2020 Annual Operational Compliance Report

Wallowa Falls Hydroelectric Project

(FERC No. P-308)

Grande Ronde River Basin

Wallowa County, Oregon

Prepared by:
PacifiCorp
825 NE Multnomah Street
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Table of Contents

1.0 Introduction

The Federal Energy Regulatory Commission (Commission) issued a new operating license for the Wallowa Falls Hydroelectric Project (Project) January 5, 2017. The Operation Compliance Monitoring Plan (OCMP) was developed to satisfy Article 408 and Condition 1e) of Appendix A: Oregon Department of Environmental Quality (ODEQ) Water Quality Certification, of the license. The OCMP was approved by the October 11, 2017 Commission Order Modifying and Approving Operational Compliance Monitoring Plan Pursuant to License Article 408.

Condition 1(e) of the Water Quality Certification for the relicensing and continued operation of the Wallowa Falls Project required that the OCMP be revised within three months of completion of the tailrace realignment channel, upstream passage barrier (tailrace barrier), and a modified forebay flow release valve or gate. The OCMP was revised in consultation with the Oregon Department of Environmental Quality (ODEQ), Oregon Department of Fish and Wildlife (ODFW), U.S. Fish and Wildlife Service (USFWS), Oregon Water Resources Department (OWRD) and the U.S. Forest Service (USFS). The revised OCMP was submitted to the Commission on September 22, 2020.

This Annual Report satisfies the reporting requirements of Section 3.1.2 of the OCMP (PacifiCorp 2017a) and license Article 408. In addition to the report elements provided in Section 3.1.2 of the OCMP, PacifiCorp has elected to include the 2020 Wallowa Falls Bull Trout Redd Monitoring Report required by Article 412 of the license and the 2020 Noxious Weed Control Plan Annual Report required by Section 3.5 of the Noxious Weed Control Plan (PacifiCorp 2017c) in this Report, as Appendices C and D, respectively.

Section 6.1 of 2018 Wetland and Waters of the State Site Restoration Plan (Meridian, 2018) prepared for the intake modification and tailrace reroute project areas requires that restoration effectiveness monitoring for the area of construction disturbance at the project intake be included in the 2020 Annual Report. Accordingly, the 2020 Intake Site Post Construction Monitoring Memo is included as Appendix F to this report.

2.0 Project Operations – Water Management

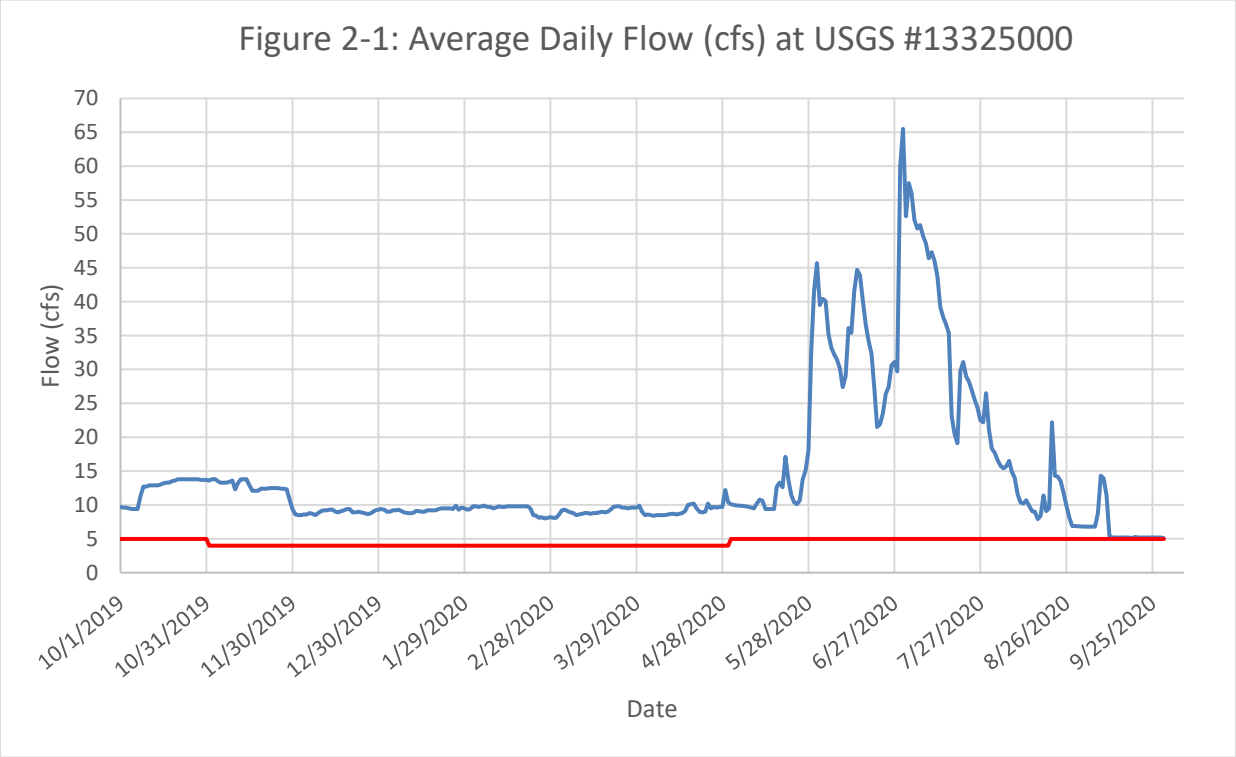
2.1.1 Minimum Flows

Minimum instream flows, as required by license Appendix A, Condition 1(a) and Appendix B, Condition 9(2) were implemented by PacifiCorp before July 5, 2018. PacifiCorp contracted the United States Department of the Interior, U.S. Geological Survey (USGS) to install the required stream gage and continues to conduct the required hydrologic surveillance program (USGS Gage

13325000, East Fork Wallowa River) for the Project. The gage was installed in the summer of 2017[1]. As required by license Appendix A, Condition 1(b), the East Fork Wallowa River gage reports a real-time recording of river stage and corresponding flow in cfs measured in 15-minute intervals. Compliance with the license required minimum flow is determined based on a top of the hour average of the previous four 15-minute readings.

From October 1, 2019 through September 30, 2020, the Project operated with 5 cubic feet per second (cfs) or greater, as measured at the compliance gage in the bypassed reach of the East Fork Wallowa River. Figure 2-1 shows the average daily flow during the 2020 water year.

Figure 2-1: Average Daily Flow (cfs)



[1] The Gage and associated communications system are located on the East Fork of the Wallowa River on a parcel of property owned by PacifiCorp and designated by Wallowa County, Oregon, as tax lot number 03S4500009900.

2.1.2 Ramping

In accordance with Article 406 *Ramping Rates* and Condition 1(c) of Appendix A of the Wallowa Falls License PacifiCorp filed the *Wallowa Falls Ramping Study Report and Down-Ramping Plan* with the Commission on April 3, 2018. As discussed in the Study Report, as well as the OCMP, due to the lack of storage capacity, the Project is operated in run-of river mode and generation is subject to seasonal river flows.[2] All increases in generation, will comply with the Standard Operating Procedure (Down-Ramping Plan) for ramping. Improvements in automation and communication infrastructure at the Project have allowed the PLC to control unit generation based on real-time forebay level indication and streamflow in the bypassed reach. This is a much more efficient way to run the generating unit than was historically possible and also has the added benefit of holding a steadier river stage in the bypassed reach of the East Fork Wallowa River. The PLC also receives real-time data from the USGS compliance gage and is programmed to alarm locally at the plant as well as to the Hydro Control Center, in Ariel, Washington, if there is a drop in minimum flows. For example, when a rainstorm occurs and forebay indication shows a rise in inflows the PLC can ramp the unit up at 300 kW/hr. to utilize the increased inflows for generation while holding the bypassed reach at a more steady stage. PacifiCorp's water right of 16 cfs is the maximum used for generation. Therefore, any inflow in excess of 16 cfs will always spill over the dam.

In 2020 all generation changes were made in compliance with the Down-Ramping Plan, that is to say the automated Programmed Logic Control (PLC) made all generation increases in steps of 300 kW/h or less. The following unplanned and approved emergency outages occurred during the October 1, 2019 through September 30, 2020 timeframe.

September 6, 2020

The generating unit experienced a trip on September 6, increasing the water levels in the East Fork Wallowa River. Before bringing the unit back online on September 9, a redd survey was performed in order to assess if redds had been constructed during the higher than normal flows on the extreme stream margin. The September 9 survey found no redds in areas that could be susceptible to desiccation if the unit was brought back online, and as such the generating unit was turned on and stepped up. All prescribed ramp rates were followed during unit start-up.

[2] Run of river mode of operation refers to a hydroelectric project that has little or no water (energy) storage, is subject to seasonal river flows for generation and is therefore an intermittent energy source. This is in contrast to conventional hydropower which uses reservoirs to regulate water for flood control and dispatchable electrical power.

At a run of river project there is little or no storage, therefore when generation is held at a steady state, changes to river stage in the bypassed reach are entirely the result of natural increases or decreases in inflow to the project. In contrast, at a conventional hydropower project, when generation is held at a steady state, natural increases in inflow can be absorbed (stored) in the project reservoir or natural decreases in inflow can be withdrawn from the project reservoir, allowing the downstream river stage to be maintained in steady state.

October 13, 2020

Although the following ramping event occurred in water year 2021, for fluidity of reporting it is being included in this annual report. As requested, and approved by the Agencies, on October 13, 2020 PacifiCorp repeated the hydraulic evaluation of the newly commissioned tailrace barrier. This involved reviewing hydraulic performance at multiple flow rates, which required changes in generation that resulted in ramping (increasing flow) in the bypassed reach for the purposes of the evaluation. Flows in the bypass reach were increased from approximately 7.4 cfs to 13.1 cfs and back down to 7.4 cfs for the evaluation. Prior to October 13, 2020, PacifiCorp's contract biologist completed a redd survey on October 2, 2020 and reported that there were no new redds constructed between September 25, 2020 and October 2, 2020.

3.0 Forebay Flushing

PacifiCorp successfully flushed the Project forebay for 72 hours commencing at 10:00 AM on June 15 and completing at 10:00 AM on June 18, 2020. The use of both the low-level outlet pipe and a 20-inch siphon pipe to pass all natural inflow, allowed the forebay to be drained and sediment to be evacuated downstream. Prior to the flush PacifiCorp notified agency stakeholders, via e-mail June 11, 2020 of the planned flushing event. Agency stakeholders declined the offer of a per-flush coordination call.

Prior to the flushing event In-Situ datasondes were deployed in the East Fork Wallowa River upstream of the inlet to the Project forebay and downstream of the Project dam at the USGS gage site. The upper datasonde (background) malfunctioned for unknown reasons and the data recorded was clearly not accurate. The background turbidity was way in excess of downstream turbidity throughout the monitoring period even before flushing started. There was no rain event or spike in flows to explain this and it has to be assumed that these were not accurate readings and they were therefore not reported. Visual inspection of the East Fork Wallowa River immediately following forebay flushing found no distressed or dead fish. A Forebay Flushing Report was filed with the Commission and the Oregon Department of Environmental Quality August 28, 2019 and is included as Appendix A to this report.

Figure 3.0. Location of Wallowa Falls forebay flush monitoring datasondes in 2020.

4.0 Fish Salvage Events

Article 411 of the license calls for a Fish Salvage Plan to be developed within six months of license issuance, PacifiCorp developed the Fish Salvage Plan (PacifiCorp 2017b) in consultation with the agencies and filed it with the Commission April 14, 2017. The plan is implemented during all tailrace dewatering events, as well as immediately after installation of the temporary tailrace barrier, until the permanent tailrace barrier, required by license Article 409 and Appendix A, Condition 2(a), is installed and operational. The 2020 Fish Salvage and Temporary Tailrace Barrier Report is included as Appendix B to this report.

5.0 Bull Trout Monitoring and Protection Measures

Article 412 of the license mandates that annually, by March 31, PacifiCorp file a report with the Commission that documents the prior year's bull trout redd monitoring results as required by

Appendix C, condition 4(a), of the license, as well as, any bull trout monitoring and protection measures completed during the previous year. At a minimum, the report must include:

1) The results of the fish handling and injury monitoring from removal for in-water construction required by Appendix C, condition 2(g) and (h);
2) The results of the bull trout construction monitoring required by Appendix C, condition 3(a)xi; and
3) The results of the bull trout redd monitoring required by Appendix C, condition 4(a).

The results of fish handled for work-site isolation for in-water construction on the Wallowa Falls Hydroelectric Project in 2020, are included in Appendix C. Per license Article 412 and Appendix C, condition 4(a), the results of bull trout redd monitoring for calendar year 2020 are included as Appendix C to this report.

6.0 Noxious Weed Control

Article 415 and Appendix B, condition 6 of the Commission license requires that PacifiCorp file a noxious weed control plan with the Commission within six (6) months of license issuance, PacifiCorp developed the Noxious Weed Control Plan (NWCP [PacifiCorp 2017c]) in consultation with the agencies and filed it with the Commission June 5, 2017. As provided for in Section 3.5 of the NWCP, the 2020 Noxious Weed Control Plan Annual Report is included as Appendix D to this report.

7.0 Deviations and Unanticipated Events

June 3, 2020 Effluent Discharge to the West Fork Wallowa River

Commissioning of the north tailrace channel began by raising the Wallowa Falls penstock head gate at approximately 8:30 AM on June 3, 2020. Water was observed discharging from the powerhouse at approximately 8:45 AM. From the powerhouse water is conveyed through the new tailrace (north) channel to the West Fork Wallowa River.

The lower portion of the tailrace channel, before it enters the West Fork Wallowa River, crosses Oregon State Parks property. There is an occupied Oregon State Parks ranger cabin adjacent to the lower portion of the tailrace channel. The ranger cabin is connected to the City of Joseph's sewer system and waste-water treatment facility via a pumped sewer line to the main sewer pipe up at the state highway. The cabin has a 1,000-gallon sewage holding tank that flows into a pump vault

and from there waste is pumped up hill towards Oregon State Park's Little Alps Day-Use Area and then out to the main sewer line at the highway.

At approximately 9:30 AM, PacifiCorp's contracted environmental inspector, who was located at the end of the tailrace channel, heard the sewer holding tank overfill alarm sound. The inspector made immediate notification to staff at the dam to close the headgate. The headgate was immediately closed, but it takes approximately one hour and forty-five minutes for water to completely drain from the water conveyance system and stop flowing through the tailrace channel. Water and sewage effluent was observed discharging from the concrete manhole cover on the sewage pump vault. The holding tank is capped and there were no sewage or solids discharges directly from the holding tank itself. Some water and sewage ran overland towards and into the West Fork Wallowa River. Onsite erosion control materials were used to try and slow and redirect flow away from the river. The tailrace was completely dewatered, and all water and sewage stopped flowing at approximately 11:40 AM. Photos are provided below.

The following corrective actions were taken.

Onsite PacifiCorp personnel notified Oregon State Parks, who immediately closed the Little Alps Day-Use restrooms, which are immediately upstream of the ranger cabin on the sewer system. The Joseph Water and Sewer district was also notified and came onsite.

Weekly Brothers, Inc., onsite for the tailrace commissioning, determined that a T off of the ranger cabin sewer line crossed under the tailrace channel to an abandoned cabin just upstream of the ranger cabin. Hand excavation in the bottom of the tailrace channel indicated that this abandoned PVC sewer pipe was broken and providing a direct hydraulic conduit to the ranger cabin sewer system. The abandoned line was cut a permanently capped, removing any hydraulic connection to the ranger cabin's sewer system.

A pump truck was deployed to the site on the afternoon of June 3, 2020 to pump and clean the sewage holding tank. An electrician was also called out to inspect the sewage pump and verify that it was not damaged and was in good working order.

One Call Restoration out of La Grande, Oregon was called to the site on the afternoon of June 3, 2020. They cleaned and disinfected the interior of the ranger cabin and pressure washed and disinfected all contaminated impervious surfaces (patio, house, drive) outside. A disinfectant was also applied to the impacted lawn area. Lime was spread on impacted soil areas on June 4, 2020. After several days lime and topsoils were raked up and disposed of as solid waste.

A visual inspection at the head of Wallowa Lake in the early evening of June 3, 2020 gave no indication of any distressed or dead fish.

The event was reported to Oregon Emergency Response System at 10:23AM (OERS #2020-1357) and the National Response Center at 10:30AM (#127-8757). PacifiCorp staff had follow-up

discussions with both ODEQ and the Environmental Protection Agency. In addition, email notification of the event was sent to DEQ, ODFW, USFWS, USFS and Oregon Water Resources Department (OWRD) and the Commission.

Photo 1: Active Discharge

Photo 2: Active discharge and waddle placement to slow runoff into river

Photo 3: Septic holding tank pump vault cover: source of discharge

Photo 4: Discharge has stopped (June 3, 2020 at 11:47 AM)

June 23, 2020 West Fork Wallowa River Potential Stranding Issue

On June 23, 2020 PacifiCorp sent email notification to ODFW, ODEQ, USFWS and the USFS of a potential fish stranding concern in the West Fork Wallowa River downstream of the newly commissioned north tailrace channel and fish passage barrier. Immediately downstream of the new tailrace outlet a side channel on the right bank of the West Fork Wallowa River that is at risk of becoming dewatered if the project head gate closes when the West Fork is at base flow. To address this issue, PacifiCorp immediately instituted a fish salvage procedure for the side channel habit. For all planned and unplanned unit outages that shut the head gate, the West Fork side channel immediately downstream of the tailrace outlet will be electrofished and salvaged. As approved by ODFW and USFWS, PacifiCorp implemented an Emergency Action Plan in the side channel during the 2020 spawning season. The implementation of this plan is discussed in Appendix B, Fish Salvage and Temporary Tailrace Barrier Report.

PacifiCorp is evaluating long term engineering solutions that could remove the stranding risk in the West Fork Wallowa River side channel habitat immediately downstream of the tailrace outlet. PacifiCorp plans to have a conceptual engineering design for a long-term solution to prevent potential fish stranding in the side-channel in the fourth quarter of 2020. The conceptual plan will

be shared with the Agencies as well as the U.S. Army Corps of Engineers and Oregon Department of State Lands for design feedback and direction related to required consultation and permitting. It is PacifiCorp's intent to have a permanent solution designed, permitted and constructed before the 2021 spawn. If that is not possible due to permitting or consultation timelines, PacifiCorp will seek Agency approval to use the same barrier net and diversion system used in 2020 for the 2021 bull trout and kokanee spawn.

8.0 Implementation Projects

In calendar year 2020, the tailrace reroute project was completed and commissioned in June per the schedule provided in the final Permanent Tailrace Barrier Plan dated February 2019. New interpretive signage at the forebay was also installed as prescribed in the Recreation, Visual and Aesthetic Management Plan[3].

Table 1 provides a summary of work completed in 2020. Photos are provided in Appendix E.

Table 1 – 2020 Implementation Projects

Requirement	2019 Action	Photo Reference
Recreation, Visual and Aesthetic Management Plan	The new interpretive sign panels were installed at the forebay.	Photos 1-3
FERC License, Appendix A – Condition 2(a)	Phase 2 – The northern tailrace channel and fish barrier at the tailrace confluence with the West Fork Wallowa River was commissioned. The southern tailrace channel was decommissioned and seeded.	Photos 3-7

[3] Per FERC License, Appendix B – 4(e) Condition 7(A) PacifiCorp has installed the hardware and developed the sign panels for the new Wallowa Lake trailhead sign. However, the sign panels have not been fabricated or installed due to waiting for USFS review and approval of panel design and content. The other measures in the Recreation, Visual and Aesthetic Management Plan for 2020 (trail directional signs and trail drainage improvements) have been pushed out to 2021 due to the ongoing COVID-19 pandemic.

9.0 References

Federal Energy Regulatory Commission (FERC). 2017. PacifiCorp Wallowa Falls Hydroelectric License (FERC) Project No. 308. Issued January 5, 2017.

Meridian Environmental, Inc. 2018. Wetlands and Waters of the State Site Restoration Plan. Wallowa Falls Hydroelectric Project FERC Project No. P-308 Intake Modification and Tailrace Reroute Project Areas. Seattle, Washington.

PacifiCorp. 2017a. Operational Compliance Monitoring Plan. Wallowa Falls Hydroelectric Project FERC Project No. P-308. Portland, Oregon.

PacifiCorp. 2017b. Noxious Weed Control Plan. Wallowa Falls Hydroelectric Project FERC Project No. P-308. Portland, Oregon.

PacifiCorp. 2017c. Fish Salvage Plan. Wallowa Falls Hydroelectric Project FERC Project No. P-308. Portland, Oregon.

PacifiCorp. 2018. Wallowa Falls Ramping Study Report and Down-Ramping Plan. Wallowa Falls Hydroelectric Project FERC Project No. P-308. Portland, Oregon.

Appendix A

2020 Wallowa Falls Forebay Flushing Report

PACIFICORP

Pacific Power |
Rocky Mountain Power
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

Electronically filed August 21, 2020

Ms. Kimberly D. Bose, Secretary Federal Energy Regulatory Commission 888 First Street, NE Washington, DC 20426	Mr. John Dadoly Oregon Department of Environmental Quality 700 SE Emigrant Ave – Suite 330 Pendleton, OR 97801

Subject: Wallowa Falls Hydroelectric Project (FERC No. P-308)
2020 Forebay Flushing Report

Dear Addressee:

The Federal Energy Regulatory Commission (Commission) issued a new operating license for the Wallowa Falls Hydroelectric Project (Project) January 5, 2017. Annual flushing of the Project forebay is permitted under Appendix A, Condition 5 of the license. On August 2, 2017 the Commission issued an Order Modifying and Approving the Turbidity Monitoring Plan for Forebay Flushing under Appendix B, Condition 10 of the Project license. This letter report satisfies the annual reporting requirement for forebay flushing.

PacifiCorp flushed the forebay for 72 hours commencing at 10:00 AM on June 15 and completing at 10:00 AM on June 18, 2020. Prior to the flush, PacifiCorp notified agency stakeholders[1] via e-mail on June 11, 2020 of the planned flushing event. Agency stakeholders declined the offer of a pre-flush coordination conference call.

The final Turbidity Monitoring Plan for Forebay Flushing, dated June 2, 2017, requires that natural inflow to the Project be greater than or equal to 15 cubic feet per second (cfs) for flushing to occur. The flow in the lower bypassed reach of East Fork Wallowa River, as measured at the U.S. Geological Survey (USGS) #13325000, at 8:00 AM June 15, 2020, was 36.6 cfs. Bypassed reach flows remained greater than 35 cfs for the duration of the 72 hour flushing event.

For forebay flushing the following general sequence of events occurred:

June 13, 2020: PacifiCorp's contract biologist mobilized to site and deployed In-Situ datasondes in the East Fork Wallowa River upstream of the inlet to the Project forebay and downstream of the Project dam at the USGS gage site. A graph and hourly turbidity data recorded at the lower monitoring site for the period of June 13, 2020 through June 29, 2020 are provided in Attachment 1 to this letter report.

[1] Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service and U.S. Forest Service.

The upper datasonde (background) malfunctioned for unknown reasons and the data recorded is clearly not accurate. The background turbidity was way in excess of downstream turbidity throughout the monitoring period even before the flushing started. There was no rain event or spike in flows to explain this and it has to be assumed that these are not accurate readings and they are therefore not being reported.

June 15, 2020

- PacifiCorp personnel mobilized to the Project forebay, shut down the generating unit initiated penstock head gate closure.

- Personnel waited for the penstock to drain and then closed the penstock isolation valve downstream of the steel wye and opened the bypass valve on the upstream side of the wye.

  The penstock wye with knife gate valves (penstock isolation and bypass valves) was installed during the intake rebuild project of 2019 to allow more water to be bypassed through the dam during annual forebay flushing (Figure 1).

- PacifiCorp's contract biologist conducted a fish salvage of the Project tailrace per the final Fish Salvage plan dated May 2, 2017.

- Personnel re-opened the penstock head gate and the slide gate on the 16-inch low level outlet pipe to initiate forebay draining and flushing.

- Once the forebay was drained, personnel used trash pumps with a suction hose to mobilize sediment into the water flowing through the center of the forebay and discharging to the bypass reach.

Figure 1: penstock wye with knife gate valves

June 18, 2020

- The forebay flush was completed and the low level outlet slide gate, penstock head gate and penstock bypass valve were closed.
- The penstock isolation valve was opened and the penstock head gate was opened to re-water the penstock for generation.
- Generation was resumed.

June 20, 2020

- In-Situ datasondes were removed from the East Fork Wallowa River upstream and downstream locations.

With the use of both the low level outlet pipe and the penstock with the wye installed in 2019, we were able to drain the Project forebay and successfully mobilize accumulated sediment into the East Fork Wallowa River below the Project dam (see Attachment 1: Photos).

Throughout the flushing period hourly turbidity was recorded at the downstream monitoring site (see Attachment 2: Turbidity Data).

This letter report and its attachments are being filed electronically. If you have any questions please contact Briana Weatherly at 503-819-2281 or Briana.weatherly@pacificorp.com.

Sincerely,

Mark Sturtevant Digitally signed by Mark Sturtevant
Date: 2020.08.20 10:16:42 -07'00'

Mark A. Sturtevant
Vice President, Renewable Resources

MAS: BW: km

Encl:	Letter – Public
	Attachment 1 – Wallowa Falls 2020 Forebay Flush Photos - Public
	Attachment 2 – Wallowa Falls 2020 Forebay Flush Turbidity Data - Public

eFile:	Kimberly D. Bose, Secretary Via eLibrary at www.ferc.gov	**eMail:** John Dadoly, ODEQ DADOLY.John@deq.state.or.us
Cc:	Gretchen Sausen, USFWS	Cc: Adrian Cuzick, USDA- FS
Cc:	Elizabeth A. O. Moats, ODFW	

Attachment 1 – Wallowa Falls Forebay Flush Turbidity Data

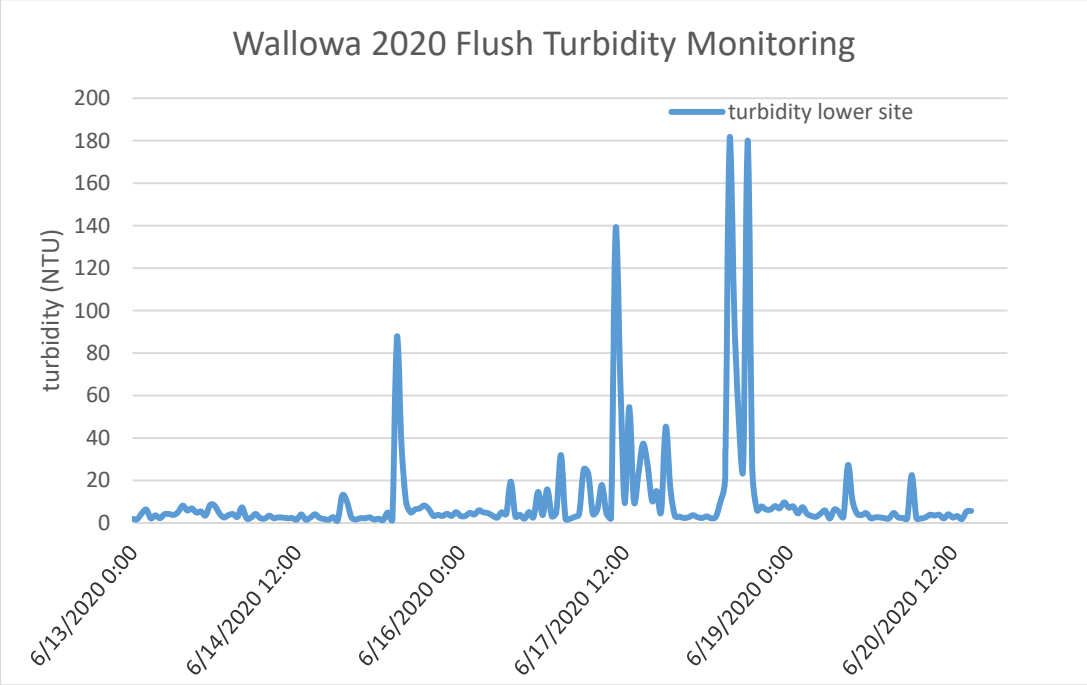


Table 1 – Wallowa Falls 2020 Forebay Flush: Turbidity Data in East Fork Wallowa River

*The gray shaded portion of the table represents data recorded during the 72 hour active flush period.

Date	Time	Turbidity Lower Site
6/13/2020	0:00	1.904
6/13/2020	1:00	1.793
6/13/2020	2:00	4.511
6/13/2020	3:00	6.297
6/13/2020	4:00	2.188
6/13/2020	5:00	3.574
6/13/2020	6:00	2.271
6/13/2020	7:00	4.116
6/13/2020	8:00	4.244
6/13/2020	9:00	3.793
6/13/2020	10:00	5.155
6/13/2020	11:00	8.18
6/13/2020	12:00	5.865
6/13/2020	13:00	6.841
6/13/2020	14:00	4.878
6/13/2020	15:00	5.427
6/13/2020	16:00	3.508
6/13/2020	17:00	8.456
6/13/2020	18:00	8.16
6/13/2020	19:00	4.677
6/13/2020	20:00	2.601
6/13/2020	21:00	3.649
6/13/2020	22:00	4.217
6/13/2020	23:00	2.891
6/14/2020	0:00	7.36
6/14/2020	1:00	2.208

Date	Time	Turbidity Lower Site
6/14/2020	2:00	2.526
6/14/2020	3:00	4.229
6/14/2020	4:00	2.312
6/14/2020	5:00	2.071
6/14/2020	6:00	3.417
6/14/2020	7:00	2.226
6/14/2020	8:00	2.647
6/14/2020	9:00	2.526
6/14/2020	10:00	2.203
6/14/2020	11:00	2.352
6/14/2020	12:00	1.556
6/14/2020	13:00	4.032
6/14/2020	14:00	1.581
6/14/2020	15:00	2.502
6/14/2020	16:00	4.078
6/14/2020	17:00	2.441
6/14/2020	18:00	1.838
6/14/2020	19:00	1.515
6/14/2020	20:00	2.733
6/14/2020	21:00	1.266
6/14/2020	22:00	12.878
6/14/2020	23:00	10.288
6/15/2020	0:00	2.712
6/15/2020	1:00	1.646
6/15/2020	2:00	2.281
6/15/2020	3:00	2.171
6/15/2020	4:00	2.666
6/15/2020	5:00	1.626

Date	Time	Turbidity Lower Site
6/15/2020	6:00	2.006
6/15/2020	7:00	1.375
6/15/2020	8:00	4.902
6/15/2020	9:00	1.559
6/15/2020	10:00	87.4
6/15/2020	11:00	37.33
6/15/2020	12:00	9.981
6/15/2020	13:00	5.041
6/15/2020	14:00	6.401
6/15/2020	15:00	6.862
6/15/2020	16:00	8.254
6/15/2020	17:00	6.516
6/15/2020	18:00	3.383
6/15/2020	19:00	3.82
6/15/2020	20:00	3.31
6/15/2020	21:00	4.313
6/15/2020	22:00	3.334
6/15/2020	23:00	5.06
6/16/2020	0:00	3.274
6/16/2020	1:00	3.256
6/16/2020	2:00	4.757
6/16/2020	3:00	3.988
6/16/2020	4:00	5.931
6/16/2020	5:00	4.98
6/16/2020	6:00	4.62
6/16/2020	7:00	3.481
6/16/2020	8:00	2.512
6/16/2020	9:00	5.027

Date	Time	Turbidity Lower Site
6/16/2020	10:00	4.291
6/16/2020	11:00	19.455
6/16/2020	12:00	3.126
6/16/2020	13:00	3.838
6/16/2020	14:00	2.041
6/16/2020	15:00	5.119
6/16/2020	16:00	2.815
6/16/2020	17:00	14.61
6/16/2020	18:00	3.726
6/16/2020	19:00	15.85
6/16/2020	20:00	3.127
6/16/2020	21:00	5.096
6/16/2020	22:00	31.973
6/16/2020	23:00	2.027
6/17/2020	0:00	2.007
6/17/2020	1:00	2.889
6/17/2020	2:00	4.183
6/17/2020	3:00	25.155
6/17/2020	4:00	23.31
6/17/2020	5:00	4.387
6/17/2020	6:00	6.301
6/17/2020	7:00	17.869
6/17/2020	8:00	4.366
6/17/2020	9:00	2.328
6/17/2020	10:00	137.906
6/17/2020	11:00	69.689
6/17/2020	12:00	9.47
6/17/2020	13:00	54.526

Date	Time	Turbidity Lower Site
6/17/2020	14:00	10.41
6/17/2020	15:00	22.888
6/17/2020	16:00	37.276
6/17/2020	17:00	27.623
6/17/2020	18:00	10.474
6/17/2020	19:00	14.943
6/17/2020	20:00	5.499
6/17/2020	21:00	45.284
6/17/2020	22:00	16.917
6/17/2020	23:00	3.411
6/18/2020	0:00	2.986
6/18/2020	1:00	2.367
6/18/2020	2:00	2.686
6/18/2020	3:00	3.659
6/18/2020	4:00	2.712
6/18/2020	5:00	2.372
6/18/2020	6:00	3.105
6/18/2020	7:00	2.201
6/18/2020	8:00	2.903
6/18/2020	9:00	10.127
6/18/2020	10:00	19.412
6/18/2020	11:00	180.079
6/18/2020	12:00	101.428
6/18/2020	13:00	50.241
6/18/2020	14:00	26.143
6/18/2020	15:00	180.095
6/18/2020	16:00	24.84
6/18/2020	17:00	6.06

Date	Time	Turbidity Lower Site
6/18/2020	18:00	7.783
6/18/2020	19:00	6.352
6/18/2020	20:00	6.329
6/18/2020	21:00	7.945
6/18/2020	22:00	6.924
6/18/2020	23:00	9.702
6/18/2020	0:00	7.229
6/19/2020	1:00	7.782
6/19/2020	2:00	4.507
6/19/2020	3:00	7.448
6/19/2020	4:00	4.346
6/19/2020	5:00	3.295
6/19/2020	6:00	2.932
6/19/2020	7:00	4.436
6/19/2020	8:00	5.858
6/19/2020	9:00	2.123
6/19/2020	10:00	6.333
6/19/2020	11:00	5.213
6/19/2020	12:00	2.904
6/19/2020	13:00	27.298
6/19/2020	14:00	10.269
6/19/2020	15:00	4.342
6/19/2020	16:00	3.785
6/19/2020	17:00	4.618
6/19/2020	18:00	2.22
6/19/2020	19:00	2.67
6/19/2020	20:00	2.655
6/19/2020	21:00	2.27

Date	Time	Turbidity Lower Site
6/19/2020	22:00	2.129
6/19/2020	23:00	4.72
6/19/2020	0:00	2.64
6/20/2020	1:00	2.374
6/20/2020	2:00	2.169
6/20/2020	3:00	22.546
6/20/2020	4:00	2.32
6/20/2020	5:00	2.172
6/20/2020	6:00	2.627
6/20/2020	7:00	3.869
6/20/2020	8:00	3.506
6/20/2020	9:00	3.878
6/20/2020	10:00	2.16
6/20/2020	11:00	4.078
6/20/2020	12:00	2.605
6/20/2020	13:00	3.237
6/20/2020	14:00	1.836
6/20/2020	15:00	5.369
6/20/2020	16:00	5.666

Attachment 2 – Wallowa Falls Forebay Flush Photos

Photo 1 – Wallowa Falls Forebay: full pool on June 15, 2020 prior to flush

Photo 2: Wallowa Falls Forebay - drained for flushing on June 15, 2020

Photo 3 –Wallowa Falls Forebay – some sediment cutting along edges during draining on June 15, 2020

Appendix B

2020 Fish Salvage & Temporary Tailrace Barrier Report

Fish Salvage & Temporary Fish Barrier Report for the Wallowa Falls Hydroelectric Project Tailrace

(FERC No. P-308)

November 15, 2020

Prepared by:
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Table of Contents

1.0 INTRODUCTION

The Federal Energy Regulatory Commission (FERC) issued a new operating license for the Wallowa Falls Hydroelectric Project (Project) on January 5, 2017. Elements of the new license address fishery resources within the Project area, specifically as they pertain to the Project tailrace. **Article 411** of the license calls for a *Fish Salvage Plan* to be developed within six months of license issuance, "*the licensee must file for Commission approval a fish salvage plan that describes its proposed procedures for capturing, handling, and relocating any fish trapped in the tailrace channel during planned or unplanned unit outage events that dewater the tailrace channel. The fish salvage plan must be implemented each year following license issuance until the permanent tailrace barrier required by Appendix A condition 2(a) and Article 409 is installed and operating. In addition to the handling procedures specified by Appendix C, condition 2, the plan must include the following provisions: (1) Salvaging of fish from the tailrace channel within two hours of the installation of any temporary fish passage barrier required by Appendix A, condition 2(b); and (2) Salvaging of fish from the tailrace channel prior to complete dewatering of the tailrace channel due to a planned or unplanned outage event*."

With the bringing online of the permanent tailrace fish barrier in June 2020, it was anticipated that construction of temporary tailrace fish barriers and tailrace fish salvages would no longer be necessary. The unexpected identification of a small side-channel of the West Fork Wallowa River immediately downstream of the tailrace discharge plume made it necessary for this Plan to once again be implemented in 2020.

It was identified that this small side-channel would lose connectivity with the main channel of the West Fork Wallowa River as the main channel receded to base flow, at which time the total flow into the side-channel would be provided by the Project tailrace channel discharge. The concern was then raised that if the Project unit tripped and the tailrace dewatered, the small side-channel would also then dewater. An Emergency Action Plan was developed to identify measures to limit risk to aquatic species in the vicinity of the side-channel should the unit trip and tailrace dewater (Appendix A). The Action Plan was approved by stakeholders on August 17 and implemented on August 23 (Appendix A).

Though no empirical fishery data existed for the small West Fork Wallowa River side-channel, it was assumed that resident and migratory fish species encountered at other locations in close proximity to also currently inhabit the channel at varying densities, depending on time of year. Fish species encountered within other locations near to the side-channel and assumed to also reside within the side-channel consist of rainbow trout (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), brook trout (*Salvelinus fontinalis*), mountain whitefish (*Prosopium williamsoni*), kokanee (*Oncorhynchus nerka*), and *cottid ssp*.

This Report and the information contained therein fulfill Plan implementation reporting requirements of Article 411 of the FERC license as well as actions necessary to protect and preserve fishery resources within the Project area.

2.0 STUDY AREA

The Project is located on the East Fork Wallowa River approximately 11 miles (17 kilometers) outside of the City of Joseph in Northeastern Oregon. The Project (Figure 1) reservoir/forebay lies over 5,200 feet (1,600 meters) above mean sea level (msl) and is approximately 0.2 surface acres (0.08 ha) in size and averages 5 feet (1.5 m) deep. Because the Project operates as run of river, there is no measurable storage. Though no measurable storage is present in the forebay, habitat in this area is lacustrine, and given the shallow water depth no thermal stratification is present. Substrate in the forebay consists of deposited silt, sand, and other glacial fines.

Water diverted at the forebay travels through the flow line and penstock to the generating turbine in the Project powerhouse. Water exits the turbine and is discharged into an approximately 985-foot (300 m) long tailrace discharge channel that empties into the West Fork Wallowa River. This channel has an average wetted-width of 10 feet (3.1 m) and an average depth of one foot (0.3 m). The habitat type within the tailrace channel is dominated by high gradient riffle with very few pools.

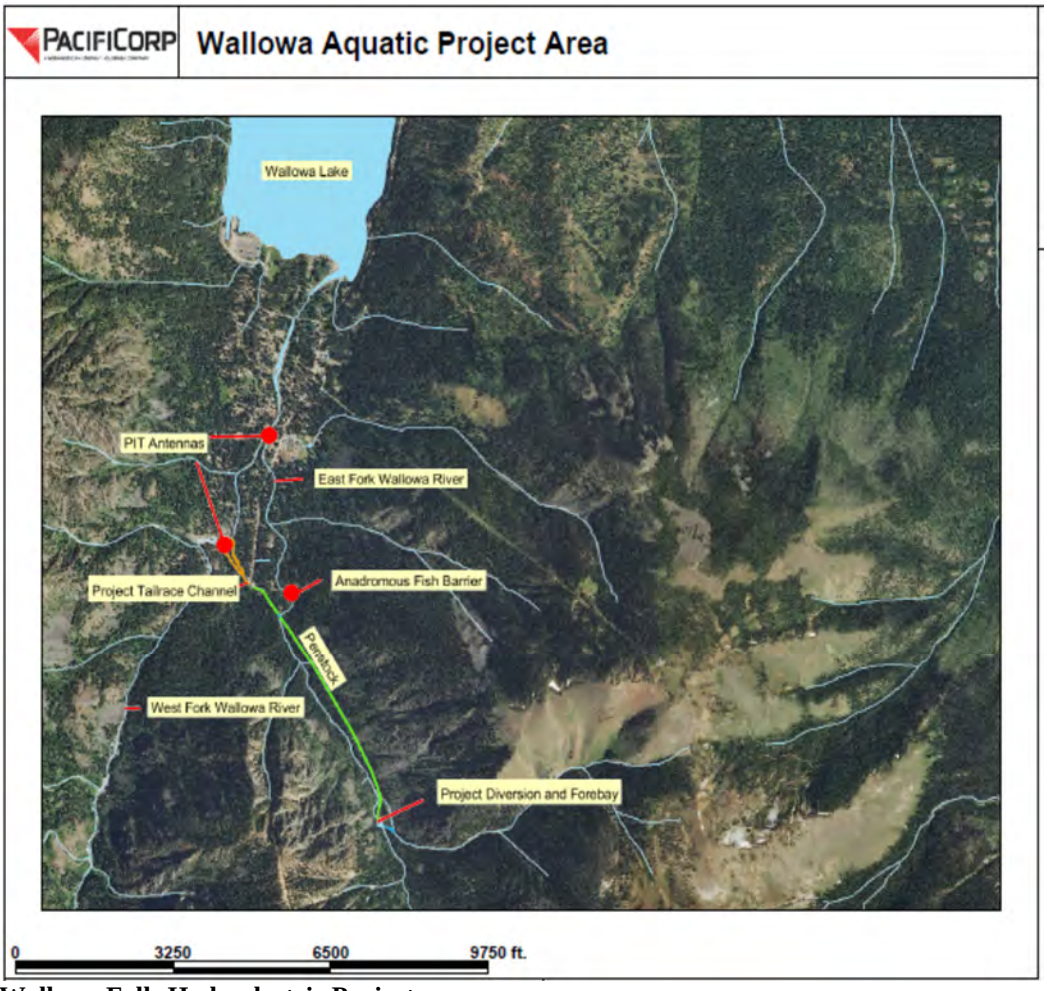

Figure 1 Wallowa Falls Hydroelectric Project.

3.0 METHODS

Onsite observations indicate when the unit trips and the headgate closes it takes approximately 90 minutes for the entire tailrace channel to drain completely of water. Conversely, if the unit trips and the headgate does not close a constant flow of approximately 3 cubic feet per second (cfs) is supplied to the tailrace channel. Thus, a fish salvage event was only triggered if the unit trips along with a subsequent headgate closure. Unit trips that do not cause the headgate to close shall trigger no salvage response as the amount of water available within the tailrace channel during this scenario is sufficient for fish survival until the unit is brought back online and full flow once again commences. Fish salvages of the tailrace channel were only necessary January-May in 2020. After the permanent tailrace fish barrier was brought online and found to be operating within specifications in June, fish salvages if the tailrace dewatered were no longer required.

January – May, upon notification of a unit trip with corresponding headgate closure, regardless of time of day, a local on-call qualified biologist was immediately notified by an operator at Merwin Hydro Control and commenced with physically rescuing stranded fish from the tailrace channel. The local qualified biologist lives in close proximity to the Project so as to be on-site and walking the tailrace channel within 60 minutes of the unplanned unit trip. A Smith-Root LR-24 (or similar model) backpack electrofisher or long-handled dip net was utilized to capture stranded fish. If a backpack electrofisher was utilized, it was set to Direct Current (DC) and applied at the lowest voltage setting possible to still allow capture of stranded fish species. All electrofishing activities followed protocols as set forth in the National Marine Fisheries Service Backpack Electrofishing Guidelines (NMFS 2000). To remain compliant with stipulations contained within the USFWS issued Biological Opinion (BiOp) for the Wallowa Falls Hydroelectric Facility, PacifiCorp ensured that fish capture and removal operations were conducted by a qualified biologist, and that all staff participating in the operation had the necessary knowledge, skills, and abilities to ensure safe handling of fish. All planned unit outages with headgate closure occurred early in the morning to ensure the lowest possible water temperatures for safe fish handling.

In 2020, salvage activities due to a unit trip began in the fenced area immediately downstream of the turbine discharge and proceeded in a downstream manner until all areas of the tailrace were thoroughly fished. All captured fish were held in five gallon buckets or small coolers with aerators until liberation into the West Fork Wallowa River downstream of the Project tailrace confluence. Fish capture and removal operations took all appropriate steps to minimize the amount and duration of handling. The operations maintained captured fish in water to the maximum extent possible during seining/netting, handling, and transfer for release, to prevent and minimize stress.

Prior to liberation, all captured fish were quantified and measured to their caudal fork. Due to the presence and possible capture of Endangered Species Act listed bull trout in the Project area, recording of information following contact with said species complied with stipulations contained within the USFWS issued BiOp for this Project which states, “PacifiCorp shall document all bull trout encountered during work site isolation by submitting a fish handling and injury-occurrence report to the Service. The report shall include: 1) the name and address of the supervisory fish biologist; 2) methods used to isolate the work area and minimize disturbances to bull trout; 3) stream conditions before and following placement and removal of temporary barriers; 4) the means of fish removal; 5) approximate the number of fish removed by species and age class, the number of bull trout removed; 6) condition of all bull trout released; and 7) any incidence of observed

injury or mortality to bull trout. Specifically, for all bull trout captured, we ask that the fisheries biologist in charge of handling record the date and time, capture location, capture method used, length and weight of the specimen, condition (if abnormal), search for and record identification numbers from any tags that may be present, and provide the collector's name." This Report and information contained therein shall qualify also as the "fish handling and injury-occurrence report" as stipulated within the USFWS issued BiOp for the Project.

Also in 2020, as stipulated within the Introduction, a sandbag and block net barrier were constructed to serve as a temporary fish exclusionary device at the top, middle, and bottom end of the small West Fork Wallowa River side-channel located immediately downstream of the tailrace barrier discharge plume. The fish barrier at the upstream end, and middle of the side-channel utilized sandbags, stacked one on top the other for the entire width of the side-channel (Figure 2 and Figure 3). A barrier net was strung across the entire bottom end exit of the side-channel (Figure 4). The openings of this barrier net were 6.35 mm and the net was held in place by large sandbags placed end to end along the stream bottom and spanning the entire stream-width. Further specifics to the Emergency Action Plan concerning this side-channel can be found in Appendix A.

Figure 2. Photo of Wallowa Falls side-channel barrier on upstream end.

Figure 3. Photo of Wallowa Falls side-channel barrier of small channel halfway down the main side-channel.

Figure 4. Photo of Wallowa Falls side-channel barrier at the downstream end.

4.0 RESULTS

Fish Salvage

No unit trips with subsequent headgate closures occurred at the Wallowa Falls Project January – May, 2020 and as such no fish salvages were ever required. One fish salvage occurred on the Project during 2020, that of a salvage of the West Fork Wallowa River side-channel immediately downstream of the tailrace barrier discharge plume after fish barriers were installed on August 23, 2020. No fish were encountered or observed.

Temporary Fish Barrier

Per the Emergency Action Plan submitted to stakeholders on August 17, 2020, a temporary fish barrier was installed at the upstream and downstream end of the West Fork Wallowa River side-channel immediately downstream of the Project tailrace barrier discharge plume on August 23, 2020. The tailrace fish barrier was visually inspected twice per week until taken out on November 15, 2020. At no time during weekly inspections was the barrier visually assessed to be ineffective in precluding fish from entering the side-channel (Appendix B).

5.0 CITATIONS

National Marine Fisheries Service. 2000. National Marine Fisheries Service Backpack Electrofishing Guidelines.

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

APPENDIX A

EMERGENCY ACTION PLAN – WF WALLOWA SIDE-CHANNEL TEMPORARY FISH BARRIERS

August 10, 2020

Emergency Action Plan: Wallowa Falls Temporary Fish Barriers to identified side-channel below Project Tailrace discharge

Background:

Upon completion of the newly realigned tailrace and permanent tailrace fish barrier at the Wallowa Falls Hydroelectric Project, a side-channel directly below the tailrace discharge outlet was identified as being susceptible to unplanned Project induced dewatering events. Under normal water years, the side-channel in question may lose connectivity to the main channel of the West Fork Wallowa River as it recedes to base flow, and may naturally go dry. With new construction recently completed, the Project tailrace now will provide some flow to the sidechannel
even at times of hydraulic loss of connectivity with the West Fork Wallowa River.
Under this scenario, in the event of an unplanned unit trip with subsequent headgate closure at the Wallowa Falls Project, the side-channel could now unexpectedly dewater. Potential impacts of this possible event are exacerbated during the bull trout and kokanee spawn timeframe, as redds that may have been excavated earlier would then become desiccated.

Study Area:

The side-channel in question (stranding channel) is located immediately downstream of the Wallowa Falls Project tailrace discharge channel, and within the flood plain of the West Fork Wallowa River (see Figure A, Sketch of side-channel and approximate locations of tailrace discharge outlet and barrier placements: Location 1). It is approximately 79 meters (260 feet) long, with an average wetted-width of 3 meters (10 feet). Figure 1 shows Location 1 on the sketch, the top-end of the stranding side-channel looking downstream. The West Fork Wallowa River main channel is on the left, the tailrace discharge is in the middle and the side-channel is on the right. The photograph in Figure 1 was taken on August 8, 2020, during West Fork Wallowa River midsummer flows. Based on August 8 field observation, the West Fork main channel has recently further down-cut below the entrance of the stranding side-channel. As a result, the tailrace is now providing the majority of flow, approximately 3cfs, into the stranding channel. However, during the August 8 field visit, it was discovered that a small channel connecting the main thalwag of the West Fork to the stranding channel also exists (Figure A, location 2). The channel in Location 2 (Figure 2) is contributing very little flow (approximately 0.5-1 cfs) to the stranding channel.

Action:

To prohibit fish from entering the stranding side-channel immediately below the Project tailrace discharge outlet from the downstream side during the bull trout and kokanee spawn, a block net (barrier net) will be installed by August 24, 2020 to serve as a temporary fish exclusionary device (Figure A, Location 3). The barrier net will be laid across the entire bottom of the upstream side of the side channel (Figure 3). The openings of the barrier net will be 6.35 mm. The net will be held in place by large sandbags placed end to end along the stream bottom and spanning the entire stream-width. The net will span the entire wetted width of the side channel, rise above the water surface, and will be pinned to the stream bank on either side with rebar to hold it in place in the event of higher than anticipated flows. The barrier net will be visited on a bi-weekly basis to clean debris and assess it is functioning as intended.

To prohibit fish and tailrace discharge from accessing the stranding side-channel from the topend immediately below the weir (Figure 1), a diversion (using sandbags, bio-blocks, or similar) will be built. The planned construction method is a sandbag berm approximately 3 meters (10 feet) long and 0.75 meter (2.5 feet) high. The diversion will prohibit water flow and connection between the West Fork Wallowa River, and the stranding side-channel, while diverting water from the tailrace discharge to the main thalwag of the West Fork.

To prohibit fish and main West Fork channel water from entering the stranding side-channel at Location 2 (Figure 2), a diversion using sandbags will be built. The planned construction method is a sandbag berm approximately 1.5 meters (5 feet) long and 0.6 meter (2 feet) high. After the three side-channel temporary barriers are placed, all fish will be salvaged from the stranding side-channel and liberated to the main channel West Fork Wallowa River by means of electrofishing. All side-channel barriers will be dismantled and taken out of the river no earlier than November 15, 2020, after conclusion of the bull trout and kokanee spawn season.

APPENDIX B

TAILRACE BARRIER WEEKLY INSPECTION NOTES

Date	Observer	Comments
8/23/2020	PacifiCorp staff	Weir completed and installed
9/12/2020	Bioresources staff	Weir in place and working well.
9/15/2020	Bioresources staff	Weir in place and working well.
9/19/2020	Bioresources staff	Weir in place and working well.
9/22/2020	Bioresources staff	Weir in place and working well.
9/24/2020	Bioresources staff	Weir in place and working well.
9/27/2020	Bioresources staff	Weir in place and working well.
10/2/2020	Bioresources staff	Weir in place and working well.
10/7/2020	Bioresources staff	Weir in place and working well.
10/9/2020	Bioresources staff	Weir in place and working well.
10/12/2020	Bioresources staff	Weir in place and working well.
10/17/2020	Bioresources staff	Weir in place and working well.
10/21/2020	Bioresources staff	Weir in place and working well.
10/24/2020	Bioresources staff	Weir in place and working well.
10/28/2020	Bioresources staff	Weir in place and working well.
11/6/2020	Bioresources staff	Weir in place and working well.
11/10/2020	Bioresources staff	Weir in place and working well.
11/15/2020	Bioresources staff	Weir disassembled and taken out of tailrace channel.

Appendix C

2020 Bull Trout Redd Monitoring Report

Bull Trout Redd Monitoring Report for the Wallowa Falls Hydroelectric Project

photo courtesy of Kendrick Moholt

(FERC No. P-308)

November 15, 2020

Prepared by:
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Portland, OR 97232

Table of Contents

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 (Report cover photo), an impassible upstream migration fish barrier.

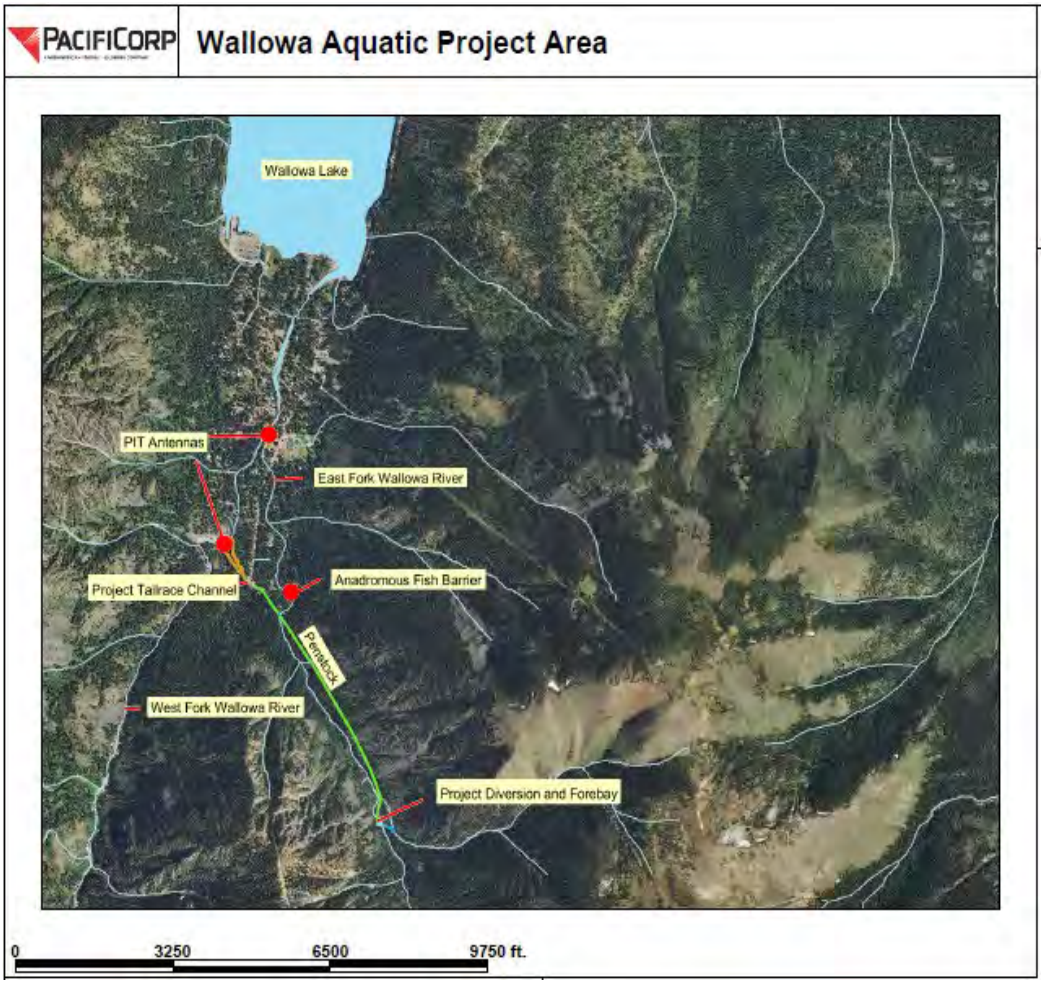


Figure 1. Wallowa Falls Hydroelectric Project.

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 27, 2020 and continued weekly through October 23, 2020 for a total of ten 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. In order to standardize inherent observer error, the same experienced surveyor was utilized for all ten surveys in 2020.

All encountered bull trout redds were demarcated by handheld GPS, 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 in order to assess redd life. Though the Planning document called for only four redd surveys during the spawning period, this being the fourth year of study and redd life still being characterized, ten surveys were performed in order to gain an accurate understanding of visual 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

Eleven bull trout redds were identified and marked by GPS during the ten redd surveys performed of the East Fork Wallowa River in 2020 (Figure 2). Seven of the bull trout redds were large and indicative of being constructed by large migratory-sized fish, while four were smaller and possibly indicative of being constructed from smaller resident-sized fish (Table 1). All redd observations

in 2020 occurred between September 9 and September 25, with the peak of six counted on September 11. Nine of the eleven observed redds had bull trout either on, actively constructing or in very close proximity to, the redd. First observed in 2020, was the apparent partial superimposition of a previously dug redd, as redd #2 and redd #10 were constructed in the same location. Other and inter-species superimposition will continue to be monitored during future surveys. Pictures of all eleven identified bull trout redds are included in Appendix A. The redd count in 2020 is the highest observed on record, 2017-2020 (Figure 3).

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

Date	Survey Location	Redd #	Redd Dimension	Live bull trout				Survey Conditions	Redd location same as year prior
				<6 in.	<12 in.	<14 in.	>14 in.		
8/27/2020	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	1	Sunny, calm	n/a
9/5/2020	EFW, mouth to barrier	n/a	n/a	n/a	1	n/a	1	Sunny, calm	n/a
9/9/2020	EFW, mouth to barrier	1	135cm x 50cm	n/a	n/a	n/a	2	Sunny, calm	Yes
9/9/2020	EFW, mouth to barrier	2	115cm x 45cm	n/a	n/a	n/a	3	Sunny, calm	n/a
9/11/2020	EFW, mouth to barrier	3	66cm x 36cm	n/a	1	n/a	n/a	Sunny, calm	n/a
9/11/2020	EFW, mouth to barrier	4	56cm x 28cm	n/a	2	n/a	n/a	Sunny, calm	n/a
9/11/2020	EFW, mouth to barrier	5	120cm x 70cm	n/a	n/a	n/a	1	Sunny, calm	n/a
9/11/2020	EFW, mouth to barrier	6	130cm x 60cm	n/a	n/a	n/a	1	Sunny, calm	n/a
9/11/2020	EFW, mouth to barrier	7	125cm x 50cm	n/a	n/a	n/a	n/a	Sunny, calm	n/a
9/11/2020	EFW, mouth to barrier	8	135cm x 65cm	n/a	n/a	n/a	1	Sunny, calm	n/a
9/18/2020	EFW, mouth to barrier	9	86cm x 40cm	1	n/a	n/a	n/a	Sunny, calm	n/a
9/18/2020	EFW, mouth to barrier	10	120cm x 65cm	n/a	n/a	n/a	2	Sunny, calm	n/a
9/25/2020	EFW, mouth to barrier	11	80cm x 40cm	n/a	n/a	n/a	n/a	Sunny, calm	n/a
10/2/2020	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Sunny, calm	n/a
10/9/2020	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Sunny, calm	n/a
10/16/2020	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Overcast, calm	n/a
10/23/2020	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Overcast, calm	n/a

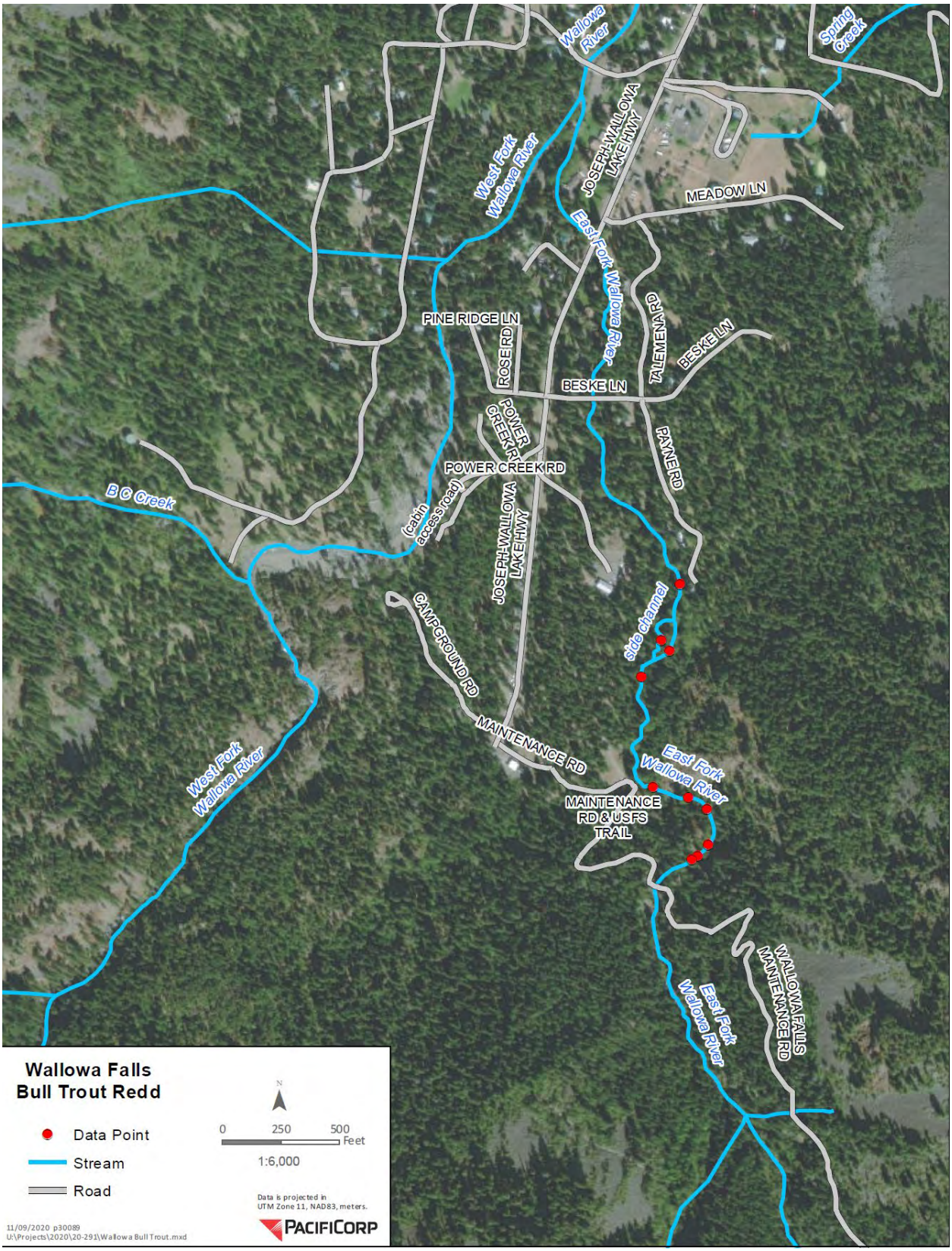


Figure 2. GPS marked locations (red dots, n=11) of bull trout redds within the East Fork Wallowa River

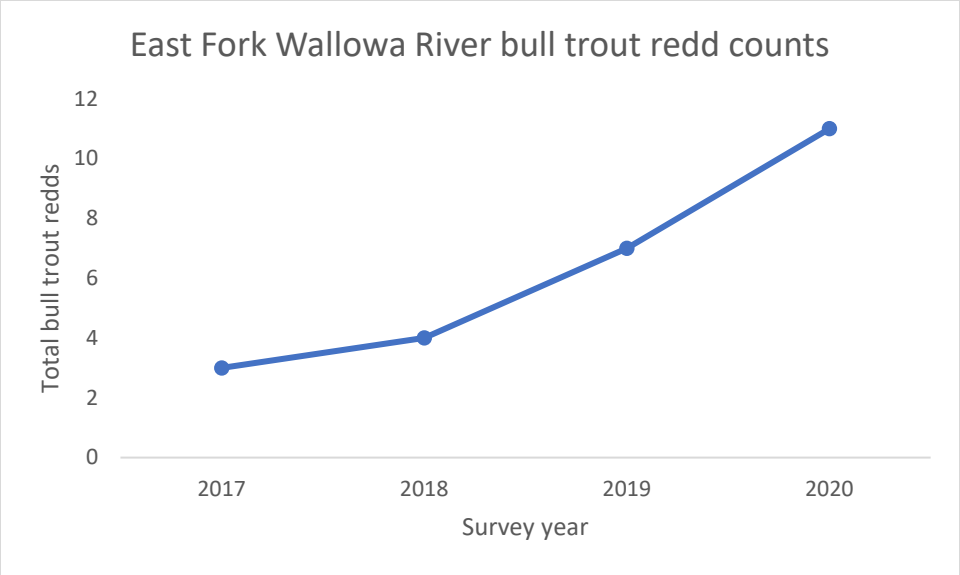


Figure 3. Bull trout redd counts by survey year (2017-2020).

All eleven bull trout redds were in the upper portion of available habitat below the barrier, with the uppermost redd ~20 meters below the impassible falls. Redds in 2020 visually persisted for an average of 19 days, with the longest time a redd remained visible being 42 days, and the shortest 14 days. No brook trout were definitively observed during any 2020 East Wallowa River redd surveys.

The generating unit experienced a trip on September 6, increasing the water levels in the East Fork Wallowa River. Before bringing the unit back online on September 9, a redd survey was performed in order to assess if redds had been constructed during the higher than normal flows on the extreme stream margin. The September 9 survey found no redds in areas that could be susceptible to desiccation if the unit was brought back online, and as such the generating unit was turned on and stepped up. All prescribed ramp rates were followed during unit start-up.

This same process was partially repeated on October 13. The unit was ramped to varying generation levels to perform a hydraulic evaluation of the new tailrace barrier during the bull trout spawn timeframe. This evaluation was completed within an 8 hour window, and as such did not require a redd survey to be performed prior to the unit being fully ramped back up.

Other than the above two deviations, 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.

Given length of redd persistence within the East Fork Wallowa observed for the first four seasons of these surveys (average time of 26 days, 2017-2020), in 2021 it is anticipated bull trout redd surveys will occur on a 10-day rotation during the months of October and September.

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.

Appendix A

2020 Bull Trout Redd Photo Documentation

Redd #1

Redd #2

Redd #3

Redd #4

Redd #5

Redd #6

Redd #7

Redd #8

Redd #9

Redd #10

Redd #11

Appendix D

2020 Noxious Weed Control Plan Annual Report

BIO-RESOURCES, INC

Botanical Report 2020

Wallowa Falls Hydroelectric Project

Special Status Plant and Noxious Weed Management

Prepared by:
Bio-Resources, Inc.
306 NE 1st Street
Enterprise, OR 97828

October 2020

Introduction

The Wallowa Falls Hydroelectric Project (Project) is located on the East Fork Wallowa River, approximately 11 miles outside of the City of Joseph in Northeastern Oregon. The Project impoundment/forebay lies over 1,600 meters above mean sea level. The Project operates as run-of-river; therefore, there is no measurable storage. Water is instead diverted from the forebay into a flow line and penstock to the generating turbine in the Project powerhouse. Water exits the turbine and flows into an approximately 300-meter-long tailrace channel that discharges into the West Fork Wallowa River. This channel has an average wetted width of 3.1 meters and an average depth of 0.3 meter. The bypassed portion of the East Fork Wallowa River within and near the Project boundary is approximately 2,800 meters long from the Project diversion dam to its confluence with the West Fork Wallowa River. Gradient in this reach is high, with the upper 1,600 meters (i.e. the area between the falls and the dam) averaging approximately 19 percent and the lower 1,200 meters (i.e. the area between the falls and the confluence with West Fork Wallowa River) averaging 8.5 percent. Geomorphology within the Project area is typical of mountain valleys. It is constrained by steep topography, mountain peaks and the valley floor and lower slopes largely forested with areas of exposed ridges, rocky outcrops, and talus slopes. The Project is adjacent to the Eagle Cap Wilderness boundary, which is known to support several rare, threatened, endangered, and/or special status plant species.

The Federal Energy Regulatory Commission (FERC) Project Boundary, to be examined by this work, is approximately 26 acres and includes project operations, facilities, and portions of the access road and campground. The bypassed portion of the East Fork Wallowa River, within and near the Project Boundary, is approximately 1.75 miles long from the Project diversion dam to its confluence with the West Fork Wallowa River.

Special Status Plant Survey-

Botrychium montanum, Botrychium minganense, Cypripedium fasciculatum

Consultation with Wallowa-Whitman National Forest (WWNF) forest botanist, Jerry Hustafa, concluded an early and late season Special Status Plant Species Survey of the Project area was justified. All species included on the Region 6 Regional Forester Sensitive Species and Strategic Species List (see Table 1) were considered during each survey. However, at the request of Mr. Hustafa, additional effort was directed towards higher probability species. An early to mid-June survey targeted *Cypripedium fasciculatum* and a late July survey was conducted to target *Botrychium* species.

Early Season Survey

An intuitive control botanical survey of the entire project area was conducted on June 2, 2020 in accordance with the Special Status Species Policy https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/. High intensity, 100% coverage, surveys were conducted in areas considered potential habitat and within areas of impact for future construction activities, especially 100 meters from north bank of the North Tailrace Channel and south bank of the South Tailrace Channel and all areas in between. No sensitive species were located during this survey.

No Clustered Lady's-slippers (*Cypripedium fasciculatum*) were located by survey efforts. However, Mountain Lady's-slipper (*Cypripedium montanum*) a closely related species, not considered sensitive, was found blooming in the project area at the lower end of the Wallowa Falls Maintenance Road (Figure 1) and adjacent forest. Clustered Lady's-slipper is a highly visible species, especially when in bloom. The Bio-Resources, Inc. field botanist, Kendrick Moholt, conducting surveys has considerable experience with this species from work in other parts of Oregon. It can be assumed with a high level of confidence that Clustered Lady's-slipper was not presence in the project area and was not impacted by any construction activities in 2020.

Figure 1. Mountain Lady's-slipper (*Cypripedium montanum*) found blooming within the project area.

Late Season Survey

A second intuitive control botanical survey of the entire project area was conducted on July 20, 2020 in accordance with the Special Status Species Policy https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/. High intensity, 100% coverage, surveys were conducted in areas considered potential for future construction activities, especially 100 meters from north bank of the North Tailrace Channel and south bank of the South Tailrace Channel and all areas in between. High intensity surveys were also conducted in an area considered high probability for *Botrychium montanum* and in the area around a *Botrychium minganense* plant located in June 2018.

Several data sources have identified *Botrychium* species within the Project area, and in particular near the Project forebay. The ORBIC database has a 1991 record of *Botrychium montanum*, a federal species of concern, in the Project area (ORBIC 2010; ORBIC 2012). In 1992, this plant was identified again during a botanical survey that was conducted as part of the Wallowa Falls Dam Reparation Project (PacifiCorp 1993). *Botrychium* species were relocated but were unable to be distinguished to species. The United States Forest Service (USFS) provided Geographic Information Systems (GIS) data, received in an email, from Mike Gerdis to Russ Howison on August 2, 2010 which identified both *Botrychium minganense* and *Botrychium montanum* located near the forebay on August 4, 1991. Comments received from USFS on the Pre-Application Document (PAD) on June 23, 2011, identified *Botrychium montanum* as being present in the Project vicinity, at or near the forebay, as well as further up in the drainage (USFS 2011). A survey of the Project area conducted during the 2012, 2017, 2018 and 2019 growing seasons failed to relocate any *Botrychium* species (Bio-Resources 2012, 2017, 2018, 2019).

An intensive survey for *Botrychium montanum* in the area of potential habitat was conducted on July 20, 2020 (Figure 3). In addition to this target search, an additional survey was conducted on the entire project area for potential sensitive species (Table 1) with special attention given to the area near the *Botrychium minganense* plant that was first located on June 12, 2018 (Figure 2).

The survey of the forebay area located no *Botrychium montanum* plants. This finding was documented using an R-6 TES Plant Element Occurrence Field Form (See Appendix 1). No plants were located during a survey in 2012, 2017, 2018 and 2019 (Bio-Resources. 2012, 2017, 2018, 2019). At this time, it may be likely that the population of *Botrychium montanum* has been extirpated from the project area. However, it seems prudent to continue to avoid the highest probability areas for the plant. It is our recommendation that construction activities and material storage be minimized or avoided in the area east of the forebay cabin as outlined in the Construction Plan to Protect Special Status Plant Species (Appendix 2).

No species of concern (Table 1) were located during this late season survey.

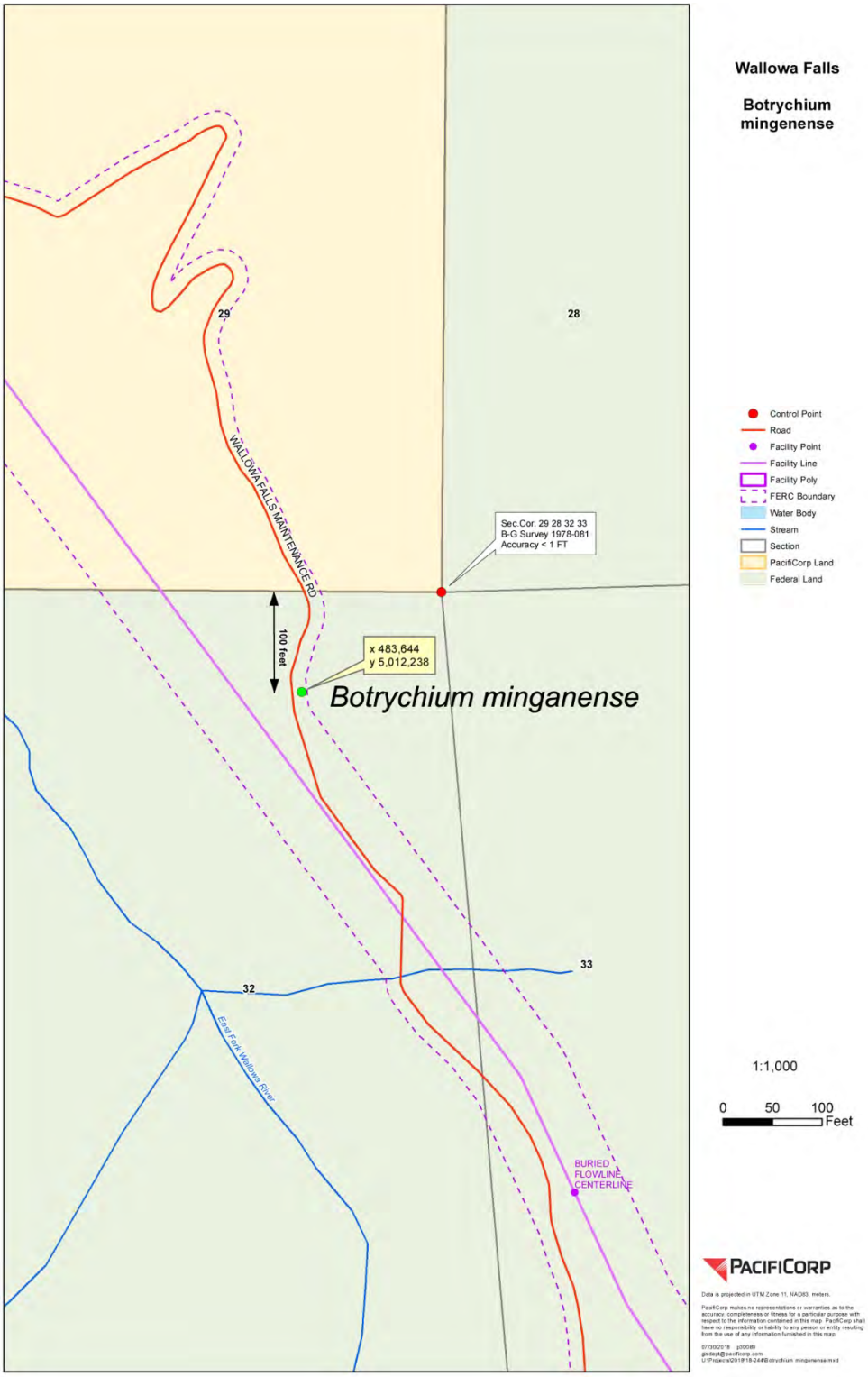


Figure 2. Location of *Botrychium minganense* found in 2018. This single plant was not relocated during searches in 2019 and 2020.

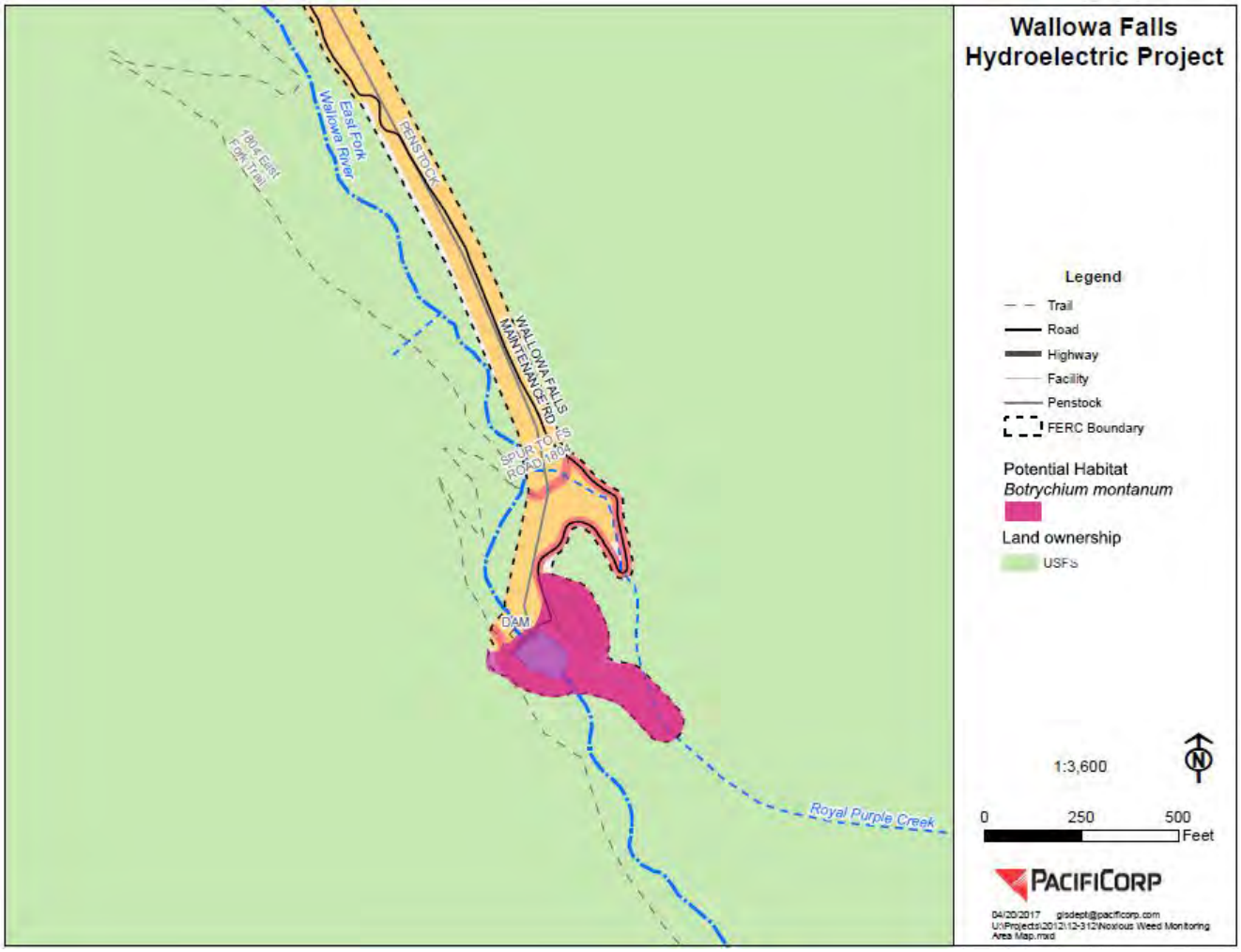


Figure 3. Potential habitat for *Botrychium montanum* on the Wallowa Falls Hydroelectric Project.

Table 1. Region 6 Regional Forester Sensitive Species and Strategic Species List

NRCS PLANTS Code	Scientific Name	Common Name
ANMI8	*Anastrophyllum minutum*	Liverwort
ANJU	*Anthelia julacea*	Liverwort
BALY	*Barbilophozia lycopodioides*	Liverwort
ENBR2	*Encalypta brevipes*	Moss
ENFA2	*Entosthodon fascicularis*	Moss
HAFL9	*Harpanthus flotovianus*	Liverwort
JUPO3	*Jungermannia polaris*	Liverwort
LOGI3	*Lophozia gillmanii*	Liverwort
PEQU7	*Peltolepis quadrata*	Liverwort
PRQU2	*Preissia quadrata*	Liverwort
PSTR5	*Pseudocalliergon trifarium*	Moss
PTPU2	*Ptilidium pulcherrimum*	Liverwort
SCCI5	*Schistidium cinclidodonteum*	Moss
TEGE	*Tetraphis geniculata*	Moss
TOMU70	*Tortula mucronifolia*	Moss
ACWA	*Achnatherum wallowaense*	Wallowa ricegrass
ACROT	*Acomastylis rossii ssp. turbinatum*	Slender-stemmed avens
ALGEG	*Allium geyeri var. geyeri*	Geyer's onion
ASVI10	*Asplenium viride*	Green spleenwort
BOHA3	*Boechera hastatula*	Hells canyon rockcress
BOAS2	*Botrychium ascendens*	Upward-lobed moonwort
BOCA5	*Botrychium campestre*	Prairie moonwort
BOCR	*Botrychium crenulatum*	Crenulate moonwort
BOHE5	*Botrychium hesperium*	Western moonwort
BOLI7	*Botrychium lineare*	Slender moonwort
BOLU	*Botrychium lunaria*	Moonwort
BOMO	*Botrychium montanum*	Mountain grape-fern
BOPA9	*Botrychium paradoxum*	Twin-spiked moonwart
BOPE4	*Botrychium pedunculosum*	Stalked moonwort
BUAM2	*Bupleurum americanum*	Bupleurum
CAMAM	*Calochortus macrocarpus var. maculosus*	Green-band mariposa-lily
CAAT8	*Carex atrosquama*	Blackened sedge
CACA12	*Carex capillaris*	Hairlike sedge
CACA13	*Carex capitata*	Capitate sedge
CACO81	*Carex cordillerana*	Cordilleran sedge
CADI4	*Carex diandra*	Lesser panicled sedge
CAGY2	*Carex gynocrates*	Yellow bog sedge
CAID	*Carex idahoa*	Idaho sedge

CALAA	*Carex lasiocarpa var. americana*	Slender sedge
CAME9	*Carex media*	Intermediate sedge
CAMI16	*Carex micropoda*	Pyrenaean sedge
CANA2	*Carex nardina*	Spikenard sedge
CAPE5	*Carex pelocarpa*	New sedge
CARE4	*Carex retrorsa*	Retrorse sedge
CASA10	*Carex saxatilis*	Russet sedge
CASU7	*Carex subnigricans*	Dark alpine sedge
CAVE5	*Carex vernacula*	Native sedge
CAFLR	*Castilleja flava var. rustica*	Rural paintbrush
CAFR8	*Castilleja fraterna*	Fraternal paintbrush
CARU8	*Castilleja rubida*	Purple alpine paintbrush
CAVI9	*Castilleja viscidula*	Sticky paintbrush
CHFE	*Cheilanthes feei*	Fee's lip-fern
COTE13	*Comastoma tenellum*	Slender gentian
CRSI2	*Cryptantha simulans*	Pine woods cryptantha
CRST2	*Cryptogramma stelleri*	Steller's rockbrake
CYLUL	*Cyperus lupulinus ssp. lupulinus*	Great Plains flatsedge
CYFA	*Cypripedium fasciculatum*	Clustered lady's-slipper
ELBR5	*Elatine brachysperma*	Short seeded waterwort
ELBO	*Eleocharis bolanderi*	Bolander's spikerush
ERDA3	*Erigeron davisii*	Engelmann's daisy
ERDI3	*Erigeron disparipilus*	White cushion erigeron
ERHY6	*Erythranthe hymenophylla*	Membrane-leaved monkeyflower
GEPR3	*Gentiana prostrata*	Moss gentian
HECU3	*Heliotropium curassavicum*	Salt heliotrope
JUTRA2	*Juncus triglumis var. albescens*	Three-flowered rush
KOMY	*Kobresia myosuroides*	Bellard's kobresia
KOSI2	*Kobresia simpliciuscula*	Simple kobresia
LIAR6	*Lipocarpha aristulata*	Aristulate lipocarpha
LIBO4	*Listera borealis*	Northern twayblade
LOER2	*Lomatium erythrocarpum*	Red-fruited lomatium
LOGR2	*Lomatium greenmanii*	Greenman's desert parsley
LOPA8	*Lomatium pastoralis*	Meadow lomatium
LYCO3	*Lycopodium complanatum*	Ground cedar
MUMI2	*Muhlenbergia minutissima*	Annual dropseed
OPPU3	*Ophioglossum pusillum*	Adder's-tongue
PEBR5	*Pellaea bridgesii*	Bridges' cliff-brake
PEDEV2	*Penstemon deustus var. variabilis*	Variable hot-rock penstemon
PHMI7	*Phacelia minutissima*	Dwarf phacelia
PHMU3	*Phlox multiflora*	Many-flowered phlox
PIAL	*Pinus albicaulis*	Whitebark pine
PIFL2	*Pinus flexilis*	Limber pine
PLOB	*Platanthera obtusata*	Small northern bog-orchid

PLOR3	*Pleuropogon oregonus*	Oregon semaphoregrass
PODI	*Potamogeton diversifolius*	Rafinesque's pondweed
PYDE	*Pyrola dentata*	Toothleaf pyrola
PYSC4	*Pyrrocoma scaberula*	Rough pyrrocoma
ROCO3	*Rorippa columbiae*	Columbia cress
RORA	*Rotala ramosior*	Lowland toothcup
RUBA	*Rubus bartonianus*	Bartonberry
SAFA	*Salix farriae*	Farr's willow
SAWO	*Salix wolfii*	Wolf's willow
SAADO2	*Saxifraga adscendens ssp. oregonensis*	Wedge-leaf saxifrage
SUVI	*Suksdorfia violacea*	Violet suksdorfia
THAL	*Thalictrum alpinum*	Alpine meadowrue
THEU	*Thelypodium eucosmum*	Arrow-leaf thelypody
TOMO	*Townsendia montana*	Mountain townsendia
TOPA2	*Townsendia parryi*	Parry's townsendia
TRDO	*Trifolium douglasii*	Douglas' clover
TRPA28	*Triglochin palustris*	Slender bog arrowgrass
TRLAA2	*Trollius laxus ssp. albiflorus*	American globeflower
UTMI	*Utricularia minor*	Lesser bladderwort

References

Bio-Resources. 2012. Final Report Wallowa Falls Hydroelectric Project Special Status Plant Study and Noxious Weed Study. August 2012.

Bio-Resources. 2017. Botanical Report 2017 Wallowa Falls Hydroelectric Project Special Status Plant and Noxious Weed Management.

Bio-Resources. 2018. Botanical Report 2018 Wallowa Falls Hydroelectric Project Special Status Plant and Noxious Weed Management.

Bio-Resources. 2019. Botanical Report 2019 Wallowa Falls Hydroelectric Project Special Status Plant and Noxious Weed Management.

Oregon Biodiversity Information Center. 2010. June 29, 2010. Oregon Biodiversity Information Center data system for rare, threatened and endangered plant and animal records within one mile of the Wallowa Falls Dam Project in T 03S R 45E Sections 29, 32, and 33,WM. Unpublished report for Kendel Emmerson, PacifiCorp Energy.

Oregon Biodiversity Information Center. 2012. May 25, 2012. Oregon Biodiversity Information Center data system for rare, threatened and endangered plant and animal records within two mile of the Wallowa Falls Dam Project in T 03S R 45E Sections 28, 29, 32, and 33,WM. Unpublished report for Bio-Resources, Inc.

PacifiCorp. 1993. Biological Evaluation Plant Species Wallowa Falls Dam Reparation Project. Prepared by Campbell-Craven Environmental Consultants. April 15, 1993.

United States Forest Service. 2011. Wallowa Falls Hydroelectric Project, FERC Project No. 308-005 Comments on Pre-Application Document, Comments on Scoping Document No. 1, and Study Requests. On the web: http://www.pacificorp.com/wallowafalls.

Noxious Weed Management

On July 20, 2020, a complete inventory of noxious weeds within the Wallowa Falls Hydroelectric Project was conducted by Bio-Resources, Inc. botanist, Kendrick Moholt. Invasive Plant Inventory Forms, maps, and photographs are included in Appendix 3. One week following the inventory on July 27, 2020, a Bio-Resources, Inc. inspector (again Mr. Moholt) oversaw an herbicide spray and manual removal operation to control noxious weeds within the Project Area. Treatment consisted of spraying with Milestone herbicide, a surfactant and a marking dye (see Appendix 3 for Herbicide Application Data Form) and with manual control (digging individual plant with a shovel). The manual control technique was used within 30 meters of open water and exclusively on all property managed by the US Forest Service.

The campground area was treated with very targeted and minimal applications using only backpack sprayer to spot apply chemical on individual plants. A four-wheeler mounted spray unit was use at the hiking trail staging area and along the trail on property owned by PacifiCorp. No herbicides were applied on Forest Service land. The species targeted by application of herbicide were Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), houndstongue (*Cynoglossum officinale*), burdock (*Arctium minus*), and meadow hawkweed (*Hieracium caespitosum*).

One additional species of noxious weed not previously located in the project area was found during the July 20 inventory. Two basal rosettes of Scotch thistle (*Onopordum acanthium*) were found near the velocity barrier at the end of the tailrace. These two plants were treated by spot application of herbicide during the July 27 treatment effort.

Appendix 1

Sensitive Plant Forms

TES Plant Element Occurrence Field Form

USDA FOREST SERVICE 2005

® = required field, ®* = conditionally required field

General Information

1) FS SITE ID: ® EO14340

2) DATE: ® 2 June; 22 July 2020 **3) SITE NAME:**

4) NRCS PLANT CODE: ® BOMO

5) SCIENTIFIC NAME: ® *Botrychium montanum*

6) RECORD SOURCE: ® RV-Revisit **7) SURVEY ID:** ®* **8) Survey Name:** Wallowa Falls Hydro. Proj.

9) EXAMINER(S)- LAST: ® Moholt **FIRST:** Kendrick **MIDDLE INITIAL:**

LAST: **FIRST:** **MIDDLE INITIAL:**

10) OWNERSHIP: ® United States Forest Service

11) E.O. # 16 **12) NEW OCCURRENCE – YES:** *OR* **NO:** X

13) STATE: ®* Oregon **14) COUNTY:** ®* Wallowa

15) REGION: ®* 6 **16) FOREST:** ®* Wallowa-Whitman **17) DISTRICT:** ®* Eagle Cap Ranger District

18) Entire extent mapped: Yes: No :X Uncertain: **19) Area (Est):** NA **20) Area UOM:** ®* NA

21) Canopy Cover Method ®* (circle one): **COVER PERCENT:** **DAUBEN:** X **NRMCOV:**

Element Occurrence Data

22) EO Canopy Cover: %Cov: 65% ***or*** Cover Class Code: **23) Lifeform:** FB

24) Number of subpopulations: 1 **XX) Plants Found:** NO

25) Plant Count: Ø **26)Count Type:** ***Genets/Ramets/Undetermined*** NA **27) Count: *Actual* or *Estimate*** NA

28) Revisit needed - No **29) Revisit Date:**

30) Revisit Justification:

31) Phenology by %
(Sum to 100%):
Vegetative . . . . . ___
Flower/Bud . . . ___
Fruit/Dispersed . ___
Seedlings/
Juvenile

32) Population Comments: (e.g., distribution, vigor, density, phenology, dispersal)

Site appears to have a greater shrub cover and tree canopy cover since first discovered 27 years ago.

33) Evidence of disease, competition, predation, collection, trampling, or herbivory: Yes___*or* No ____

34) Evidence Comments: NA

35) Pollinator observed – Yes *or* No: X **36) Pollinator type(s):**

37) Pollinator comments: NA

Site Morphometry

38) Percent Slope: 3%

39) Slope position: FS

40) Aspect: azimuth: ***or*** cardinal: WSW

41) Elev.: Ave: Min: 1768 Max: 1768

42) Elev UOM: **®*** meter

Soil Characteristics and Light Conditions

43) Substrate on which EO occurs: S

44) Parent Material: RESI

45) Soil Moisture: D

46) Soil Texture: SL

47) Soil Type: rocky, sandy loam

48) Light Exposure: PSH

FS SITE ID: EO 14340

Site Classifications

Record taxonomic units of the given type(s) if published classifications exist for the area.

CLASSIFICATION TYPE	CLASS CODE	CLASSIFICATION SHORT NAME	CLASSIFICATION SET
49) Existing Veg			
50) Potential Veg			
51) Ecotype			

Habitat Quality and Management Comments

52) Habitat Description: Mesic oening in *Picea engelmannii* and *Abies grandis*

53) Dominant Process: 70

54) Community Quality *(L, M, H):* M

55) Landscape Integrity *(L, M, H):* M

56) Process Comment: Firewood stacked nearby

57) Disturbance/Threats (present or imminent): Trampling

58) Disturbance/Threats Comment: Area SE of cabin should be avoided

59) Non-Native Comment: Minimal threat from non-natives

60) Current Land Use Comment: Potential storage area for cabin

Canopy Cover

Record % canopy cover by actual percent, ***or*** by cover class (*as indicated in General Information Block*).

Lifeform Canopy Cover	61) % Cov *or* Code	Ground Cover	62) % Cov *or* Code
Tree	65	Bare	15
Shrub	5	Gravel	
Forb	10	Rock	
Graminoid	5	Bedrock	
Non-vascular		Moss	
Lichen		Litter/Duff	
Algae		Basal Veg	
Lichen		Water	
		Road surface	

FS SITE ID: EO 14340

Associated Species

List species directly associated with the EO species on this site. Record the NRCS Plant Code, scientific name or both. If desired, indicate lifeform, dominant species, % cover for each species and flag non-native species.

63) Completeness of Species List: ®* C, R, OR S C

64) Species List Comment: small area recorded

65) NRCS Plant Code	66) Scientific Name	67) Life Form	68) Dom. (Y/N)	69) % Cov or	70) Non-native
PIEN	*Picea engelmannii*	TR	Y	50	No
ABGR	*Abies grandis*	TR	N	15	No
RILA	*Ribes lacustre*	SH	Y	5	No
CARO5	*Carex rossii*	GR	Y	5	No
FRVI	*Fragaria virginiana*	FB		10	No
ARCO9	*Arnica cordifolia*	FB		10	No
TAOF	*Taraxacum officinale*	FB		T	Yes
PYSE	*Pyrola secunda*	FB		5	No
HIAL2	*Hieracium albiflorum*	FB		T	No
THOC	*Thalictrum occidentalis*	FB		T	No
EPAN	*Epilobium angustifolium*	FB		T	No
ANRA	*Antennaria racemosa*	FB		T	No

EO Specimen Documentation None

71) Reference for ID:

72) Primary Collector – Last Name: **First Name:** **M.I.**

Other Collectors – Last Name: **First Name:** **M.I.**

73) Collection #: ®* **74) ID Confirmed: ®*** Y: or N: or Questionable:

75) Verification:

76) Specimen Repository: ®*

FS SITE ID: EO 14340

Image Information

77) Image ID

78) Image Description
Site SE of cabin

Location Information

(State, County, Region, Forest, District will be auto-populated by the database application when the spatial feature is entered)

79) USGS Quad Number: 45117-C2-TF-024

80) USGS Quad Name: Joseph, Oregon

81) Forest Quad Number:

82) Forest Quad Name:

83) Legal Description: Required where public land survey is available.

Meridian:

Township and Range: 3S 45E

Section: 33	**Q Sec:** SW	**QQ Sec:** ____	**QQQ Sec:** ____	**QQQQ Sec:** ____

84) Latitude and Longitude (either in degrees, minutes, seconds or in decimal degrees)

Geodetic Datum:

Latitude: **Degrees** ____ **N** **Minutes** **Seconds** ____.____

Longitude: **Degrees** _____ **W** **Minutes** **Seconds** ____.____

GPS Datum:

GPS Lat. Dec. Degrees:

GPS Long. Dec. Degrees:

85) UTM

UTM Datum: NAD27

UTM Zone:

Easting: 084221

Northing: 5011023

86) GPS Equipment Used (Manufacturer and Model):

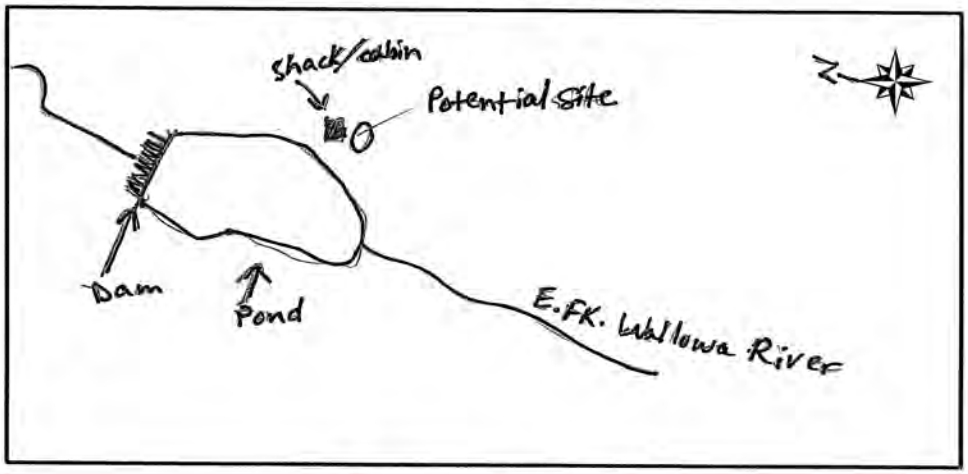
Garmin 62S

87) Metes and Bounds

88) Directions to Site

From the main USFS trailhead at the end of Hwy. 82, walk the Wallowa Falls maintenance road ~1.2 miles to the dam. The site is located southeast of the shack by the dam.

89) Sketch of Site or Area



90) General EO Comments

39

TES Plant Element Occurrence Field Form

USDA FOREST SERVICE 2005

® = required field, ®* = conditionally required field

General Information

1) FS SITE ID: ®	**2) DATE: 2 June; 22 July 2020®**	**3) SITE NAME:**
4) NRCS PLANT CODE: BOMI®		
5) SCIENTIFIC NAME: ® *Botrychium minganense*		
6) RECORD SOURCE: ®	**7) SURVEY ID: ®***	**8) Survey Name: BRI/PacifiCorp 2020**
9) EXAMINER(S)- LAST: Moholt®	**FIRST:Kendrick**	**MIDDLE INITIAL:**
LAST:	**FIRST:**	**MIDDLE INITIAL:**
10) OWNERSHIP: USFS (WWNF)®		
11) E.O. #	**12) NEW OCCURRENCE –no**	
13) STATE: Oregon®*	**14) COUNTY: Wallowa ®***	
15) REGION: R6®*	**16) FOREST: Wallowa-Whitman®***	**17) DISTRICT: Wallowa RD®***
18) Entire extent mapped: YES No: Uncertain:	**19) Area (Est):<0.1 acres**	**20) Area UOM: ®***
21) Canopy Cover Method ®* (circle one): COVER PERCENT		

Element Occurrence Data

22) EO Canopy Cover: %Cov:50 ***or*** Cover Class Code:		**23) Lifeform:**
24) Number of subpopulations:	**XX) Plants Found:** NO	
25) Plant Count:	**26)Count Type: *Genets*/**	**27) Count:**
28) Revisit needed - No	**29) Revisit Date:**	
30) Revisit Justification: The plant was found last year for the first time. Construction activity in the area this year		
31) Phenology by % *(Sum to 100%):* Vegetative . . . . . ___ Flower/Bud . . . Fruit/Dispersed . ___ Seedlings/ Juvenile . . . . . ___	**32) Population Comments:** (e.g., distribution, vigor, density, phenology, dispersal) Plant not relocated.	
	33) Evidence of disease, competition, predation, collection, trampling, or herbivory: Yes___ *or* No ____ **34) Evidence Comments:**	
35) Pollinator observed –No **36) Pollinator type(s):**		
37) Pollinator comments: NA		

Site Morphometry

38) Percent Slope: 5%	**39) Slope position: southwest**
40) Aspect: azimuth: 220 ***or*** cardinal:	
41) Elev.: Ave: Min: 5125 Max:5125	**42) Elev UOM: ®***

Soil Characteristics and Light Conditions

43) Substrate on which EO occurs: Duff layer		
44) Parent Material: granit	**45) Soil Moisture: wet**	**46) Soil Texture: fine**
47) Soil Type: Clay loam		**48) Light Exposure: medium**

FS SITE ID:

Site Classifications

Record taxonomic units of the given type(s) if published classifications exist for the area.			
CLASSIFICATION TYPE	**CLASS CODE**	**CLASSIFICATION SHORT NAME**	**CLASSIFICATION SET**
49) Existing Veg			
50) Potential Veg			
51) Ecotype			

Habitat Quality and Management Comments

52) Habitat Description: **On trail edge with twinflower, ocean spray, mixed conifer**	
53) Dominant Process:	
54) Community Quality *(L, M, H):*	**55) Landscape Integrity *(L, M, H):***
56) Process Comment:	
57) Disturbance/Threats (present or imminent): present	
58) Disturbance/Threats Comment: **Trail maintenance**	
59) Non-Native Comment: little to no non-native	
60) Current Land Use Comment: next to trail	

Canopy Cover

Record % canopy cover by actual percent, ***or*** by cover class (*as indicated in General Information Block*).			
Lifeform Canopy Cover	**61) % Cov *or* Code**	**Ground Cover**	**62) % Cov *or* Code**
Tree	50	Bare	
Shrub	10	Gravel	
Forb	20	Rock	
Graminoid	-	Bedrock	
Non-vascular	5	Moss	5
Lichen		Litter/Duff	20
Algae		Basal Veg	
		Water	
		Road surface	
		Lichen	

FS SITE ID:

Associated Species

List species directly associated with the EO species on this site. Record the NRCS Plant Code, scientific name or both. If desired, indicate lifeform, dominant species, % cover for each species and flag non-native species.					
63) Completeness of Species List: ®* C, R, OR S **64) Species List Comment:**					
65) NRCS Plant Code	**66) Scientific Name**	**67) Life Form**	**68) Dom. (Y/N)**	**69) % Cov or Class**	**70) Non-native**
	Linnaea borealis		y	5	
	Fragaria virginiana				
	Adenocaulon bicolor				
	Chimaphila umbellata				
	Goodyera oblongifolia				
	Thalictrum occidentale				
	Holodiscus discolor		y	10	
	Abies concolor				
	Picea engelmannii				
	Pinus ponderosa				
	Acer glabrum				

EO Specimen Documentation NONE

71) Reference for ID: ----------NA		
72) Primary Collector – Last Name:	**First Name:**	**M.I.**
Other Collectors – Last Name:	**First Name:**	**M.I.**
73) Collection #: ®*	**74) ID Confirmed: ®*** Y: or N: or Questionable:	
75) Verification:		
76) Specimen Repository: ®*		

Image Information

77) Image ID	78) Image Description

Location Information

(State, County, Region, Forest, District will be auto-populated by the database application when the spatial feature is entered)

79) USGS Quad Number:	80) USGS Quad Name:
81) Forest Quad Number:	82) Forest Quad Name:

83) Legal Description: Required where public land survey is available.

Meridian: Township and Range: T3S R45E

Section: Q Sec:NE QQ Sec:NW QQQ Sec: QQQQ Sec:

32

84) Latitude and Longitude (either in degrees, minutes, seconds or in decimal degrees)

Geodetic Datum:

Latitude: Degrees_____N Minutes Seconds_____.____

Longitude: Degrees_____W

GPS Datum: GPS Long. Dec. Degrees:

85) UTM

UTM Datum: NAD 83 UTM Zone: 11T

Easting: 0483644 Northing: 5012238

86) GPS Equipment Used (Manufacturer and Model):

Garmin 62S

87) Metes and Bounds

FS SITE ID:

88) Directions to Site

From the southern end of Powerhouse Road walk the Wallowa Falls Maintenance Road to the main falls (~0.1 mile) and continue ~0.2 mile (just 100 feet past the section line between sec. 29 and 32). The plant is located on the east side of the trail.

89) Sketch of Site or Area

90) General EO Comments

Appendix 2

Construction Plan to Protect Special Status Plant Species

Wallowa Falls Hydroelectric Project
Construction Plan to Protect Special Status Plant Species

The Wallowa Falls Hydroelectric Project (Project) is located on the East Fork Wallowa River approximately 11 miles outside of the City of Joseph in Northeastern Oregon. The FERC regulated boundary of this Project is approximately 26 acres and includes project operations, facilities, and portions of the access road and campground (Figures 4, 5, 6). The Project is adjacent to the Eagle Cap Wilderness boundary, which is known to support several rare, threatened, endangered, and/or special status plant species. In addition, several data sources have identified *Botrychium* species within the Project area. This plan has been designed in cooperation with the Wallowa-Whitman National Forest to ensure the protection of sensitive botanical resources.

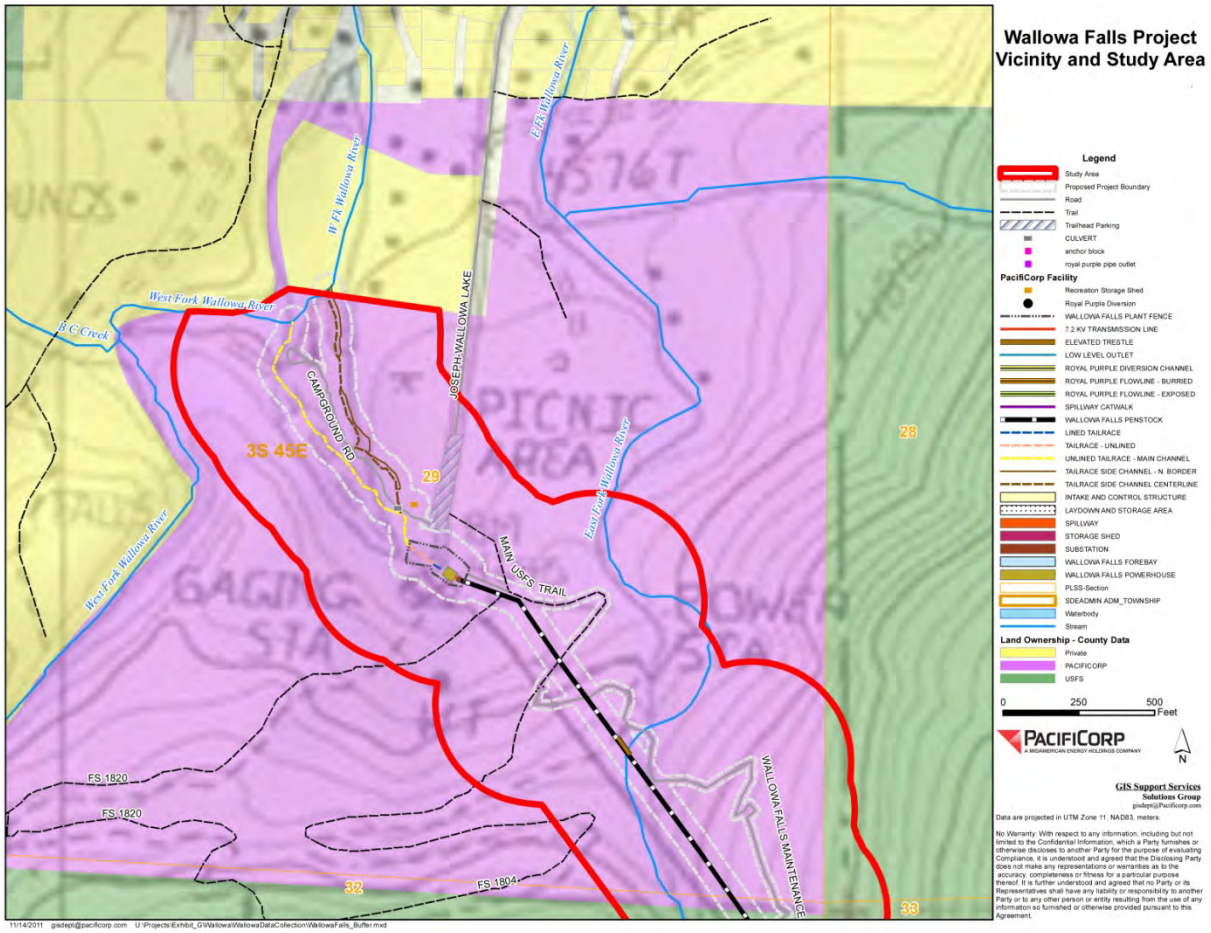


Figure 4. Wallowa-Whitman National Forest Project Area (1 of 3; North)

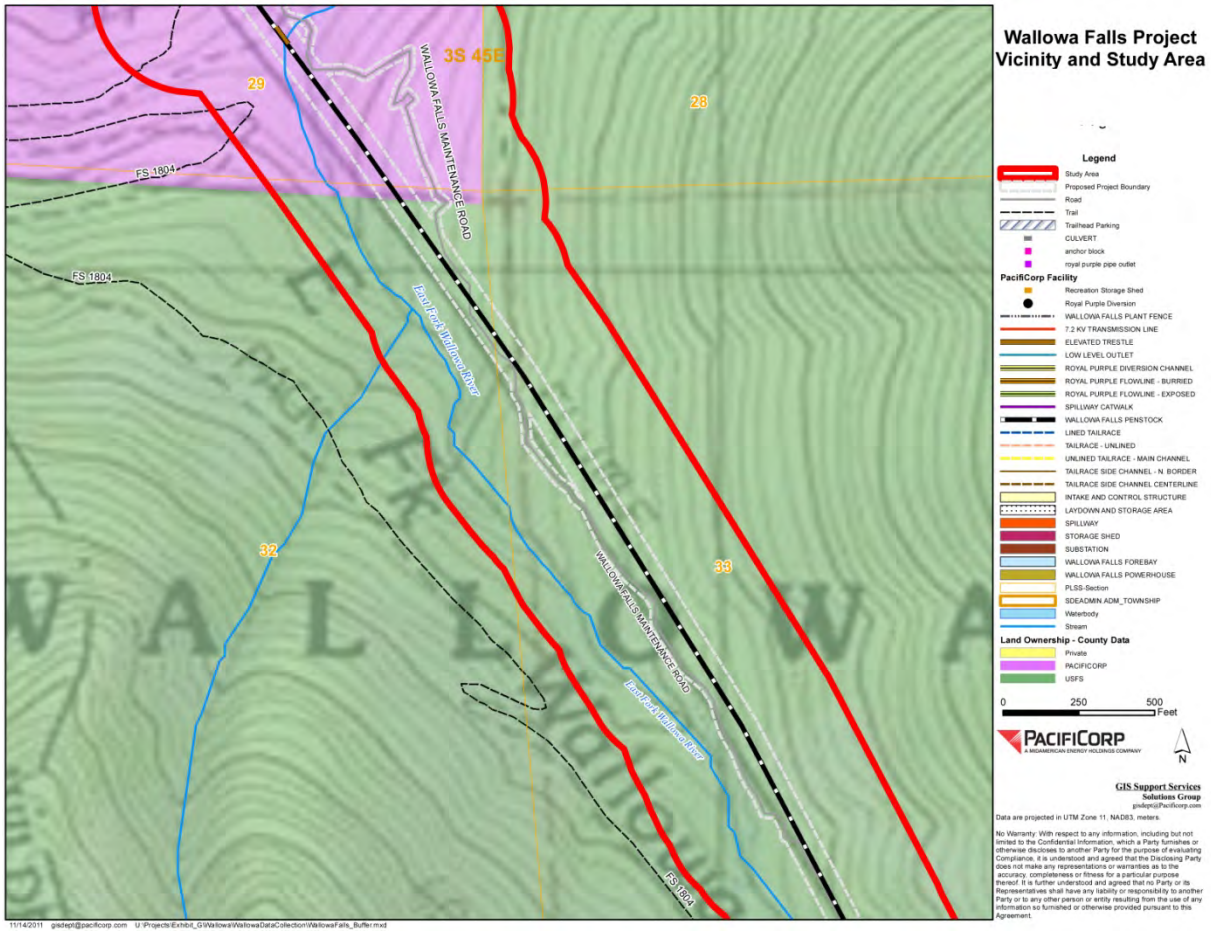


Figure 5. Wallowa-Whitman National Forest Project Area (2 of 3; Middle)

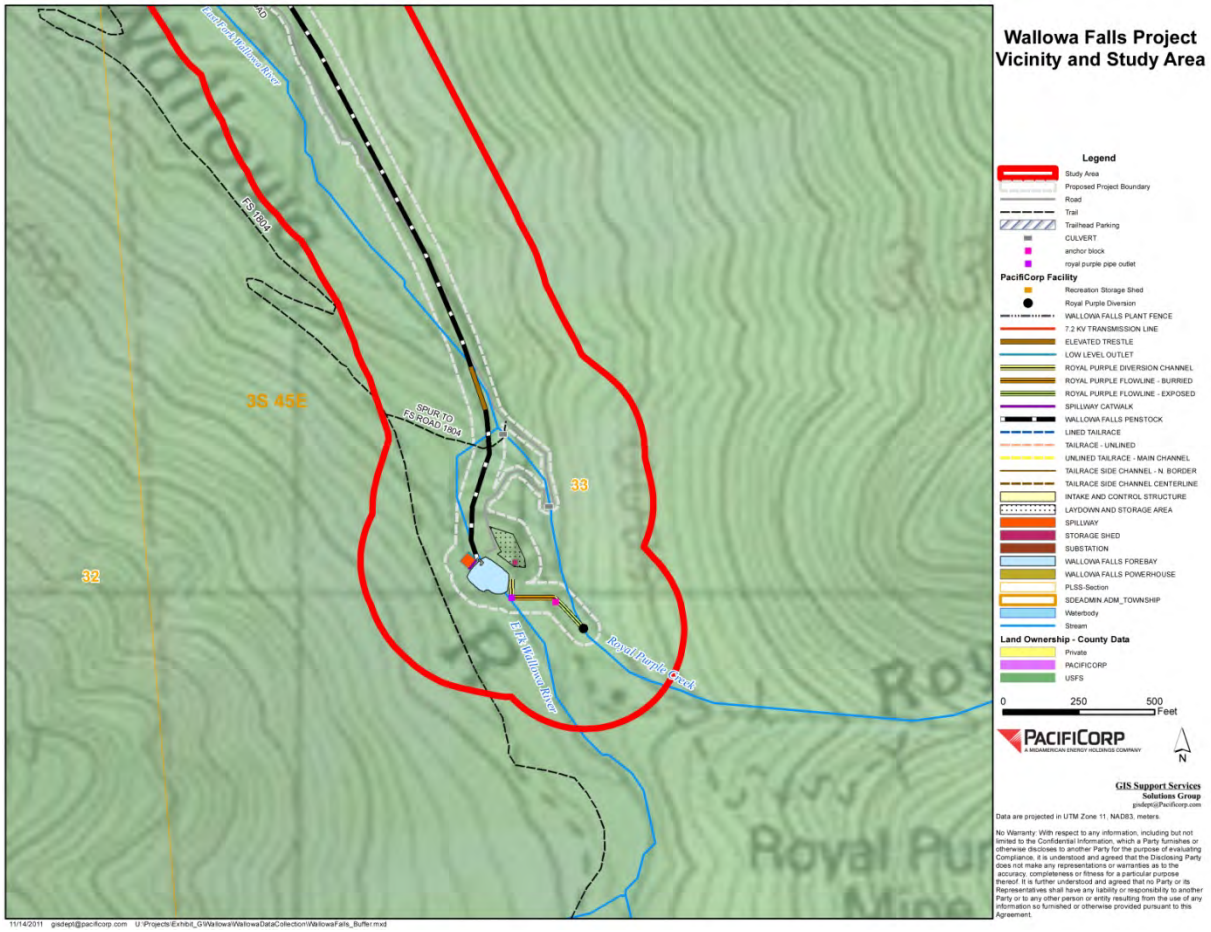


Figure 6. Wallowa-Whitman National Forest Project Area (3 of 3; South)

The area immediately southeast of the forebay cabin in the southern end of the Project area is a historic population for *Botrychium montanum*. Though the population has not been relocated in recent years, the area is considered high probability habitat for this species. Construction activities and material storage should be minimized or avoided in the area east of the forebay cabin (see Figure 7).

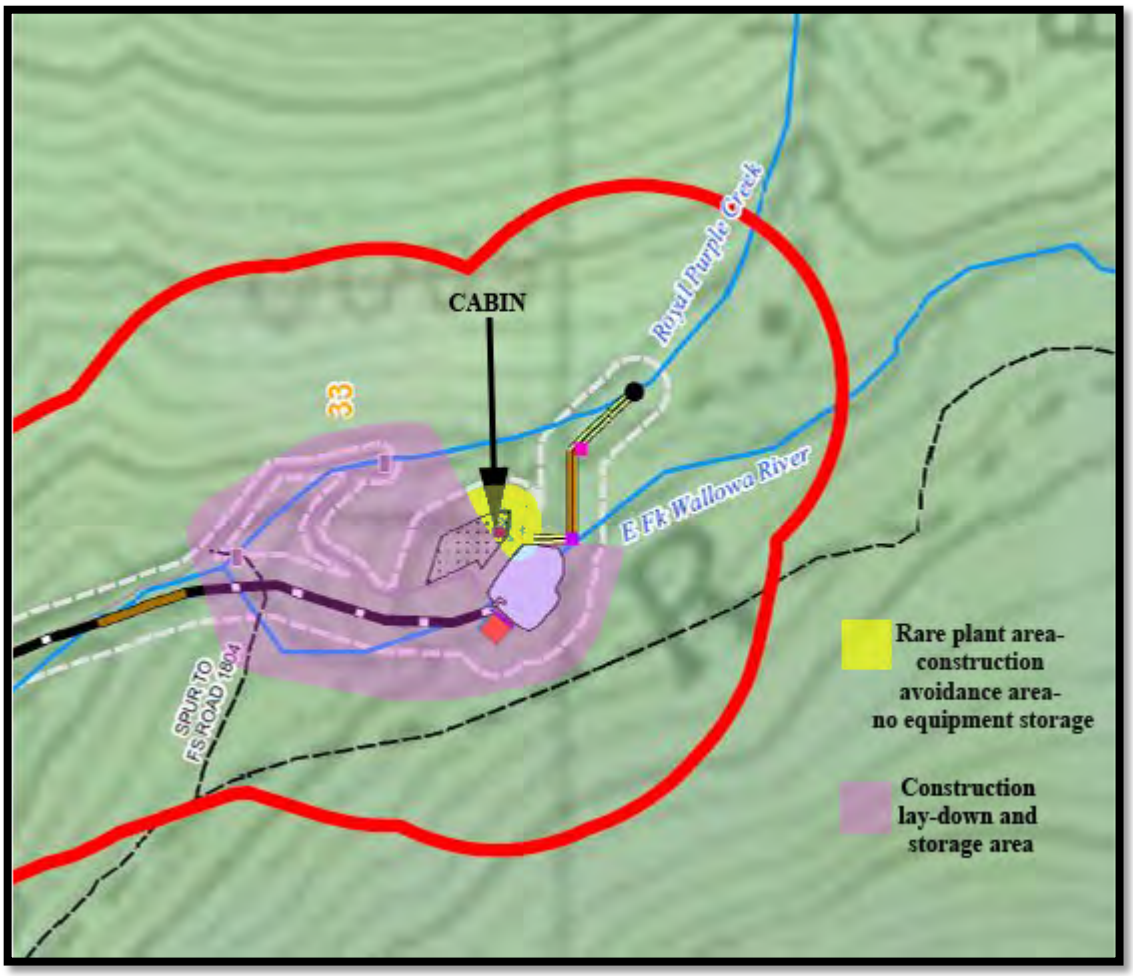


Figure 7. Construction avoidance area for *Botrychium montanum* on the Wallowa Falls Hydroelectric Project.

A population of *Botrychium minganense* is located within the Project area next to the Wallowa Falls Maintenance Road (see Figure 8) approximately 100 feet south of the PacifiCorp/Federal land boundary (line between T3S R45E section 29 and 31). The following mitigation measures are required to ensure the protection of this population:

- Activity in the area around the population of *Botrychium minganense* will be limited to standard trail maintenance **only** within the existing footprint of the previously disturbed access road.
- The avoidance area around the population of *Botrychium minganense* will be considered a 100 meter radius around the population center at NAD 83 11T E0483644 N5012238 (see Table 11).
- If any additional activity is proposed, the Company is directed to contact the WWNF forest botanist for additional consultation.

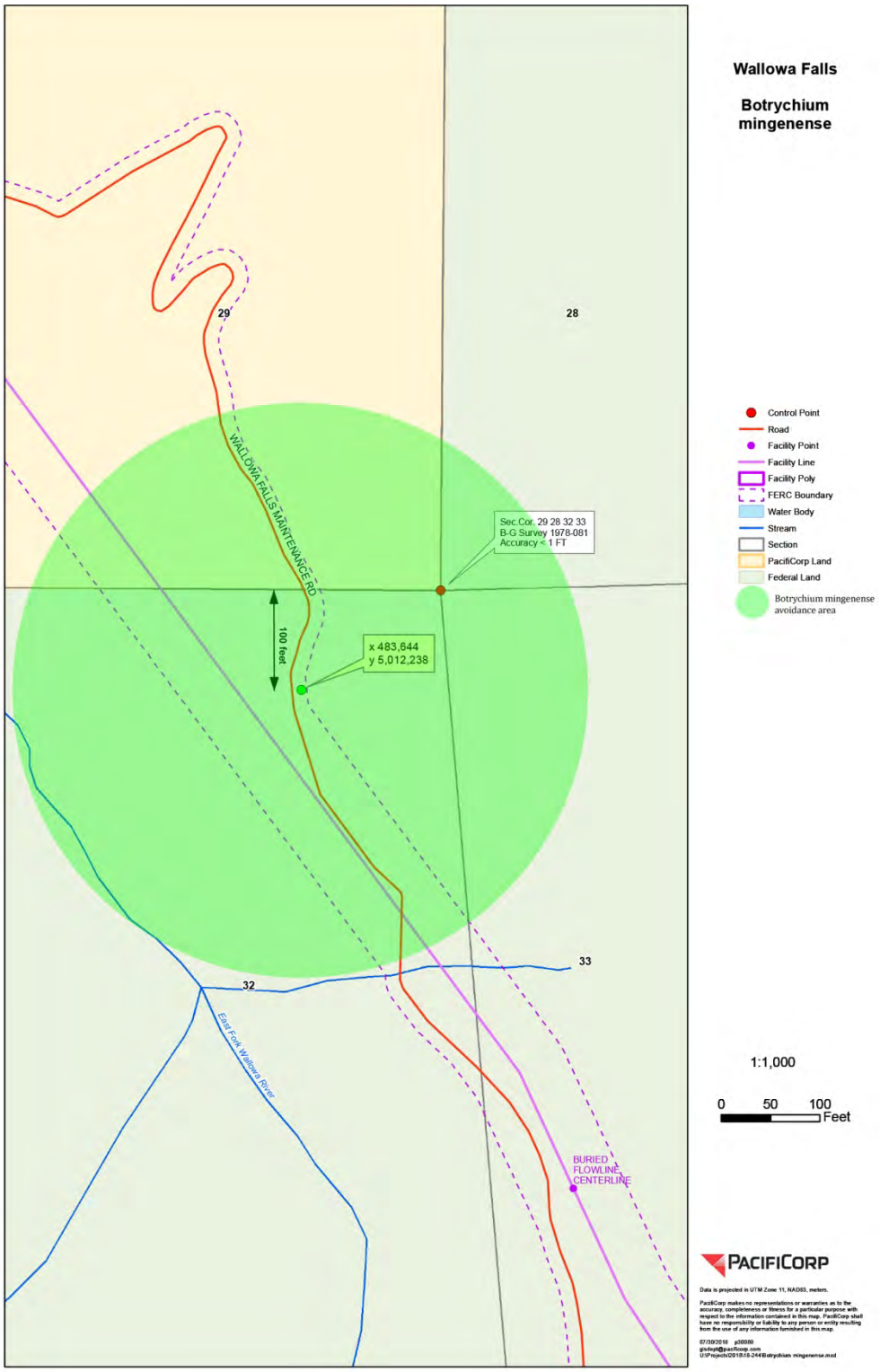


Figure 8. Off trail avoidance area for *Botrychium minganense* on the Wallowa Falls Hydroelectric Project Maintenance Road.

Appendix 3

Noxious Weed Forms

Invasive Plant Inventory Form

General Site Information

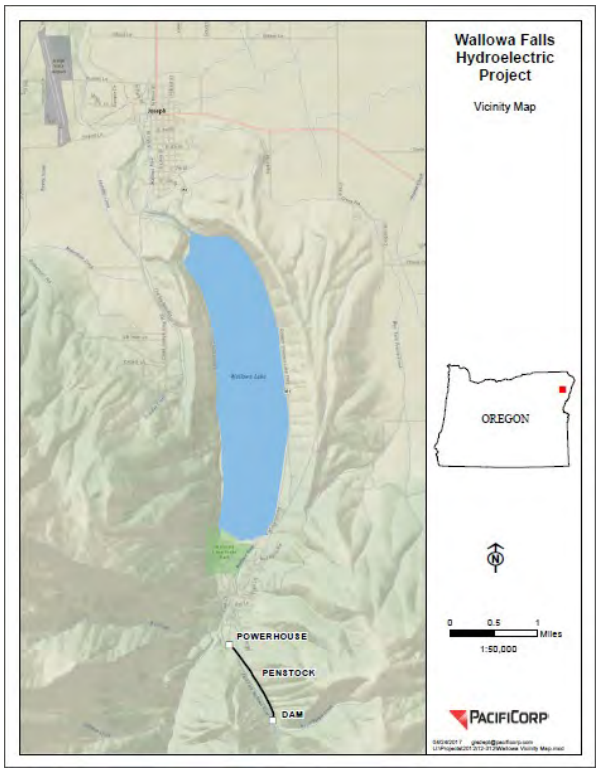
Site Name: Wallowa Falls Hydroelectric Project			**Date:** July 20, 2020
Photo Point (GPS):			Ownership/District: USFS, WWNF, Eagle Cap and PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5800'	**GPS Coordinates:** 0483259 E 5012652N to 0484159E 5011062N	**Datum:** UTM (NAD 27) Zone 11
EDRR: __Y__N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other** campground			
Township: 3S**Range:** 45E **Section:** 33 NW¼ of NW¼, SW¼ of NW¼, NW¼ of SW¼, SE¼ of SW¼			
Township: 3S**Range:** 45E **Section:** 29 SW ¼			
Township: 3S**Range:** 45E **Section:** 32 NE¼ of NE¼			

Site Data Information

Target Species Code: CIVU	**Common Name:** Bull Thistle	
Scientific Name: *Cirsium vulgare*		**Phenology: R__ B__ FL** X **S**
Distribution: CLumped____**L**inear_____**SE** Scattered even_____ **SP** Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.15
% Cover or Count (weeds): ~50		Understory Cover % (all):40-90%
Potential to Spread: High__ Med x_Low____		**Distance to Water:** >30m
Water Type: Perennial_ Ephemeral____		**System: Lake__ River__ Spring_ Stream**
Soil Types: sandy loam		Slope % aspect: 2-20%, Aspect variable
Other Species on Site:		

Comments

Map of Site


Wallowa Falls
Hydroelectric
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Vicinity Map
OREGON
POWERHOUSE
PENSTOCK
DAM
0 0.5 1 Miles
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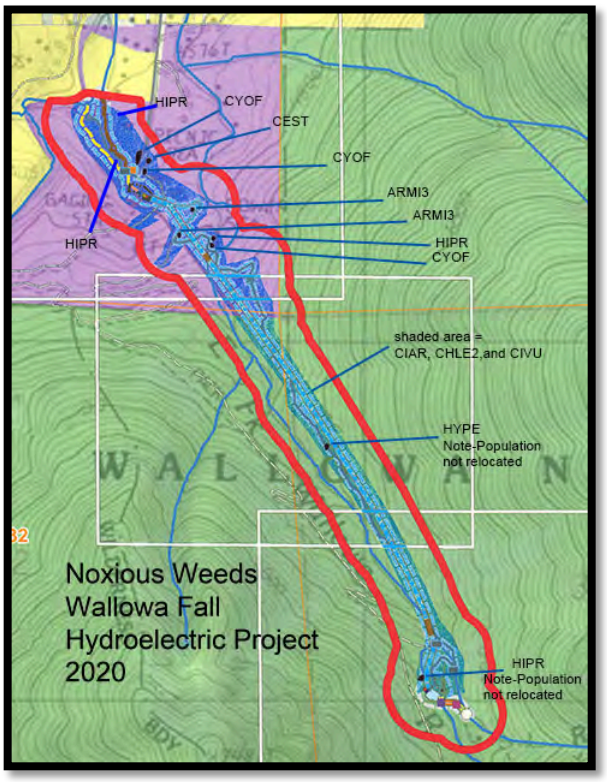
PACIFICORP


HIPR
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CYOF
shaded area =
CIAR, CHLE2,and CIVU
HYPE
Note-Population
not relocated
Noxious Weeds
Wallowa Fall
Hydroelectric Project
2020
HIPR
Note-Population
not relocated

Bull Thistle
Cirsium vulgare

Invasive Plant Inventory Form

General Site Information

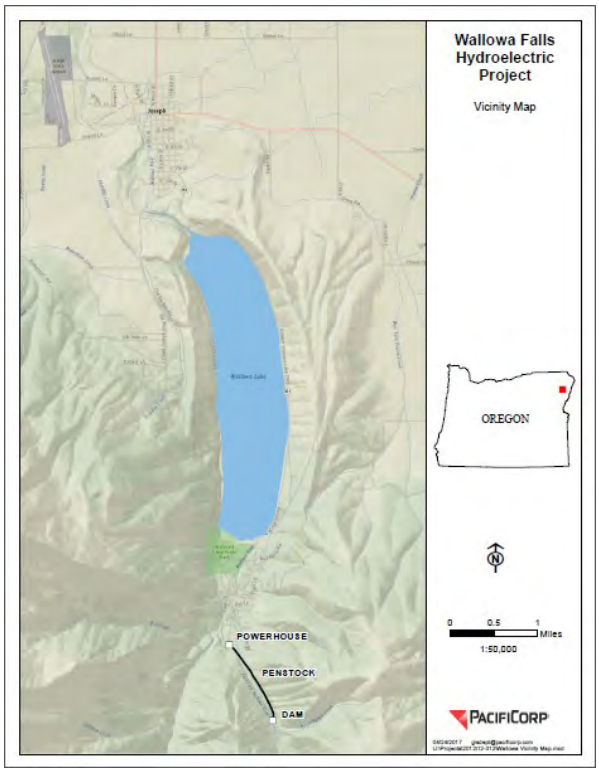
Site Name: Wallowa Falls Hydroelectric Project		**Date:** July 20, 2020	
Photo Point (GPS):		Ownership/District:USFS, WWNF, Eagle Cap and PacifiCorp	
Photo Name:		**Examiner:** Kendrick Moholt, Bio-Resources, Inc.	
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5800'	**GPS Coordinates:** 0483259 E 5012652N to 0484159E 5011062N	**Datum:** UTM (NAD 27) Zone 11
EDRR: Y N	**GPS File Name:**	Other Observations:	
Access: Road **Trail** X **River** **Other** campground			
Township: 3S **Range:** 45E **Section:** 33 NW¼ of NW¼, SW¼ of NW¼, NW¼ of SW¼, SE¼ of SW¼			
Township: 3S **Range:** 45E **Section:** 29 SW ¼			
Township: 3S **Range:** 45E **Section:** 32 NE¼ of NE¼			

Site Data Information

Target Species Code: CIAV	**Common Name:** Canada Thistle	
Scientific Name: *Cirsium arvense*		**Phenology: R B FL** X **S**
Distribution: CLumped **L**inear **SE** Scattered even **SP** Scattered Patchy X **C**ontinuous		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.3
% Cover or Count (weeds): ~1000		Understory Cover % (all):40-90%
Potential to Spread: High Med x Low		**Distance to Water:** >30m
Water Type: Perennial Ephemeral		**System: Lake River Spring Stream**
Soil Types: sandy loam		Slope % aspect: 2-20%, Aspect variable
Other Species on Site:		

Comments

Map of Site


Wallowa Falls
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Vicinity Map
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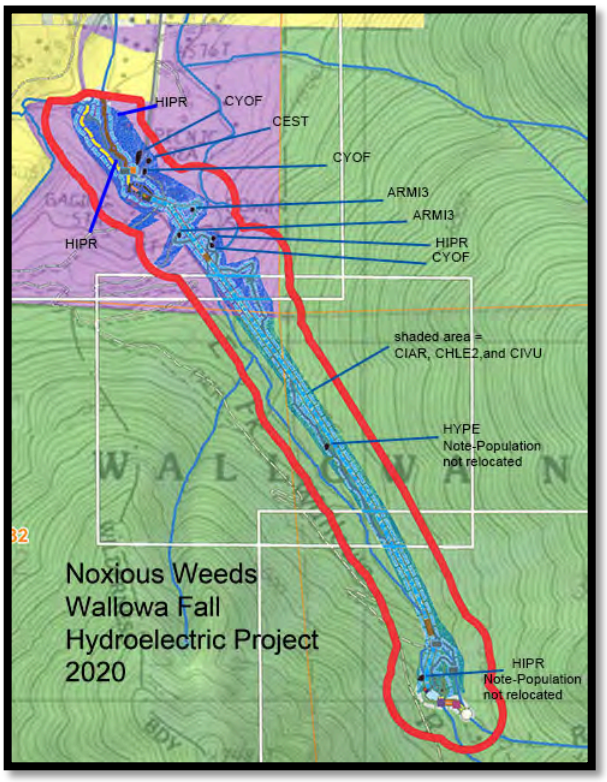
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shaded area =
CIAR, CHLE2,and CIVU
HYPE
Note-Population
not relocated
Noxious Weeds
Wallowa Fall
Hydroelectric Project
2020
HIPR
Note-Population
not relocated

Canada Thistle
Cirsium arvense

Invasive Plant Inventory Form

General Site Information

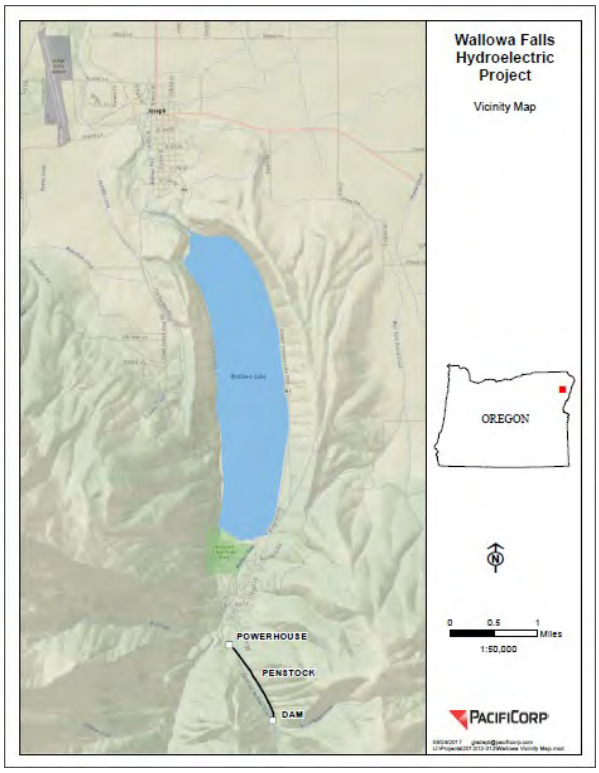
Site Name: Wallowa Falls Hydroelectric Project			**Date:** July 20, 2020
Photo Point (GPS):			Ownership: PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5000'	**GPS Coordinates:** 0483488E 5012298N and 0483529E 5012336N	**Datum:** UTM (NAD 27) Zone 11
EDRR: __Y__N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other** Campground			
Township: 3S**Range:** 45E **Section:** 29 **¼ sec:** SE of ¼ sec: SE			

Site Data Information

Target Species Code: ARMI3	**Common Name:** Common Burdock	
Scientific Name: *Arctium minus*	**Phenology: R__ B__ FL** X **S**	
Distribution: CLumped____**L**inear_____**SES**cattered even_____ **SP**Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.1
% Cover or Count (weeds): ~5	Understory Cover % (all):60-90%	
Potential to Spread: High__ Med x_Low_____	**Distance to Water:** >30m	
Water Type: Perennial_ Ephemeral____	**System: Lake__ River__ Spring_ Stream**	
Soil Types: sandy loam	Slope % aspect: 2-10%, Aspect variable	
Other Species on Site:		

Comments

Map of Site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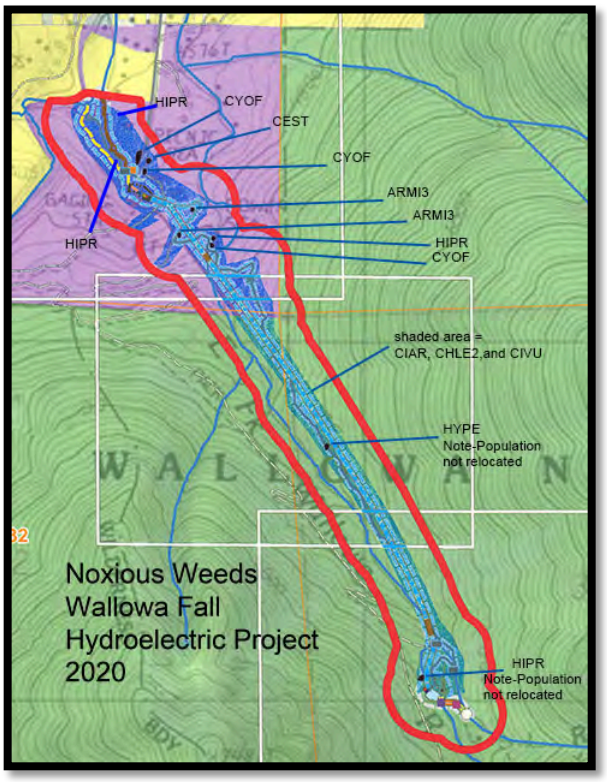
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shaded area =
CIAR, CHLE2,and CIVU
HYPE
Note-Population
not relocated
Noxious Weeds
Wallowa Fall
Hydroelectric Project
2020
HIPR
Note-Population
not relocated

Common Burdock

Arctium minus

Invasive Plant Inventory Form

General Site Information

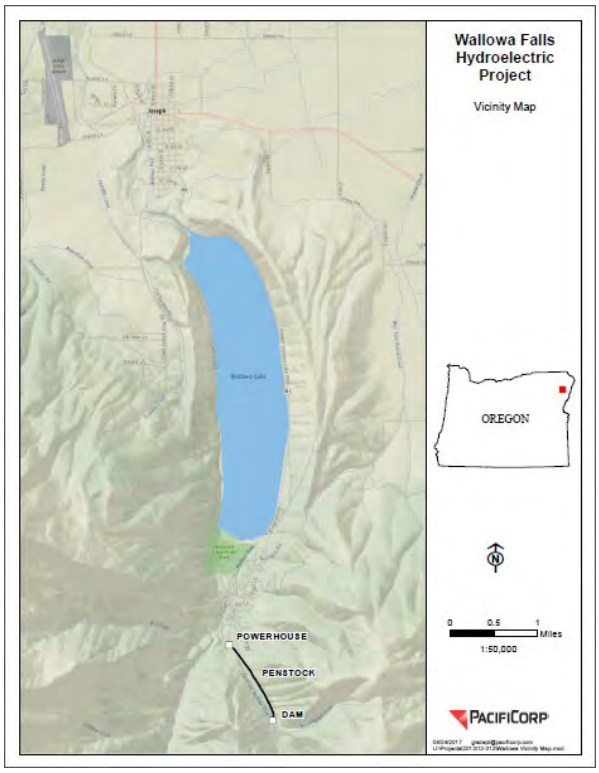
Site Name: Wallowa Falls Hydroelectric Project			**Date:** July 20, 2020
Photo Point (GPS):			Ownership: PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5000'	**GPS Coordinates:** 0483297 5012651N and 0483577E 5012260N	**Datum:** UTM (NAD 27) Zone 11
EDRR: __Y __N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other_____#**			
Township: 3S**Range:** 45E **Section:** 29 **¼ sec**: NW of ¼ sec: SE			
Township: 3S**Range:** 45E **Section:** 29 **¼ sec**: SE of ¼ sec: SE			

Site Data Information

Target Species Code: CYOF	**Common Name:** Houndstongue	
Scientific Name: *Cynoglossum officinale*	**Phenology: R__ B__ FL** X **S**	
Distribution: CLumped____**L**inear_____**SES**cattered even_____ **SP**Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.15
% Cover or Count (weeds): ~60	Understory Cover % (all):40-90%	
Potential to Spread: High x Med__Low____	**Distance to Water:** >30m	
Water Type: Perennial_ Ephemeral____	**System: Lake__ River__ Spring_ Stream**	
Soil Types: sandy loam	Slope % aspect: 2-10%, Aspect variable	
Other Species on Site:		

Comments

Map of Site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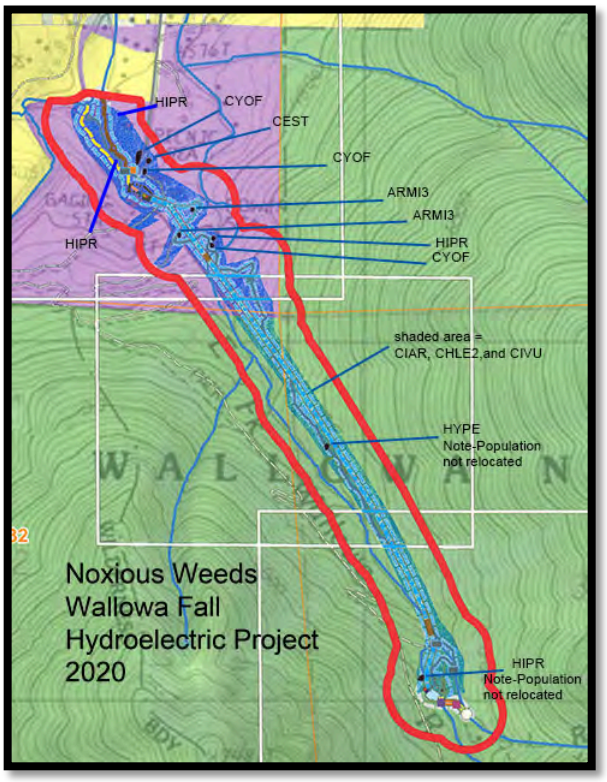
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Note-Population
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Noxious Weeds
Wallowa Fall
Hydroelectric Project
2020
HIPR
Note-Population
not relocated

Houndstongue
Cynoglossum officinale

Invasive Plant Inventory Form

General Site Information

Site Name: Wallowa Falls Hydroelectric Project			**Date:** July 20, 2020
Photo Point (GPS):			Ownership/District: USFS, WWNF, Eagle Cap and PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5800'	**GPS Coordinates:** 0484195E 5011062N (USFS) 0484223E 5011018N (Pacif)	**Datum:** UTM (NAD 27) Zone 11
EDRR: __Y__N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other_____#**			
Township: 3S**Range:** 45E **Section:** 33 **¼ sec:** SE (USFS)			
Township: 3S**Range:** 45E **Section:** 29 **¼ sec:** SE of **¼ sec:** SE (PacifiCorp)			

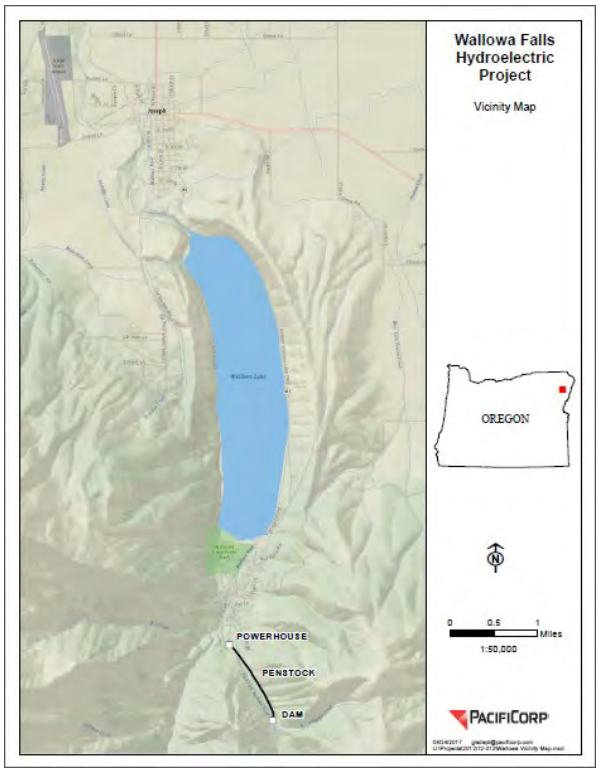
Site Data Information

Target Species Code: HIPR	**Common Name:** meadow hawkweed	
Scientific Name: *Hieracium caespitosum* (**Synonym: Hieracium pratense)**		**Phenology: R__ B__ FL** X **S**
Distribution: CLumped____**L**inear_____**SE**Scattered even_____ **SP**Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.15
% Cover or Count (weeds): <1% (~60 plants)		Understory Cover % (all):40-90%
Potential to Spread: High x Med__Low____		**Distance to Water:** >30m
Water Type: Perennial_ Ephemeral____		**System: Lake__ River__ Spring_ Stream**
Soil Types: sandy loam to sandy lithosol		Slope % aspect: 2-20%, Aspect variable
Other Species on Site:		

Comments

The hawkweed treated here is not in the same location formerly recorded with the infestation ID numbers MH3555 and MH3560. Plants have not been relocated at these older infestation sites.

Map of Site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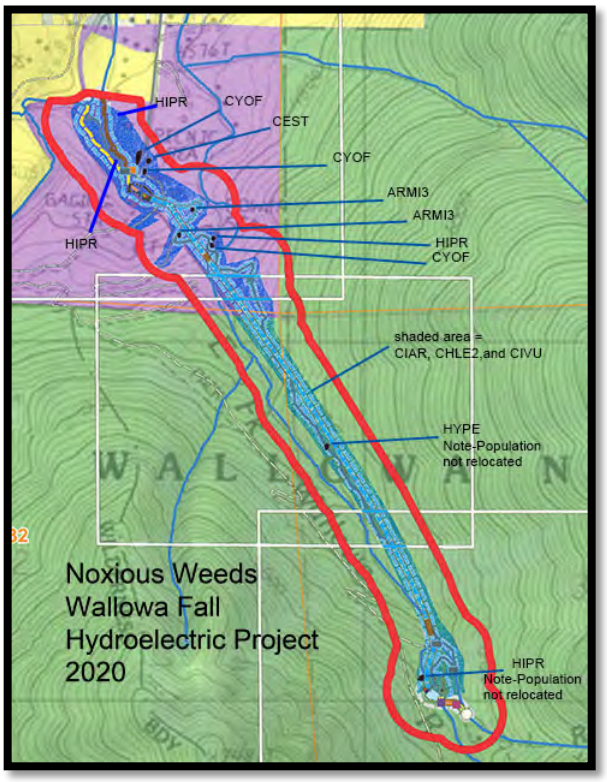
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HIPR
CYOF
shaded area =
CIAR, CHLE2,and CIVU
HYPE
Note-Population
not relocated
Noxious Weeds
Wallowa Fall
Hydroelectric Project
2020
HIPR
Note-Population
not relocated

Meadow Hawkweed

Hieracium caespitosum

Invasive Plant Inventory Form

General Site Information

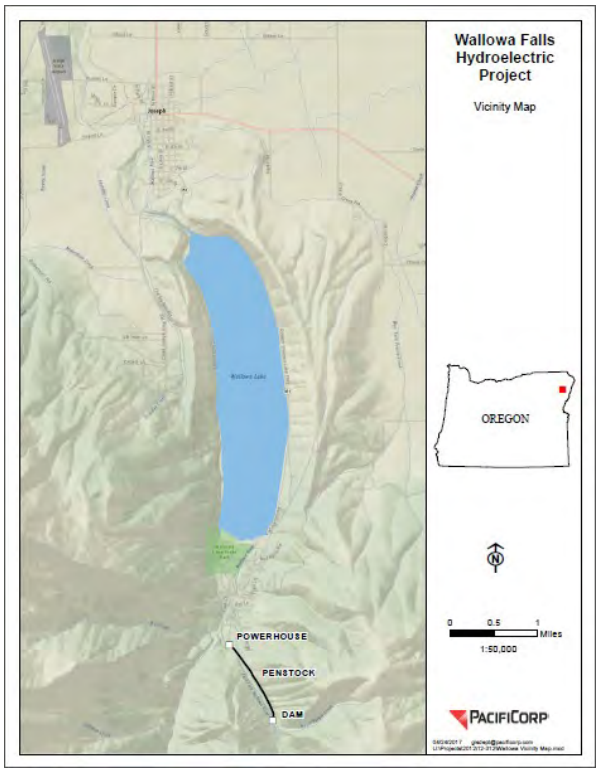
Site Name: Wallowa Falls Hydroelectric Project			**Date:** July 20, 2020
Photo Point (GPS):			Ownership/District:USFS, WWNF, Eagle Cap and PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5800'	**GPS Coordinates:** 0483259 E 5012652N to 0484159E 5011062N	**Datum:** UTM (NAD 27) Zone 11
EDRR:__Y__N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other** campground			
Township: 3S**Range:** 45E **Section:** 33 NW¼ of NW¼, SW¼ of NW¼, NW¼ of SW¼, SE¼ of SW¼			
Township: 3S**Range:** 45E **Section:** 29 SW ¼			
Township: 3S**Range:** 45E **Section:** 32 NE¼ of NE¼			

Site Data Information

Target Species Code: CHLE2	**Common Name:** Oxeye Daisy	
Scientific Name: *Leucanthemum vulgare* (Synonym- *Chrysanthemum leucanthemum*)		**Phenology: R__ B__ FL** X **S**
Distribution: CLumped____**L**inear_____**SE** Scattered even_____ **SP** Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.3
% Cover or Count (weeds): ~1000		Understory Cover % (all):40-90%
Potential to Spread: High__ Med x_Low____		**Distance to Water:** >30m
Water Type: Perennial_ Ephemeral____		**System: Lake__ River__ Spring_ Stream**
Soil Types: sandy loam		Slope % aspect: 2-20%, Aspect variable
Other Species on Site:		

Comments

Map of Site


Wallowa Falls
Hydroelectric
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Vicinity Map
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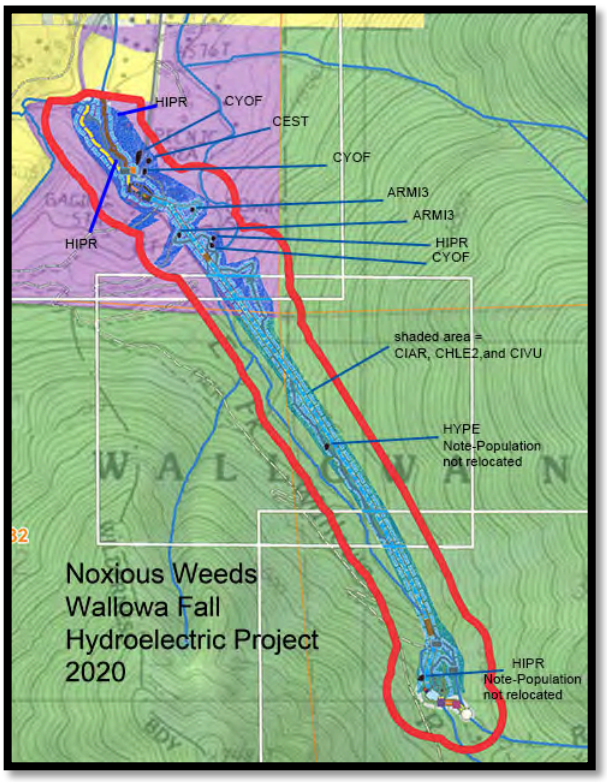
HIPR
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CYOF
shaded area =
CIAR, CHLE2,and CIVU
HYPE
Note-Population
not relocated
Noxious Weeds
Wallowa Fall
Hydroelectric Project
2020
HIPR
Note-Population
not relocated

Oxeye Daisy
Leucanthemum vulgare

Invasive Plant Inventory Form

General Site Information

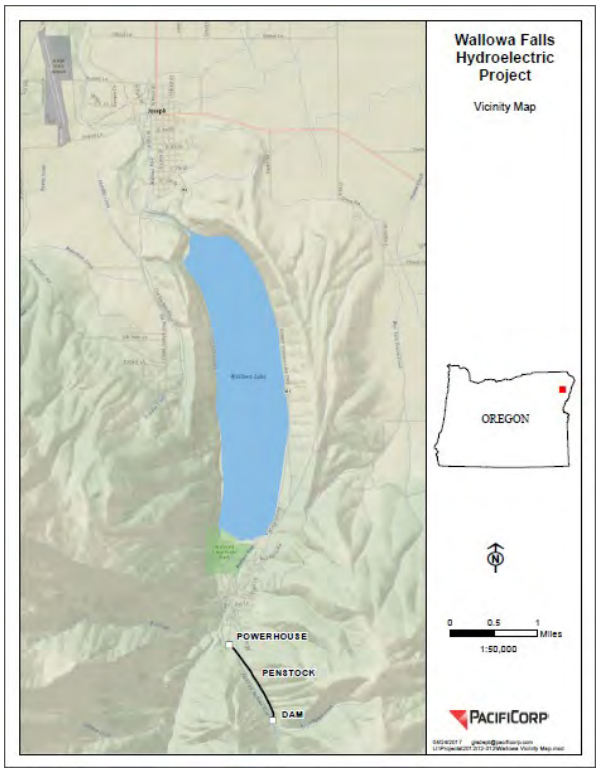
Site Name: Wallowa Falls Hydroelectric Project			**Date:** July 20, 2020
Photo Point (GPS):			Ownership: PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5000'	**GPS Coordinates:** 0483409E 5012480N	**Datum:** UTM (NAD 27) Zone 11
EDRR:__Y__N	**GPS File Name:**	Other Observations:	
Access: Road_X_ **Trail**_ **River**_ **Other** Campground			
Township: 3S**Range:** 45E **Section:** 29 **¼ sec:** NW of **¼ sec:** SE			

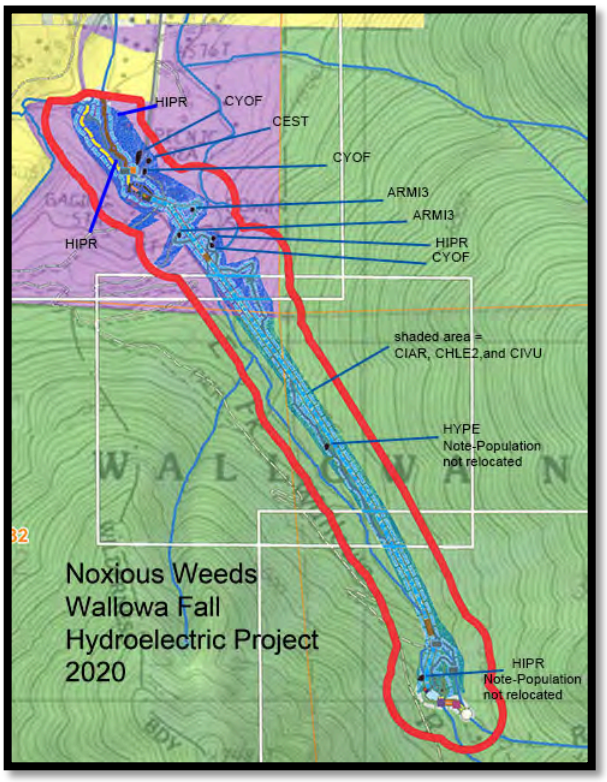
Site Data Information

Target Species Code: CEST	**Common Name:** Spotted Knapweed	
Scientific Name: *Centaurea stoebe* Synonym (*Centaurea maculosa*)		**Phenology: R**__ **B**__ **FL** X **S**
Distribution: CLumped____**L**inear_____**SES**cattered even_____ **SP**Scattered Patchy_X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.25
% Cover or Count (weeds): dozens		Understory Cover % (all):40-90%
Potential to Spread: High_x_ Med__Low____		**Distance to Water:** >30m
Water Type: Perennial_ **Ephemeral**____		**System: Lake**__ **River**__ **Spring**_ **Stream**
Soil Types: sandy loam		Slope % aspect: 2-10%, Aspect variable
Other Species on Site:		

Comments

Map of Site


Wallowa Falls
Hydroelectric
Project
Vicinity Map
OREGON
POWERHOUSE
PENSTOCK
DAM
0 0.5 1 Miles
1:50,000
PACIFICORP


HIPR
CYOF
CEST
CYOF
ARMI3
ARMI3
HIPR
HIPR
CYOF
shaded area =
CIAR, CHLE2,and CIVU
HYPE
Note-Population
not relocated
Noxious Weeds
Wallowa Fall
Hydroelectric Project
2020
HIPR
Note-Population
not relocated

Spotted Knapweed (rosette)
Centaurea stoebe

Invasive Plant Inventory Form

General Site Information

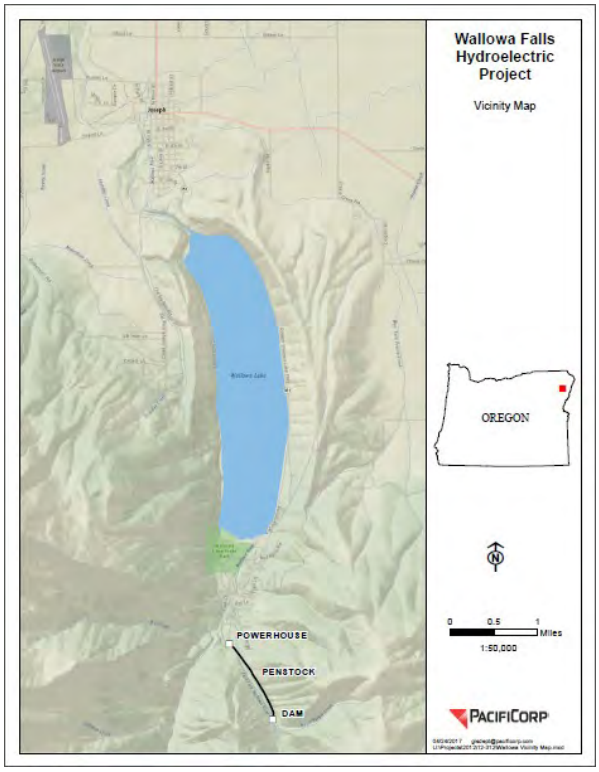
Site Name: Wallowa Falls Hydroelectric Project		**Date:** 20 July 2020	
Photo Point (GPS):		Ownership: PacifiCorp	
Photo Name:		**Examiner:** Kendrick Moholt, Bio-Resources, Inc.	
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5000'	**GPS Coordinates:** 0483122E 5012854N	**Datum:** UTM (NAD 83) Zone 11
EDRR: Y N	**GPS File Name:**	Other Observations:	
Access: Road Trail River Other: Campground			
Township: 3S **Range:** 45E **Section:** 29 **¼ sec:** NW of **¼ sec:** SE			

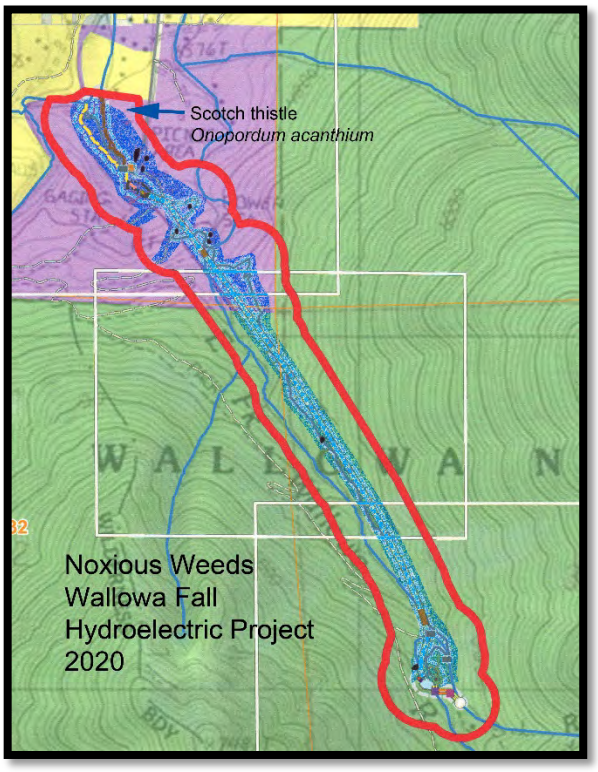
Site Data Information

Target Species Code: CEST	**Common Name:** Scotch Thistle	
Scientific Name: *Onopordum acanthium*	**Phenology: R B FL** X **S**	
Distribution: CLumped **L**inear **SE**Scattered even **SP**Scattered Patchy X **C**ontinuous		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.01
% Cover or Count (weeds): Two rosetts	Understory Cover % (all):40-90%	
Potential to Spread: High x Med Low	**Distance to Water:** >30m	
Water Type: Perennial Ephemeral	**System: Lake River Spring Stream**	
Soil Types: sandy loam	Slope % aspect: 1%, Aspect variable	
Other Species on Site:		

Comments

Map of Site


Wallowa Falls
Hydroelectric
Project
Vicinity Map
OREGON
POWERHOUSE
PENSTOCK
DAM
0 0.5 1 Miles
1:50,000
PACIFICORP


Scotch thistle
Onopordum acanthium
Noxious Weeds
Wallowa Fall
Hydroelectric Project
2020

Scotch Thistle (rosette)

Onopordum acanthium

Invasive Plant Inventory Form

General Site Information

Site Name: Wallowa Falls Hydroelectric Project		**Date:** 20 July 2020	
Photo Point (GPS):		Ownership/District:USFS, WWNF, Eagle Cap	
Photo Name:		**Examiner:** Kendrick Moholt, Bio-Resources, Inc.	
Botanist Initial: Wildlife Biologist:	**Elevation:** 5500'	**GPS Coordinates:** 0484018E 5011521N	**Datum:** UTM (NAD 27) Zone 11
EDRR:__Y___N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other_____#**			
Township: 3S**Range:** 45E **Section:** 33 **¼ sec:** NW			

Site Data Information

Target Species Code: HIPE	**Common Name:** St. John's Wort	
Scientific Name: *Hypericum perforatum*		**Phenology: R__ B__ FL_ S** None
Distribution: CLumped____**L**inear_____**SES**cattered even_____ **SP**Scattered Patchy__ **C**ontinuous_____		
Total Acres: 0 (none)	**Percent Infested:** <0%	**Infested Acres:** 0
% Cover or Count (weeds): 0		Understory Cover % (all): 90%
Potential to Spread: High__ Med___Low X		**Distance to Water:** >30m
Water Type: Perennial_ Ephemeral____		**System: Lake__ River__ Spring_ Stream**
Soil Types: sandy loam		Slope % aspect: 2%, 230°
Other Species on Site:		

Comments

THIS SMALL WEED POPULATION APPEARS TO HAVE BEEN ERADICATED

Approximately 1 mile from trailhead on Wallowa Falls Maintenance Road (NE of the FS1804 trail switchback on the Sec. 32/33 border).

Herbicide Application (2510) Data Form

General Treatment Data

Treatment Area Name	Owner	FACTS ID #	Subunit	Project
Wallowa Falls Hydroelectric Project	USFS & PacifiCorp	_____	__	Wallowa Falls Hydroelectric Project
Equipment	**Fund Code**	Comments		
4-Wheeler spray rig, backpack spray rig; shovel	NA	Manual control conducted by hand digging with shovel		

Infestation/Target Species

INFESTATION_ID	Species Name	% Infested	Infested Area Treat	Phenology
TBD	Meadow Hawkweed *Hieracium caespitosum*	<1%	0.00 ac USFS (NONE) 0.10 ac PacifiCorp (spot app)	Flowering
TBD	Bull Thistle *Cirsium vulgare*	<1%	0.01 ac USFS (Manual) 0.05 ac PacifiCorp (spot app and Manual)	Flowering
TBD	Canada Thistle *Cirsium arvense*	<1%	0.10 ac USFS (Manual) 0.05 ac PacifiCorp (spot app and Manual)	Flowering
TBD	Common Burdock *Arctium minus*	<1%	0.01 ac PacifiCorp (spot app and Manual)	Flowering
TBD	Hounds' Tongue *Cynoglossum officinale*	<1%	0.15 ac PacifiCorp (spot app and Manual)	Flowering
TBD	Oxeye Daisy *Leucanthemum vulgare*	<1%	0.5 ac PacifiCorp (spot app and Manual)	Flowering
TBD	Spotted Knapweed *Centaurea stoebe*	<1%	0.5 ac PacifiCorp (spot app and Manual)	Flowering
TBD	Scotch thistle *Onopordum acanthium*	<1%	0.01 ac PacifiCorp (spot app)	Flowering

DailyLog

Application Site	Licensed Applicator Name and License #	Applicators (other)
Wallowa Falls Hydroelectric Project campground, and trail	Veezy Contracting #AG-L 1009406 CPA	___

Application Date	Application Area (Acres)	Time Start	Time Stop	Temp (F)	Wind Speed (MPH)	Wind Direction	Cloud Cover	RH%	Water Distance
27 July 2020	1.5	0700	1600	70°F	1-3	NW	clear	40	>30m

Calibrated Volume	UOM	Volume Applied	UOM	Mix (oz/gal)	Dilutent
16	Gal/Acre	24	Gal	0.44	Water

Herb Product Name	EPA Reg #	Product Rate	UOM	Additives	Rate	UOM
Milestone	62719-519	7	Oz/Ac	INSIST 90	12	Oz/Ac

Remarks: Bio-Resources, Inc contract botanist, Kendrick Moholt, on site during herbicide application and manual control.

Appendix E

2020 Construction Photos

Downstream

Bull trout are dependent upon clean, cold water. Equipment in the dam's control house ensures that priority is given to supplying ample water to the river and fish.

Small but Mighty

Maximum efficiency in a miniature project

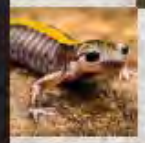


Photo credits top to bottom: Wallowa dam and penstock: Sun Ranch Ltd., spillway: Pacificorp, penstock: Sun Ranch Ltd., Long-toed salamander: John P Clare, Oregon Department of Fish and Wildlife

In front of you is part of the Wallowa Falls Hydroelectric Project. It was constructed in 1921 to provide electricity to the communities of Joseph, Enterprise, Lostine, and Wallowa. This system continues to supply power to the region today.

This hydro-power project is part of a natural river system rich with fish and other aquatic species. To work in balance with nature, the amount of water in the forebay is closely measured to the 100th of an inch. This measurement is evaluated on a continuous basis to determine how much water can be diverted from the river to generate electricity.

The diverted water flows through the penstock, dropping 1,000 feet in its travel down to the powerhouse. The energy of this moving water turns a single generator creating 1,100 kW of power.

During low water periods, priority is given to the river and less water is available to generate electricity. Gates, controlled remotely, regulate how much water is run through the penstock.

How does it work?

forebay The East Fork of the Wallowa River flows into the forebay. A forebay is a small reservoir.

dam The dam holds back the river water to create the forebay. This allows river levels to be monitored.

control A stilling well, with a very sensitive float, measures the level of the water. It relays the measurement to a remote computer that controls a water valve in the penstock. The valve is opened or closed based on the amount of water available.

penstock Diverted water flows through the penstock, picking up speed as it travels down the mountain to the powerhouse.

spillway During high water events, such as rain storms and snow melt, excess water flows over the spillway.

low-level outlet Some river water flows through the bottom of the dam in a pipe called the low level outlet.

minimum in-stream flow The released water is referred to as the "minimum in-stream flow" as it continuously feeds the river and assures adequate flow for fish and aquatic life.

Photo 1: Forebay Interpretive Panel 1

kú·s

All life begins and ends with water: our mothers, the rivers, the rain. From the beginning of time to the end of time, the word we carry on our breath, the taste of this world on our tongues and our tears, is alive, is life, is kú·s.

Beth Piatote, Nez Perce

The Law of Nature

kú·s hí·wes wá·qis

Water is life

In order to continue taking, we must continue giving. This moral covenant of reciprocity reflects how we, the Nez Perce, take responsibility for the water, the land, and the plants and animals. This obligation is the natural law, tamá·lwit.

From time immemorial, the presence of the Nez Perce is tied to this place. A bond so precious that our stories and beliefs honor all creatures, plants, the water, and the stars as our relatives. Water is the lifeblood which connects us and reminds us of our close relationship and our shared responsibility to respect the earth upon which we, the Nimíipuu, are born.

As you cross into the wilderness just up this trail, remember that as remote as this landscape may appear, it is likely that everywhere a human foot can go, a human foot has been.

Today instead of q'o'yiic (sockeye), landlocked sockeye called kokanee color the Wallowa River red each fall as they gather to spawn.

"The sockeye [salmon] were so plentiful at Wallowa Lake that the fish would tickle the women's feet as they were trying to collect them."

Rod Wheeler, Nez Perce

Photo credits top to bottom: Flowing River: Jessie Street, Unsplash. Bald Eagle: Doug Lloyd, East Fork of the wallowa (Wallowa River); Kendrick Mabolt. Tuhl-ure (Wallowa Lake); Tekia Joan Galvin. Longhouse Joan: Historic. Levi Carson sets a nacíˀs (chinook) on the ʔimnáha (Imnaha River); Joe Whittle ©.

Photo 2: Forebay Interpretive Panel 2

Photo 3: Forebay Interpretive Signs Installed

Photo 3: Weir and box flume at tailrace outlet (June 5, 2020)

Photo 4: Trash rack upstream of road culvert on lower north tailrace channel (June 5, 2020)

Photo 5: Lower north tailrace channel (June 5, 2020)

Photo 6: Decommissioned south tailrace channel – seeded and mulched

Photo 7: Decommissioned south tailrace channel – lower crossing

Appendix F

2020 Intake Site Monitoring Memorandum

A competent and competitive environmental consulting firm since 1978.

Memo

2020 Intake Site Post Construction Monitoring Memo

Wallowa Falls Hydroelectric Project - Intake and Tailrace Modifications

FERC No. 308

Wallowa Falls Hydro Intake and Tailrace Modifications
DEQ File No.126336 /EPA No. ORR10F714 /DEQ Permit No. 33142

Special Conditions for Removal/Fill Permit No. 61630-RF

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM STORMWATER DISCHARGE PERMIT NUMBER 1200-C

Construction activities, followed by installation of erosion control wattles, and revegetation efforts were conducted in the summer of 2019 at the Wallowa Falls Hydroelectric Project intake area. No major construction activity and little maintenance activity occurred in the following year (2020). An interpretive sign was installed along the hiking trail and a ground wire for the control house was installed on May 29, 2020. On this date evaluation of erosion control structures found the staked waddles around the construction laydown area were in place and functioning properly. Staked waddles at the bottom of the access road to the dam base had captured sediment over the winter but had not failed. As a precautionary measure, an additional 30 feet of erosion control wattle was added to the top of existing structures to provide protection through the next year.

An inspection of reclamation seeding at the Wallowa Falls Hydroelectric Project intake area was conducted by Bio-Resources, Inc. biologist, Kendrick Moholt, on July 27, 2020. Reclamation seeding was extremely successful on the access road to the dam base (Figures 1). The area of the construction laydown site also had successful germination of reclamation seed and the native seed bank. Though the vegetation on this shallow soiled, rocky area appears more sparsely covered than the adjacent access road, the ground cover has increased from pre-construction conditions (Figure 2). The construction laydown site is a low gradient area with course soils. These soils remain stable even after significant 2019/2020 rain events and spring snow melt.

Vegetative recovery of the disturbed area adjacent to the new discharge pipe from Royal Purple Creek (installed 2019) also appears adequate with no sign of erosion (Figures 3 and 4).

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Enterprise, OR 97828
Office: (541) 426-7200
E-mail: bioresources@eoni.com
Web: bio-resourcesinc.com

Figure 1. Reclamation seeding on the access road to the dam base (photo- July 27, 2020).

Figure 2. Reclamation seeding on the construction laydown site (photo- July 27, 2020).

Figure 3. The discharge pipe from Royal Purple Creek installed 2019.
(photo- July 27, 2020).

Figure 4. Junction of the existing and new discharge pipe from Royal Purple Creek. (photo- July 27, 2020).

Appendix G

Agency Comments

AGENCY	COMMENT	UTILITY RESPONSE
U.S. Fish and Wildlife Service Oregon Department of Environmental Quality Oregon Department of Fish and Wildlife	**Turbidity** - It appears that in 2020, PacifiCorp installed only one datasonde at both the upper and lower locations and again had issues with the upper turbidity device. The Service has recommended before, and continues to recommend, that two devices at both the upper and lower locations be used. Using two devices at each location, will allow for calibration of the devices to ensure they are recording accurate data. This issue has been ongoing, and we continue to recommend PacifiCorp ensure that all turbidity datasondes are installed in the best locations and working correctly.	In 2021 and proceeding years, PacifiCorp will deploy duplicate datasondes at both the upper and lower monitoring locations during the annual forebay flushing event.
U.S. Fish and Wildlife Service	**Deviations and Unanticipated Events** (Page 12, 7.0)-The Service recommends that PacifiCorp plan to complete the necessary Endangered Species Act consultation and other permitting steps as soon as possible to minimize risk, potential adverse impacts to bull trout and negate the need for fish salvage in 2021.	PacifiCorp plans to share conceptual designs for an engineered solution to prevent fish stranding in the West Fork Wallowa River side channel with the Service and other regulatory agencies in the first quarter for 2021.