroelectric Project (Project) on October 14, 2016. Monitoring elements within the new BiOp specifically pertaining to Endangered Species Act (ESA) listed bull trout (*Salvelinus confluentus)* were triggered when the Federal Energy Regulatory Commission (FERC) issued a new operating license for the Project on January 7, 2017.

The USFWS listed five reasonable and prudent measures (RPM) to be undertaken in order to minimize incidental take of bull trout by Project operations. Elements within this Plan pertain specifically to RPM 4 which seeks to "*minimize the risk of adverse effects to bull trout from emergency shut-down and ramping".* Section 8.4 4(a) of the BiOp adds specific language and actions to be taken in order to achieve RPM 4.

Bull trout currently inhabit the East Fork Wallowa River (Study Area) at varying densities, depending on time of year. Past redd surveys of the Study Area have revealed bull trout actively constructing redds, while no bull trout redds have ever been observed within the neighboring West Fork.

This Report and the information contained therein fulfills reporting requirements per Section 8.4 4(a) of the USFWS issued BiOp as well as results pertinent to implementation of actions necessary to assess abundance and spatial distribution of bull trout redds within the East Fork Wallowa River.

2.0 STUDY AREA

The bypassed portion of the East Fork Wallowa River within and near the Project area is approximately 2,800 meters (m) long from the Project diversion dam to its confluence with the Wallowa River (Figure 1). Gradient in this reach is high, with the upper 1,600 m averaging 19 percent and the lower 1,200 m averaging 8.5 percent. Channel morphology within most of the upper reach is dominated mainly by steep bedrock, vertical waterfalls, and cascades over boulders; though the upper reaches are steep, the lower 800 m to the confluence with the Wallowa River has a shallower gradient, consisting of numerous riffles and pools. Over the course of its length, the bypassed East Fork Wallowa River drops approximately 365 m from the dam to the confluence with the Wallowa River. The upper and lower portions are divided by a 3.7 m vertical falls, an impassible upstream migration fish barrier.

Figure 1. Wallowa Falls Hydroelectric Project.

3.0 METHODS

Section 8.4 4(a) of the BiOp states the following terms and conditions are necessary for the implementation of RPM 4, "*Conduct bull trout redd monitoring in the East Fork Wallowa River (from the upstream falls to the confluence with the Wallowa River) on an annual basis for 10 years to monitor take. FERC/PacifiCorp shall meet with the Service at the end of the 10 year period to determine whether additional years of redd monitoring are necessary GPS and map redds and photo document redds during survey. Measure the size of a redd and its location. Document bull trout observed (<6 inches in length, < 12 inches in length, <14 inches in length, and > 14 inches in length, while conducting redd count and document if bull trout occupy the redd). Note if brook trout are spawning with bull trout. Document flows during annual redd counts and during a shutdown and ramping. Conduct this redd monitoring in mid-September and October. If an emergency shutdown and ramping occurs during the spawning season, the East Fork Wallowa River spawning area will be field visited for any new redds built near the water's edge that could be dewatered due to shut down and ramping. Notify the Service of both positive and negative findings".*

Bull trout redd surveys of the lower portion of the East Fork Wallowa River began August 24, 2023, and continued weekly through October 20, 2023, for a total of nine planned redd surveys. During each survey the entire lower portion of the East Fork Wallowa River was walked by an experienced qualified biologist, from the confluence with the West Fork Wallowa River upstream 800 m to the migratory fish barrier, an approximately 7-meter vertical falls. To standardize inherent observer error, the same experienced surveyors were utilized for all surveys in 2023.

All encountered bull trout redds were demarcated with handheld Global Position Satellite (GPS) units, flagged for visual reference within the stream, measured, and photographed. During subsequent surveys, previously identified redds were revisited and assessed for visibility. Flagging was either marked Still Visible along with the survey date if redd could still be visually identified, or the flagging taken down if the redd was no longer visible. Time taken for redd to no longer remain visible within the stream was recorded to assess redd life. Though the Planning document for these activities called for only four redd surveys during the spawning period, this being the sixth year of study and redd life still being characterized, nine surveys were performed to increase precision of previously assessed redd persistence within this watershed. Average and minimum observed redd life will be utilized to adjust frequency of surveys moving forward. Flows during the survey period (Sep-Oct) remained relatively stable and measured between 9-20 cubic feet per second as measured at the United States Geological Survey gage.

All fish observed in the vicinity of identified redds were recorded to species, if possible, as well as estimated for fork length.

4.0 RESULTS

Ten bull trout redds were identified and marked by GPS during redd surveys performed in the East Fork Wallowa River in 2023 (Figure 2). All ten bull trout redds were large and indicative of being constructed by large migratory-sized fish (Table 1), and all were observed in the upper portion of available habitat in the East Fork Wallowa, just below and near to the natural migratory fish barrier. All redd observations in 2023 occurred between September 12 and October 6, with the peak of four counted on September 29 (Figure 3). Six of the ten identified redds had live bull trout either on the redd actively constructing, or in close proximity. Figure 4 graphically represents the established trend line based on historical redd counts in the East Fork Wallowa River to date (2017-2023).

Table 1. East Fork Wallowa River bull trout redd data.

Date	Survey Location	Redd #	Redd Dimension (cm)	Live bull trout				Survey Conditions
				<6 in.	<12 in.	<14 in.	>14 in.	
8/24/2023	EFW, mouth to barrier	n/a						Sunny, clear. Water clarity excellent.
8/31/2023	EFW, mouth to barrier	n/a	Emergency survey prior to the generating unit being brought online, no redds observed during survey.					Sunny, clear. Water clarity excellent.
9/8/2023	EFW, mouth to barrier	n/a						Sunny, clear. Water clarity excellent.
9/12/2023	EFW, mouth to barrier	1	96 x 50	n/a	n/a	n/a	2	Sunny, clear. Water clarity excellent.
9/12/2023	EFW, mouth to barrier	2	130 x 65	n/a	n/a	n/a	2	Sunny, clear. Water clarity excellent.
9/18/2023	EFW, mouth to barrier	3	120 x 70	n/a	n/a	n/a	2	Clear. Water clarity excellent.
9/18/2023	EFW, mouth to barrier	4	90 x 80	n/a	n/a	n/a	2	Clear. Water clarity excellent.
9/22/2023	EFW, mouth to barrier	5	102 x 48	n/a	n/a	n/a	n/a	Clear. Water clarity excellent.
9/29/2023	EFW, mouth to barrier	6	118 x 80	n/a	n/a	n/a	2	Clear. Water clarity excellent.
9/29/2023	EFW, mouth to barrier	7	72 x 65	n/a	n/a	n/a	n/a	Clear. Water clarity excellent.
9/29/2023	EFW, mouth to barrier	8	144 x 120	n/a	n/a	n/a	n/a	Clear. Water clarity excellent.
9/29/2023	EFW, mouth to barrier	9	50 x 35	n/a	n/a	1	1	Clear. Water clarity excellent.
10/06/2023	EFW, mouth to barrier	10	60 x 45	n/a	n/a	n/a	n/a	Clear. Water clarity excellent.
10/13/2023	EFW, mouth to barrier	n/a	Emergency survey prior to the generating unit being brought online, no redds observed during survey.					Clear. Water clarity excellent.
10/20/2023	EFW, mouth to barrier	n/a						Clear. Water clarity excellent..

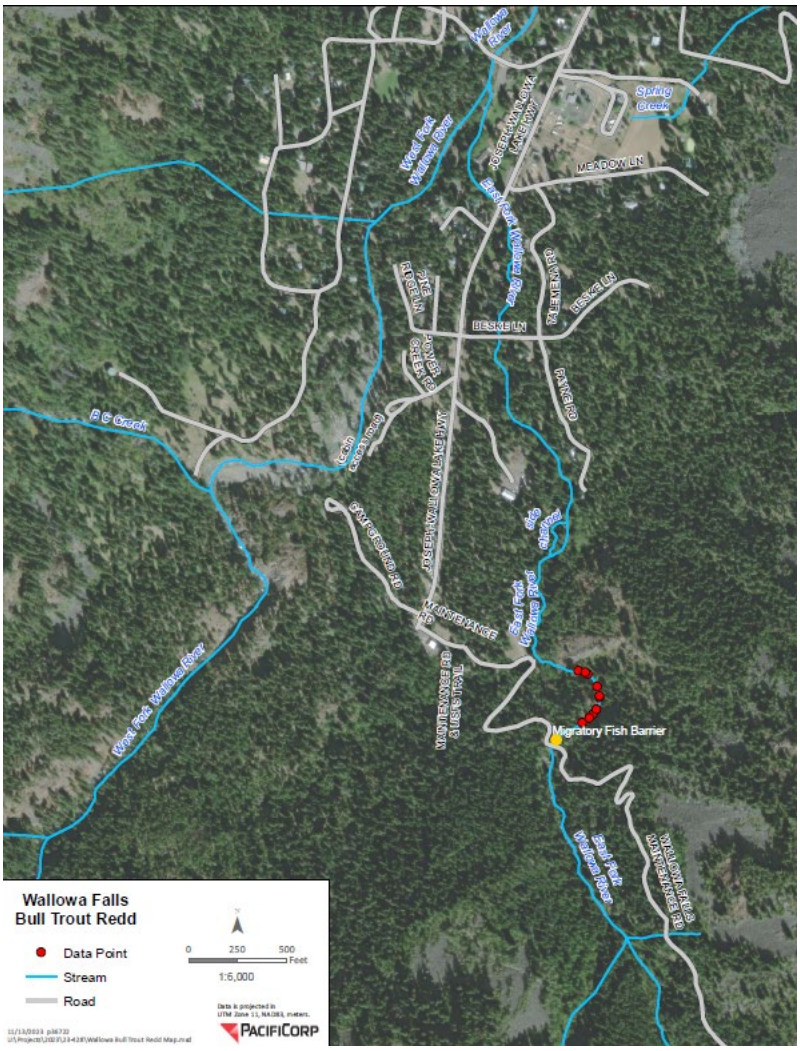

Figure 2. Marked GPS locations (red dots, n=10) of bull trout redds within the East Fork Wallowa River

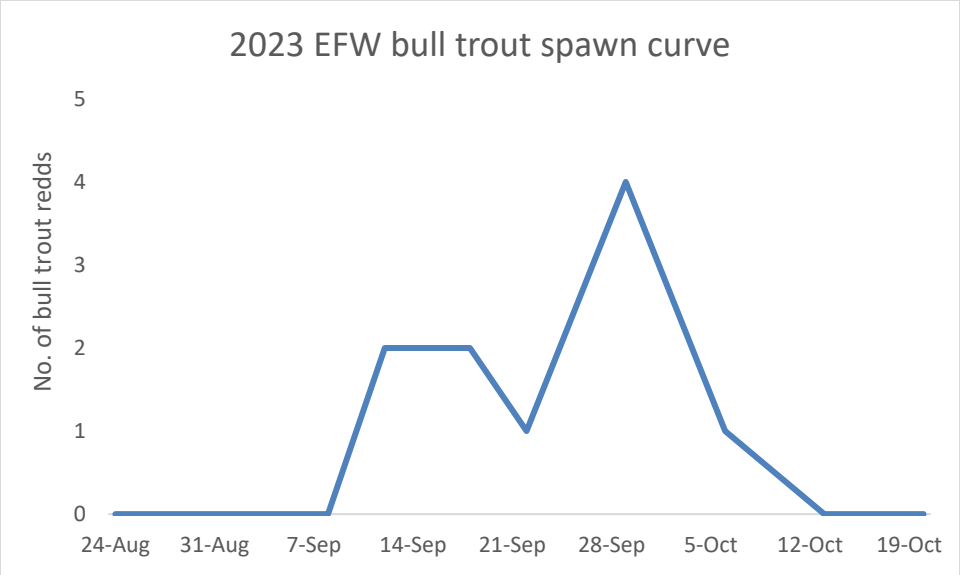

Figure 3. 2023 bull trout spawn curve in the East Fork Wallowa River.

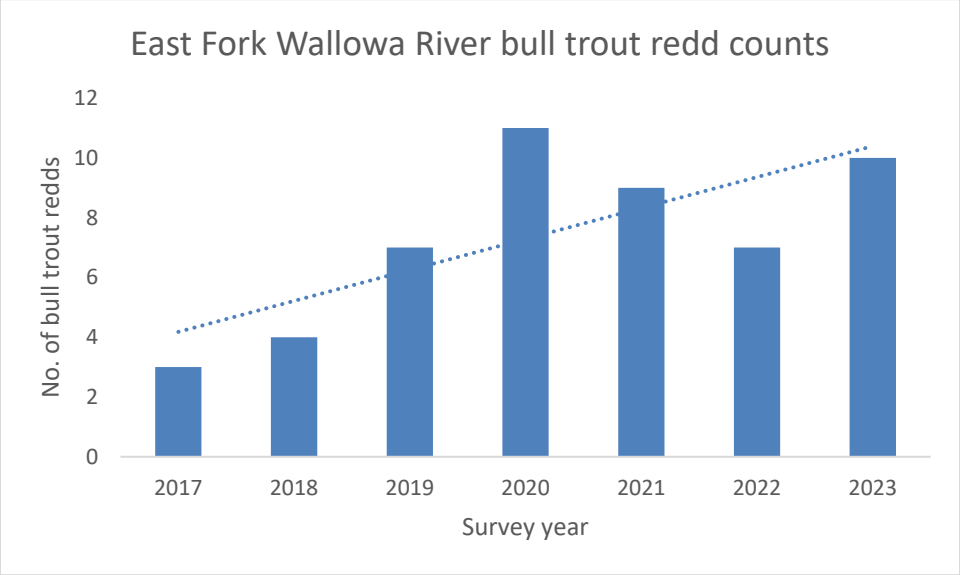

Figure 4. Bull trout redd counts by survey year (2017-2023).

All ten bull trout redds were in the upper portion of available habitat below the barrier. No brook trout were definitively observed during any 2023 East Fork Wallowa River redd survey.

Flows during the survey period remained stable and never deviated below the prescribed minimum instream flow as measured at the United States Geological Survey gage site.

Two emergency redd surveys were performed during the 2023 season. As part of elements contained within the BiOp and Project license, if the generating unit trips for a duration longer

than 8 hours from September through October, a redd survey documenting new redd locations and or redds susceptible to desiccation with receding bypass flows, must be performed prior to the unit being brought back online.

The generating unit had been off-line for repairs since June 2023 and was scheduled to be brought back on-line on August 31. An unplanned redd survey was conducted of the East Fork Wallowa River on August 31 prior to unit start-up to ensure no redds would be impacted by the receding flows, no new or old bull trout redds were observed during the survey.

The second emergency survey was triggered by a trip of the generating unit during the second week of October. Prior to the unit being started back up on October 13, an emergency redd survey was performed. During this survey no new redds were observed. Care was taken during this survey to monitor previously constructed redds as flows in the bypass receded due to water diversion through the generating unit. The biologist was on-site within the stream and in contact with the hydro control operator as the unit was slowly ramped up. Based on direct observation, a maximum set point for the generating was then established to maintain adequate flow over the existing redds.

Given length of redd persistence within the East Fork Wallowa observed for the first seven seasons of these surveys (average time of 24 days 2017-2023, minimum in 2023 of 14 days), in 2024 it is anticipated bull trout redd surveys will occur on a 10-day rotation during the months of September and October.

5.0 CITATIONS

Oregon Department of Environmental Quality. 2016. 401 Water Quality Certification for the Wallowa Falls Hydroelectric Project.

United States Fish and Wildlife Service. 2016. Biological Opinion for the Wallowa Falls Hydroelectric Project.