Wallowa Falls Hydroelectric Project

FERC No. P-308

Pre-Application Document

February 2011

PACIFICORP ENERGY
A DIVISION OF PACIFICORP

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FERC No. P-308

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Prepared by:
PacifiCorp Energy
Hydro Resources
825 NE Multnomah, Suite 1500
Portland, OR 97232

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1.0 INTRODUCTION

PacifiCorp Energy (PacifiCorp) plans to file an application for new license for the Wallowa Falls Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC or Commission) Project No. 308, on the East Fork Wallowa River, West Fork Wallowa River and Royal Purple Creek in Wallowa County, Oregon. The current license will expire on February 28, 2016. The Project has a generation capacity of 1,100 kilowatts (kW) and is located on private land owned by PacifiCorp and federal lands managed by the Wallowa-Whitman National Forest.

1.1 Purpose

The purpose of this pre-application document is to provide the Commission and interested parties with existing information relevant to the issuance of a new license for the Project. The information presented in this document is intended to assist in the identification of issues and related information needs, development of study plans, and license application process. This document follows the form and content requirements specified in 18 CFR 5.6 (c) and (d).

1.2 Process Plan and Schedule

PacifiCorp plans to use the Integrated Licensing Process (18 CFR Part 5) for relicensing the Project. The Integrated Licensing Process is intended to streamline the Commission's licensing process by providing a predictable, efficient, and timely licensing process that continues to ensure adequate resource protections. Table 1.2-1 presents a schedule for pre-application filing activities. The proposed location for scoping meeting(s) is Enterprise, Oregon. The building and room information for these meetings will be filed separately 30 days prior to the meeting(s).

Table 1.2-1 Preliminary schedule and milestones for the Integrated Licensing Process for Wallowa Falls.

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
PacifiCorp	File NOI/PAD with FERC*	2/22/11	5.5, 5.6
FERC	Hold Initial Tribal Consultation Meeting	3/24/11	5.7
FERC	Issue Notice of Proceeding Commencement & Scoping Document 1	4/25/11	5.8
FERC	Hold Scoping Meeting(s) and Site Visit	5/25/11	5.8(b)(viii)
All Stakeholders	NOI/PAD/SD1 comments due to FERC	6/24/11	5.9
FERC	Issue SD2 if needed	8/8/11	5.2
PacifiCorp	File Proposed Study Plan with FERC\Stakeholders	8/8/11	5.11(a)
PacifiCorp	Hold Study Plan Meeting	9/7/11	5.11(e)

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
All Stakeholders	Study Plan Comments Due to FERC	11/7/11	5.12
PacifiCorp	File Revised Proposed Study Plan with FERC\Stakeholders	12/7/11	5.13(a)
All Stakeholders	Revised Proposed Study Plan comments due to FERC	12/22/11	5.13(b)
FERC	Issue Director's Study Plan Determination	1/23/12	5.13(c)
FS, FWS	Notice of Study Disputes Due to FERC	2/13/12	5.14(a)
Study Dispute Panel	Select Third Panel Member	TBD	5.14(d)(3)
Study Dispute Panel	Convene Panel	TBD	5.14(d)
PacifiCorp	File Applicant Comments on Study Dispute	TBD	5.14(j)
Study Dispute Panel	Hold Technical Conference	TBD	5.14(j)
Study Dispute Panel	Issue Panel Finding	TBD	5.14(k)
FERC	Issue Directors Study Dispute Determination	4/23/12	5.14(l)
PacifiCorp	Conduct First Year of Studies	2012	5.15(a)
PacifiCorp	File Initial Study Report	2/13/13	5.15(c)
PacifiCorp	Hold Initial Study Report Meeting	2/28/13	5.15(c)(2)
PacifiCorp	File Initial Study Report Meeting Summary	3/15/13	5.15(c)(3)
All Stakeholders	Study Disputes/Request to Modify Study Plan Due	4/15/13	5.15(c)(4)
All Stakeholders	Responses to Disputes/Study Requests	TBD	5.15(c)(5)
FERC	Director's Study Plan Determination	TBD	5.15(c)(6)
PacifiCorp	Conduct Second Year Studies	2013	5.15
PacifiCorp	File Updated Study Report	2/13/14	5.15(f)
PacifiCorp	Hold Updated Study Report Meeting	2/28/14	5.15(f)
PacifiCorp	File Updated Study Report Meeting	3/15/14	5.15(f)
All Stakeholders	Study Disputes/Request to Modify Study Plan Due	4/15/14	5.15(f)
All Stakeholders	Responses to Disputes/Study Requests	TBD	5.15(f)

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
FERC	Director's Study Plan Determination	TBD	5.15(f)
PacifiCorp	File Preliminary Licensing Proposal	9/21/13	5.16(a)
All Stakeholders	File Comments on Preliminary Licensing Proposal	12/21/13	5.16(e)
PacifiCorp	File License Application	2/21/14	5.17
PacifiCorp	Issue Public Notice of License Application Filing	2/21/14	5.17(d)(2)
	Current FERC License EXPIRES	**2/28/16**	

*Under FERC rules NOI/PAD may be filed anytime between 8/28/2010 and 2/28/2011.
Lines shaded in blue may not be applicable if there are no study disputes.

2.0 PROJECT LOCATION, FACILITIES AND OPERATION

The Project location is as follows:

State:	Oregon
County:	Wallowa
Nearby Town:	Joseph
Body of Water:	East Fork Wallowa River, West Fork Wallow River, Royal Purple Creek

2.1 Name and Address

The Project liaison for all correspondence is:

Russ Howison
Project Manager, Hydro Resources
825 NE Multnomah, Suite 1500
Portland, OR 97232
503-813-6626

Secondary contact:

Carole Meyer
Project Coordinator, Hydro Resources
825 NE Multnomah, Suite 1500
Portland, OR 97232
503-813-6657

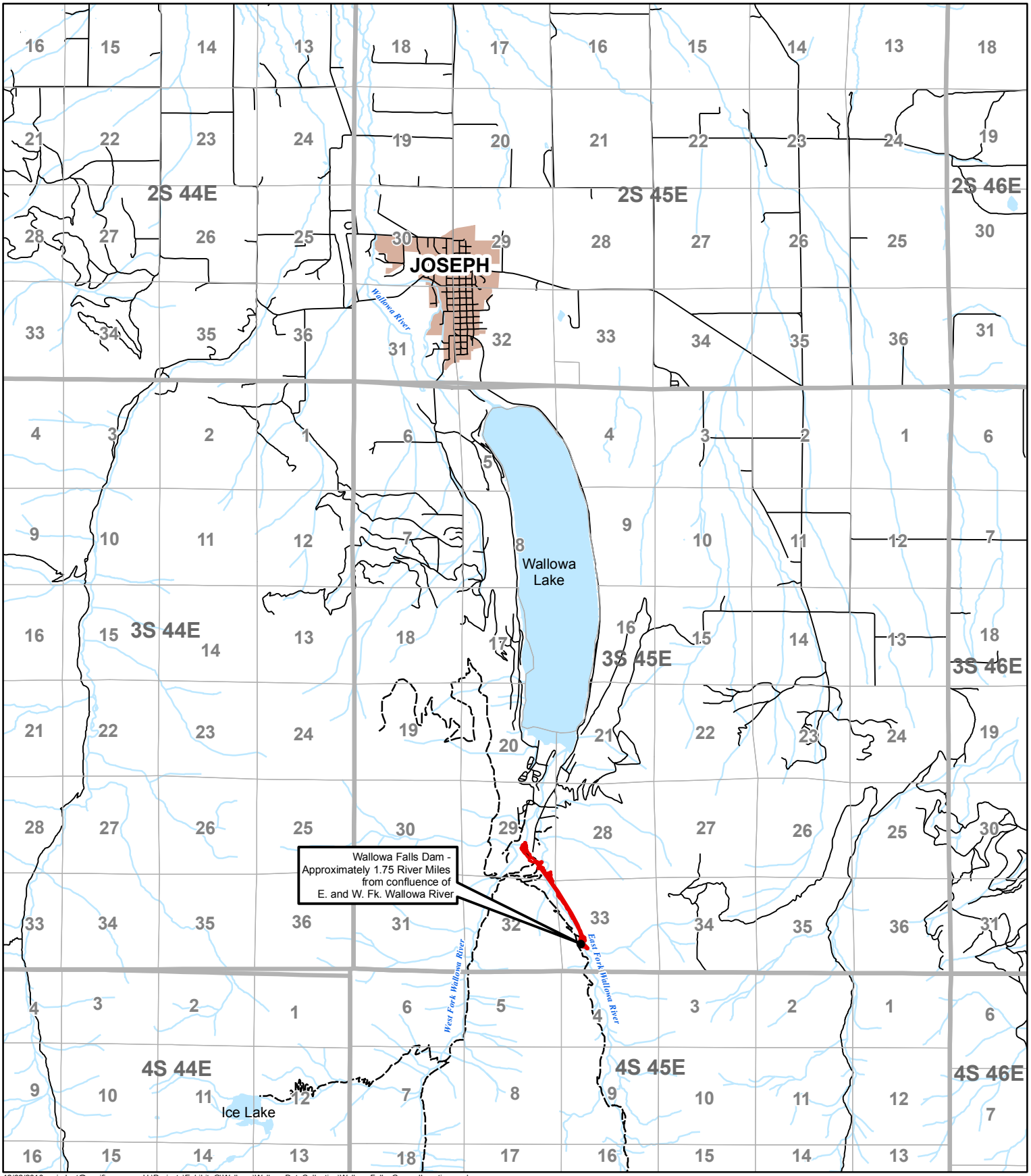
2.2 Project Area, Vicinity, and Maps

For the purposes of this document Project area is defined as all lands and waters within the existing and proposed Project boundaries. Unless otherwise specified, (i.e. Section 3.4 Wildlife and Botanical Resources) Project vicinity is defined as all lands and waters within a 2 mile radius of the existing and proposed Project boundaries.

The location of the Project is shown in Figure 2.1. Detailed maps showing lands and waters within the proposed Project boundary, land ownership and Project facilities are provided in Appendix A.

2.3 Description of Existing and Proposed Project Facilities and Components

The Project was initially constructed in 1921 by the Enterprise Electric Company with a generating capacity of 800 kilovolts (kVA). The original license was issued on June 27, 1924 and expired on March 31, 1974. On October 19, 1928 the Commission approved the transfer of the license to the Inland Power and Light Company. By order dated November 23, 1942, the Commission approved the transfer of the license from Inland Power and Light Company to



12/02/2010 gisdept@pacificorp.com U:\Projects\Exhibit_G\Wallowa\WallowaDataCollection\WallowaFalls_GeneralLocation.mxd

Figure 2.1
Wallowa Falls
Hydroelectric Project
General Location

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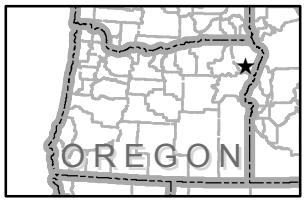
Miles



Wallowa County, Oregon

Legend

- Project Area
- Wallowa Falls Dam
- City Limits
- Road
- Trail
- Stream
- Water Body
- Township/Range
- Section

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

GIS Support Services
Solutions Group
gisdept@Pacificorp.com

Data are projected in UTM Zone 10, NAD83, meters.

Pacific Power and Light Company[1]. At the time of completion, the Project replaced several small generation sources in the Wallowa Valley and was connected to an existing transmission line servicing the communities of Joseph, Enterprise, Lostine and Wallowa. By order issued April 8, 1929 the Commission amended the license to include the construction of minor Project works for the diversion of water from Royal Purple Creek. In 1967 the original generator was replaced with a new 1,375 kVA (1,100 kW) unit which is still in service. By order dated March 29, 1976 the Commission issued a new license for the Project for a period of ten years. The current license was issued on August 28, 1986 for a period of thirty years.

The existing Project consists of:

(1) a 2-foot-high, 9-foot-long concrete diversion dam, having a 1-foot-wide spillway, at elevation 5,838 feet on Royal Purple Creek which is a tributary to the East Fork Wallowa River;

(2) a 240-foot-long, 8-inch diameter pvc pipeline discharging flows into the Wallowa Falls forebay, 200 feet upstream of the East Fork Wallowa River dam;

(3) an 18-foot-high, 125-foot-long, buttressed rock-filled timber crib dam with impervious gravel and asphalt core, having a 30-foot-wide spillway, at elevation 5,795 feet on the East Fork Wallowa River;

(4) a 0.2-acre forebay;

(5) a 5,688-foot-long steel penstock varying in diameter from 18 inches to 16 inches;

(6) a powerhouse containing a single generating unit with a rated capacity of 1,100 kW operating under a head of 1,168 feet producing an average annual energy output of 7.0 GWh;

(7) a tailrace discharging Project flows into the West Fork Wallowa River; and,

(8) a 20-foot-long, 7.2-kilovolt (kV) transmission line which connects to Wallowa Falls substation.

The normal maximum water surface area and normal maximum water surface elevation (mean sea level), and gross storage capacity of the Project impoundment (forebay) is:

Area – 0.2 Acre Maximum
Elevation – 5,792-ft (spillway), 5,795-ft (dam crest)
Storage – Effectively none as the Project is operated as “run-of-the-river” with no peaking or flood control capability.

[1] Pacific Power and Light Company is a prior company name of PacifiCorp Energy.

The number, type, and minimum and maximum hydraulic capacity and installed (rated) capacity of the turbines or generators include:

Generator: One 1,375 kVA Allis-Chalmers Company synchronous generator rated at 80% power factor, 514 rpm, three-phase, 60 cycles, and 7200 volts.

Minimum Hydraulic Capacity: Turbine can be manually operated to 0 kW\0 cubic feet per second (cfs). During standard operation (automated mode) minimum capacity is approximately 200kW\3 cfs.

Maximum Hydraulic Capacity: 16-cfs

Turbine: One 48-inch diameter, 1,500 hp, George J. Henry Jr. impulse turbine with motorized needle valve.

Transmission: A 20-foot-long, 7.2-kilovolt (kV) transmission line connects the powerhouse to the Wallowa Falls substation and is the only transmission line included in the Project. A 6.7 mile long, 23 kV line connects the Wallowa Falls substation with Pacific's Enterprise Substation. An additional 2-mile-long transmission line interconnects this facility with the 230 kV transmission grid at Pacific's Hurricane Substation. Figure 2.3.1 is a single-line diagram showing the transfer of electricity from the Project to the transmission grid.

The estimated dependable capacity is 505 kW. The average annual generation is 7,000,000 kWh. The average monthly generation is 502,000 kWh.

The State of Oregon has not made a navigability determination on the Wallowa River or its tributaries. However, the portions of the East Fork Wallowa River and Royal Purple Creek within the Project area appear too shallow or not wide enough to allow a boat to pass or to transport commercial timber. Therefore, PacifiCorp believes the East Fork Wallowa River and Royal Purple Creek are non-navigable.

During the current license term PacifiCorp made the following capital improvements to the Project dam structure and access:

In 1994 PacifiCorp completed a rebuild of the dam. The original rock-filled timber crib dam was modified by the addition of a rock toe and embankment rock fill and the construction of an impervious gravel and asphalt core between the existing timber crib and the embankment rock fill. The spillway was widened from its original design width of 24-feet to 30-feet which increased its capacity by approximately 50 percent. The side walls of the spillway were constructed of rock filled gabion baskets and the full width and length of the spillway was sheathed with steel aircraft landing mats. A 3-foot wide galvanized structural steel footbridge with railing was constructed to span to 30-foot spillway.

For the dam rebuild Project PacifiCorp constructed a dirt access road to the forebay along the east side of the East Fork Wallowa River. The new access road roughly follows the alignment of the original penstock construction trail. Two pedestrian foot bridges crossing the East Fork

Wallowa River between the new access road and USFS Trail 1804 were also constructed. By order received September 18, 1995 the Commission approved PacifiCorp's revised Exhibit F-2 and F-4 for the diversion dam and forebay access road respectively.

The Exhibit G for the Project was never revised to include the forebay access road in the Project boundary. Additionally, other Project features including portions of the tailrace are not in the current Project boundary. It is PacifiCorp's assumption that a revised Project boundary will include the forebay access road and other appropriate Project features. PacifiCorp is therefore treating the forebay access road and other Project features as though they are within the Project area in any proposed relicensing studies.

At this time PacifiCorp is not proposing any additional facilities to the Project

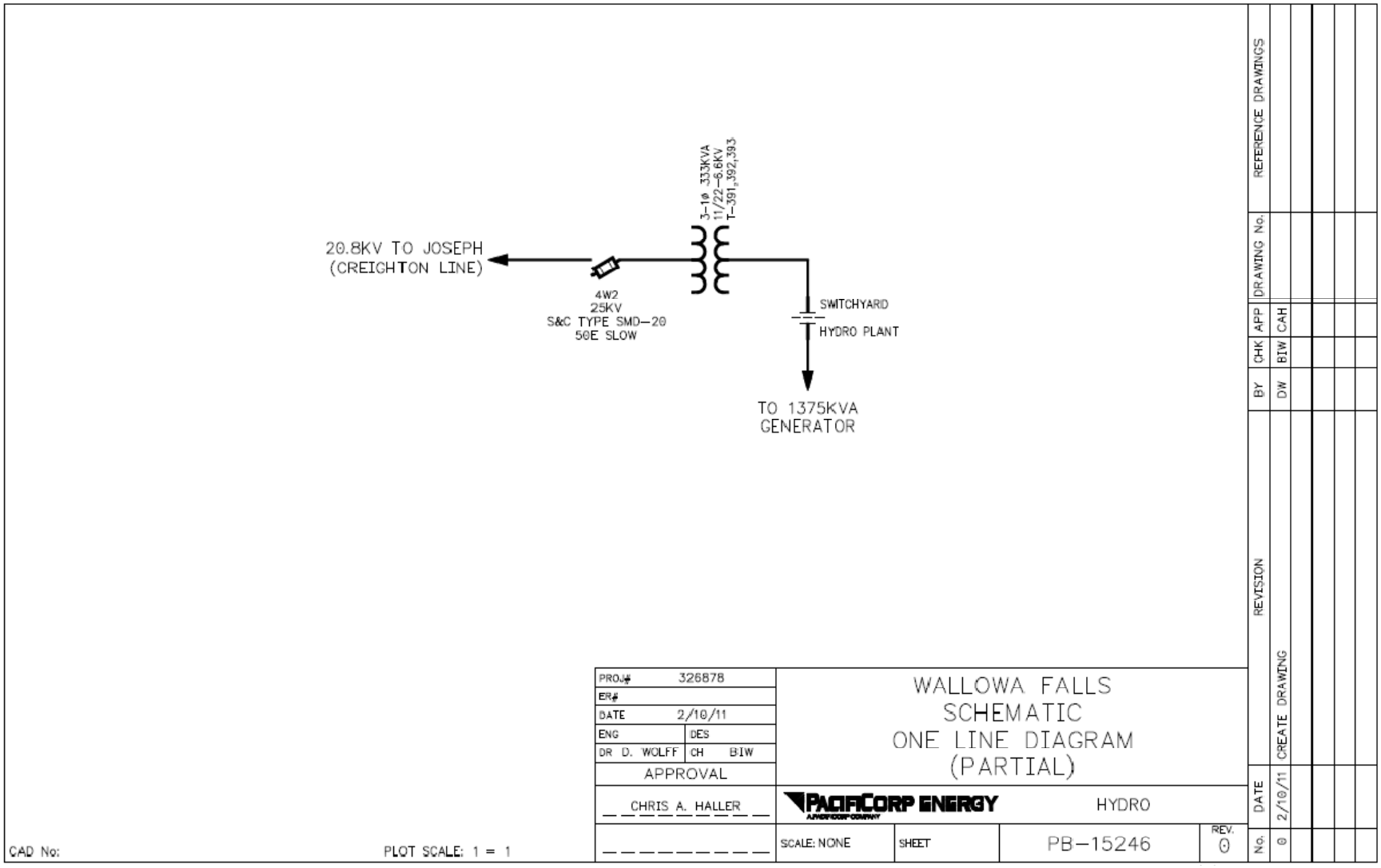
2.4 Project Operations and Existing License

2.4.1 Current Operations

The current operating license was issued by the Commission in 1986 with a 30 year license term, expiring February 28, 2016. The Wallowa Falls Hydroelectric Project is operated as a run-of-the river Project. The current license does not specify any daily/seasonal ramping rates, flushing flows, reservoir operations, or flood control operations. Following the installation of an automated control system in 1996 the Wallowa Falls plant is now designed for unmanned operation and is controlled by a programmable logic controller. The normal mode of operation is for the plant to be unattended. A local Project operator is located in Enterprise Oregon and visits the Project on a monthly basis and as called out by PacifiCorp's Hydro Control Center located in Ariel, Washington. The Hydro Control Center monitors the Project operations remotely and notifies the local operator when an issue arises. Prior to 1996 the Project was manually operated locally. The penstock pressure, generator load, forebay level, needle valve percent open position, generator stator temperature and front bearing temperature are all monitored by the Supervisory Control and Data Acquisition (SCADA) system at the Wallowa Falls plant and are visible to a Hydro Control Operator at the Hydro Control Center.

Annual maintenance is routinely conducted between June and August each year and involves vegetation management on Project lands, erosion control or road maintenance activities, as-needed maintenance on the water conveyance system and generating unit, and forebay flushing as discussed in Section 2.4.3. The timing and scope of annual maintenance activities are coordinated with the Wallowa-Whitman National Forest as provided in the Special-Use Permit issued for the Project by the U.S. Department of Agriculture, Forest Service (USFS).

Figure 2.3.1 Wallowa Falls Hydro Plant Schematic One Line Drawing.



2.4.2 Existing License

Order Issuing New License was conveyed to PacifiCorp on August 28, 1986

The Director's order states:

(A) This license is issued to Pacific Power and Light Company (licensee), for a period of 30 years, commencing March 1, 1986, and terminating February 28, 2016, to continue to operate and maintain the Wallowa Falls Project. This license is subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provision of the Act.

(B) The Project consists of:

All lands, to the extent of the licensee's interests in those lands, enclosed by the Project boundary shown by Exhibit G:

Exhibit G	FERC No. 308	Showing:
1	14	Project Area and Boundary (revised 8/15/85)

Project works consisting of: (a) a 2-foot-high, 7[2]-foot- long concrete diversion dam at elevation 5,838 feet on Royal Purple Creek having a 1-foot-wide spillway; (b) an 8-inch-diameter, 240-foot-long pvc pipeline discharging flows into the Wallowa Falls forebay 200 feet upstream of the dam; (c) an 18-foot-high, 125-foot-long rock-filled log crib dam at elevation 5,795 feet having a 24-foot-wide spillway, creating; (d) a 2.0[3]-acre forebay; (e) a 5,688-foot-long steel penstock varying in diameter from 18 inches to 16 inches; (f) a powerhouse containing a single generating unit with a rated capacity of 1,100 kW operating under a head of 1,168 feet producing an average annual energy output of 7 million kWh; (g) a tailrace discharging Project flows into the West Fork Wallowa River; (h) 7.2-kV generator leads; and (i) appurtenant facilities.

The Project works generally described above are more specifically shown and described by those portions of Exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the Project and located within the Project boundary, all portable property that may be employed in

[2] The Royal Purple diversion dam length is misreported in the current FERC License. The correct length is 9-feet.
[3] The Wallowa Falls Project forebay acreage is misreported in the current FERC License. The correct acreage is 0.2 acres.

connection with the Project and located within or outside the Project boundary, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the Project.

(C) The Exhibit G described above and those sections of Exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

The following sections of the Act are waived and excluded from the license for this minor Project:

4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-16, (October 1975), entitled "Terms and Conditions of License for Constructed Minor Project Affecting Lands of the United States". The license is also subject to the following additional articles:

Article 101. Within six (6) months following the date of issuance of this license the licensee shall file with the Director, Office of Hydropower Licensing, a special-use authorization approved and enforceable by the Forest Service.

The licensee may not commence activities authorized in the license and Forest Service special-use authorization until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, instructs otherwise.

Article 201. The licensee shall pay the United States the following annual charges, effective the first day of the month in which this license is issued:

a. For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 1,470 horsepower.

b. For the purpose of recompensing the United States for the use, occupancy, and enjoyment of 12.1 acres of its lands, a reasonable annual charge as determined by the Commission in accordance with its regulations in effect from time to time.

Article 202. The Commission reserves the authority to order, upon its own motion or upon the recommendation of federal or state fish and wildlife agencies or affected Indian Tribes, alterations of Project structures and operations to take into account to the fullest extent practicable the regional fish and wildlife program developed pursuant to the Pacific Northwest Electric Power Planning and Conservation Act.

Article 401. The licensee shall maintain in the bypassed reach of the East Fork Wallowa River a continuous minimum flow of 0.5 cubic feet-per second, as measured immediately downstream from the dam or inflow to the reservoir, whichever is less, for the protection of fish and wildlife resources in the East Fork Wallowa River. This flow may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee and the Oregon Department of Fish and Wildlife.

Article 402. The licensee shall restrict Project forebay flushing to the period from May 1 to August 30 of each year to protect Kokanee eggs and sac fry in the gravel areas above Wallowa Lake.

Article 403. The licensee, before starting any ground-disturbing or land-clearing activities within the Project boundaries, other than that specifically authorized in this license, shall consult the Oregon State Historic Preservation Officer (SHPO) about the need for a cultural resources survey and salvage work. The licensee shall file with the Commission documentation of the management plan and a schedule to conduct the necessary investigation, together with a copy of a letter from the SHPO commenting on the plan and schedule, 60 days before starting any such ground-disturbing or land-clearing activities. The licensee shall make funds available in a reasonable amount for the required work. If the licensee discovers any previously unidentified archeological or historic sites during the course of constructing or developing Project works or other facilities at the Project, the licensee shall stop all construction and development activities in the vicinity of the sites and shall consult a qualified cultural resources specialist and the SHPO concerning the eligibility of the sites for listing in the National Register of Historic Places and any measures needed to avoid the sites or to mitigate effects on the sites. If the licensee and the SHPO cannot agree on the amount of money to be spent for Project specific archeological and historical purposes, the Commission reserves the right to require the licensee to conduct the necessary work at the licensee's own expense.

Article 404. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of Project lands and waters and to convey certain interests in Project lands and waters for certain other types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the Project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the uses and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the Project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the Project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The types of use and occupancy of Project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the Project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to Project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the uses and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of Project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, Project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into Project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-Project overhead electric transmission lines that do not require erection of support structures within the Project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a Project reservoir. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of Project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into Project waters, for which all necessary federal and state water quality certificates or permits have been obtained; (3) other pipelines that cross Project lands or waters but do not discharge into Project waters; (4) non-Project overhead electric transmission lines that require erection of support structures within the Project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for

a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the Project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of Project lands for each Project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in Project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraphs (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the Project does not have an approved Exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall Project recreational use; and (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the Project.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the Project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in Project lands under this article does not in itself change the Project boundaries. The Project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G or K drawings (Project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the Project only upon a determination that the lands are not necessary for Project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the Project shall be consolidated for consideration - -when revised Exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the Project boundary.

(F) This order is issued under authority delegated to the Director and is final unless appealed under Rule 1902 to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

2.4.3 Daily and Seasonal Ramping Rates

The current license does not specify any daily/seasonal ramping rates, flushing flows, reservoir operations, or flood control operations. PacifiCorp flushes the Project forebay to reduce sediment build-up on an as needed basis. Under the current license forebay flushing is restricted to the period of May 1 through August 30 of each year for the protection of Kokanee eggs and sac fry in the gravel areas upstream of Wallowa Lake.

2.4.4 Project Generation

PacifiCorp began collecting electronic records of Project generation and water outflow in January of 2007. Therefore, approximately four years of data (January 2007-October 2010) were used to calculate the values in Table 2.4-1 below. The table provides the average monthly generation in kilowatt-hours (kWh) and turbine discharge in cfs based on hourly data. The average generation and turbine discharge is highest in June (790,250 kWh, 16.2 cfs) and lowest in February (448,250 kWh, 9.6 cfs).

Table 2.4-1 Average Monthly Generation Rate and Turbine Discharge.

Month	Generation (kWh)	Discharge (cfs)
January	485,250	10
February	448,250	9.6
March	502,500	9.6
April	518,000	10.3
May	650,000	12.7
June	790,250	16.2
July	585,750	13.5
August	589,750	13.1
September	616,157	13.4
October	597,750	12.9
November	536,667	10.9
December	525,667	10.3

2.4.5 Current Net Investment

As of 12-31-2010 the Company has incurred an Original Cost Investment of $2,841,136, Accumulated Depreciation of $2,022,356, and a Net Book Value of $818,780 for the Project.

2.4.6 Compliance History

The Project was constructed in 1921 and the original major license (Project No. 308) was issued to the Enterprise Electric Company on June 27, 1924 for the period of April 1, 1924 to March 31, 1974. On October 19, 1928, the Federal Power Commission approved the transfer of the license to the Inland Power and Light Company effective as of January 1, 1928. By order dated April 8, 1929, the Commission amended the license to include the construction of a small dam for the diversion of water from Royal Purple Creek. By order dated November 23, 1942, the Commission approved the transfer of the license from Inland Power and Light Company to Pacific Power and Light Company.

Pacific Power and Light filed an application for a new minor license with the Federal Energy Regulatory Commission (formerly the Federal Power Commission) on June 1, 1971. The Commission issued an Order Issuing New Minor License for Constructed Project on March 29, 1976 for the period of ten years. Pacific Power and Light filed an application for a new minor license with the Commission on December 4, 1985. The Commission issued an Order Issuing New License (Minor Project) on August 28, 1986 for the period of 30 years.

PacifiCorp has not been cited for a license violation during the current license term, and has never received a Notice of Violation from the Commission related to the Project.

License Article 101 requires, within six months following the date of license issuance, PacifiCorp to file a special-use authorization approved and enforceable by the Forest Service with the Commission. The U.S. Department of Agriculture, Forest Service (USFS), Wallowa-Whitman National Forest-Eagle Cap Ranger District issued a special-use permit to Pacific Power and Light Company on February 20, 1987 authorizing the Wallowa Falls Hydroelectric Project to occupy Wallowa-Whitman National Forest lands. Per license Article 101 the special-use permit was filed with the Commission on February 27, 1987. The 1987 special-use permit expired on December 31, 1991. A new special-use permit for the project was issued to PacifiCorp by the Wallowa-Whitman National Forest-Eagle Cap Ranger District on December 14, 1993. The 1993 special-use permit is valid until December 31, 2016.

License Article 401 requires that PacifiCorp maintain, in the bypassed reach of the East Fork Wallowa River, a continuous minimum flow of 0.5 cfs or the natural inflow to the reservoir, whichever is less, as measured immediately downstream from the dam. From 1986 to 1994 minimum flow was maintained by leakage through the rock-filled timber crib dam and flow through a partially open sluice valve. Since the re-build of the dam in 1993, minimum flow has been maintained by means of flow through the low level outlet pipe through the dam that has a valve located in the penstock intake structure. The valve is permanently open to provide the required minimum flow releases. It has been verified several times that given the fixed open state of the valve, flow from the pipe is approximately 0.8 cfs, 0.3 cfs in excess of the required minimum flow. From 1986 through 2004 there was no installed equipment for the measurement or recording of streamflow downstream of the Wallowa Falls dam. During this period, minimum flow compliance was determined by annual stream flow measurements at the site. Minimum Streamflow Compliance Certifications, for Projects requiring visual observation to monitor

stream flows in the absence of equipment for measuring and recording numeric flow data, were submitted to the Commission annually.

On October 25, 2004, PacifiCorp received the follow-up letter to the July 27, 2004 Commission Operation Inspection of the Project. The letter directed PacifiCorp to provide a plan and schedule to the Commission's Portland Regional Office (PRO) for ensuring that the 0.5 cfs continuous minimum flow requirement is being met. In the December 7, 2004 letter response to PRO, PacifiCorp committed to a program of annual stream flow measurements in the bypass reach immediately downstream of the Wallowa Falls dam to verify that the required 0.5 cfs is released into the bypass reach. The low-level outlet pipe valve used to release minimum flows through the Wallowa Falls dam is also rated for compliance flows annually. To further improve the minimum stream flow monitoring program, in July 2005 PacifiCorp installed a staff gage in the bypass reach (East Fork Wallowa River) directly downstream of the Wallowa Falls dam. In addition two staff gages were installed in adjacent, but separate pools of the lower bypass reach, 1.5 miles downstream of the dam near the powerhouse, for purpose of determining if there is a correlation between flow in the upper and lower bypass reach. Remote stage recording devices were deployed at the upper and two lower staff gages for the purpose of recording stream stage data throughout the water year. The staff gage in the upper bypass, directly downstream of the dam, was originally placed when stream flows were higher than normal and as flow receded the staff gage was out of the water. A new staff gage was installed at this location on September 19, 2006. As directed by PRO staff, PacifiCorp began submitting average daily stream flow records to the PRO annually. The 2006 Flow Monitoring Report submitted to the PRO on January 29, 2007 reported that PacifiCorp staff was unable to locate or retrieve the remote stage recording device immediately downstream of the dam in the upper bypass. Due to the lack of data for stream flow in the upper bypass, data from the remote stage recording device deployed in the lower bypass was used to evaluate minimum stream flow compliance for the 2006 water year. Data from the lower bypass indicated the flow at the staff gage location dropped below 0.5 cfs on 10 occasions between December 8 and 19, 2006. Low flows were likely due to icing in the channel, since air temperatures were hovering around 0 degrees Fahrenheit (°F) during this period. In spite of the low flows recorded in the lower bypass during this period, PacifiCorp is confident that due to previous verification of flows released through the low level dam outlet pipe and the location of the pipe inlet several feet below the surface of the forebay (below the impacts of icing), that minimum flow releases into the bypass directly below the dam were still in excess of 0.5 cfs.

Further study of the correlation in stream flow between the upper bypass reach and the lower bypass reach indicated that there is not a clear correlation between the two locations therefore the lower bypass reach is likely not an accurate indicator of stream flow downstream of the dam. Therefore PacifiCorp has abandoned the lower site as a means to measure minimum flow compliance and has focused its effort on the upper bypass site. However, frequent staff gage rating shifts, loss of stage recording devices and the remoteness of the site continue to pose challenges for obtaining accurate stream stage and flow data for the reach downstream of the dam. Annual stream flow reports providing average daily flows for the reporting period of August 1 through July 31 are submitted to the PRO annually. The available data for the 2007, 2008, 2009 and 2010 reporting periods indicated that the minimum stream flow of 0.5 cfs, as measured directly downstream of the dam was maintained for the duration. Due to difficulties

associated with measuring stream flow directly in the bypass reach, PacifiCorp is trying to establish a relationship between forebay elevation and bypass flow. Currently, this relationship is not well defined. However, PacifiCorp will continue to refine this relationship as more data is collected via ongoing field monitoring.

Four significant operational events have occurred during the current license term. A brief summary of each event is provided below.

On June 6, 1995 the failure of a guy anchor caused a penstock coupling joint to fail, resulting in the uncontrolled discharge of water for approximately 2.5 hours. The failure caused extensive erosion on the penstock access trail and USFS Trail 1804. Following the failure, PacifiCorp rebuilt the lower penstock trestle, repaired anchors and guy wires, and replaced six penstock air vent valves. Controls were also installed to accomplish automatic shutdown of the unit and automatic intake gate closure if the generating unit trips offline.

On September 18, 1996 an operational error caused a penstock failure at the Project. At the time of the failure PacifiCorp operators and a consultant were at the Wallowa Falls powerhouse to make necessary adjustments to recently installed controls. The plant was operating at approximately 600 kW. In an effort to clean hydraulic lines, the systems used to prevent rapid closure of the turbine flow nozzle were mistakenly disabled and the nozzle was closed. This action resulted in a "water hammer" shock to the penstock resulting in the rupture of the penstock at the location of a field bend. The rupture occurred approximately one-third of the way up the penstock from the powerhouse. Spill from the penstock lasted for fifteen minutes and caused erosion to the USFS Trail 1804 and two hours of elevated turbidity in the East Fork Wallowa River. PacifiCorp provided immediate telephone notification of the incident to the PRO, Oregon Department of Fish and Wildlife (ODFW) and the USFS. A written incident report was submitted to the Commission on October 3, 1996.

On September 26, 1999, a large tree fell on a penstock/trestle guy wire at the upper end of the lower trestle causing two sections of penstock pipe to separate. When the penstock failure occurred at 10:37 p.m. the generating unit tripped offline, but the automatic intake gate controls, designed to close the intake gate when the generating unit trips, did not close the intake gate. Water discharged from the penstock rupture until the intake gate could be manually closed at daybreak the following day. Approximately ten to thirty cubic yards of decomposed granite sand and gravel along with associated vegetation washed down-slope and into the East Fork Wallowa River. Due to the granitic nature of the material, sediment accumulation in the stream was minimal. PacifiCorp notified the PRO of the incident by phone on September 28, 1999, and submitted a Penstock Failure and Rehabilitation Report to the Commission on November 2, 1999. Remedial actions made in response to this incident included the inspection of the penstock alignment for hazard trees and the removal of ninety-one hazard trees in November 1999 and fifteen hazard trees in January 2000. The intake gate controls were modified in the summer of 2000 to automatically close the intake gate when there is a loss of penstock pressure.

At 12:30 a.m. June 16, 2003, the Project generating unit tripped offline. A feeder breaker to the battery charger had tripped open and the AC power supply to it tripped open as well. The cause of the trip was a low battery voltage, which was sensed by a relay at the intake gate and caused

the intake gate to close thereby dewatering the penstock and the Project tailrace channel. The intake gate is powered by DC voltage so the low DC voltage level was a warning for the intake gate to shut down safely. The operator opened the intake gate, refilled the penstock and put the unit back online at 2:05 p.m. on June 16, 2003. It was determined that all systems performed as designed. PacifiCorp notified the Commission of the incident by telephone on the morning on June 16, 2003, and in writing on July 2, 2003.

2.4.7 Description of New Facilities

No new facilities or capital upgrades are planned for the Project. The Project will continue to operate as a run-of-river generating facility with a regular routine annual maintenance cycle to ensure reliable and safe operation.

3.0 EXISTING ENVIRONMENT AND RESOURCE IMPACTS

3.1 Geology and Soils

3.1.1 Geological Formations

The dominant underlying geologic formation of the Project vicinity is Miocene Columbia River Plateau Basalt (Kuehn 1995). Subformations occupied by the Project include alluvial and glacial deposits at the powerhouse, tailrace and lower 500 feet of penstock, while the upper Project facilities are in the Clover Creek Greenstone formation (Oregon DOGMAI 1941). The alluvial and glacial deposit subformation is the unconsolidated product of contemporaneous and near contemporaneous sedimentary deposition (Wagner, 1955). The Clover Creek Greenstone formation is made up of volcanic and metavolcanic rocks of mixed lithologies (Oregon DOGMAI 2009). There are no faults or folds in the Project Area or the immediate vicinity of the Project area.

The geographic area around the Project was formed by extensive glaciation that occurred during the last ice age (Wisconsin Glacial Episode) as recently as 10,000 years ago (Budlong et. al. September 2005). The Wallowa Glacier was thought to be at its deepest near the junction of the East Fork and West Fork Wallowa River resulting in very deep glacial deposits in the area around the powerhouse and tailrace. Conversely the upper Project area is located in a recently scoured area with relatively shallow soils.

3.1.2 Soils

The United States Department of Agriculture and Natural Resources Conservation Service (USDA-NRCS) conducted a soil survey of privately owned lands in the Project vicinity in 1996. The subsequent report is the primary source of information for this discussion (Kienzle, No Date). The U.S. Forest Service is working on a sister document covering the Wallowa-Whitman National Forest portion of the Project vicinity but it has yet to be published.

There are numerous USDA-NRCS reported soil types in the Project vicinity and three reported soil types within in the Project area (Figure 3.1.1). The three reported soil types in the Project area are Anatone-Klicker-Rock-Outcrop complex (60 to 90 percent south slopes), Limberjim-Anatone complex (30 to 60 percent north slopes), and Rondowa Boulder Loam (2 to 15 percent slopes).

While the upper portion of the Project was not specifically covered in the USDA-NRCS document, it is reasonable to assume the majority of the Project penstock, diversion dams and forebay are on south facing Anatone-Klicker-Rock-Outcrop complex soils. This soil type occurs between 4,000 and 6,000 feet mean sea level (msl) and is comprised of Anatone type soils on convex south facing backslopes (50 percent of the area) and Klicker type soils on concave south facing backslopes (30 percent of the area). The remaining 20 percent of the area is divided evenly between rock outcrops and contrasting inclusions. Both Anatone and Klicker soil types are derived from basalt based loess and colluviums with depths ranging from 10 to 40 inches. Klicker soils have an additional volcanic ash component in upper profiles.

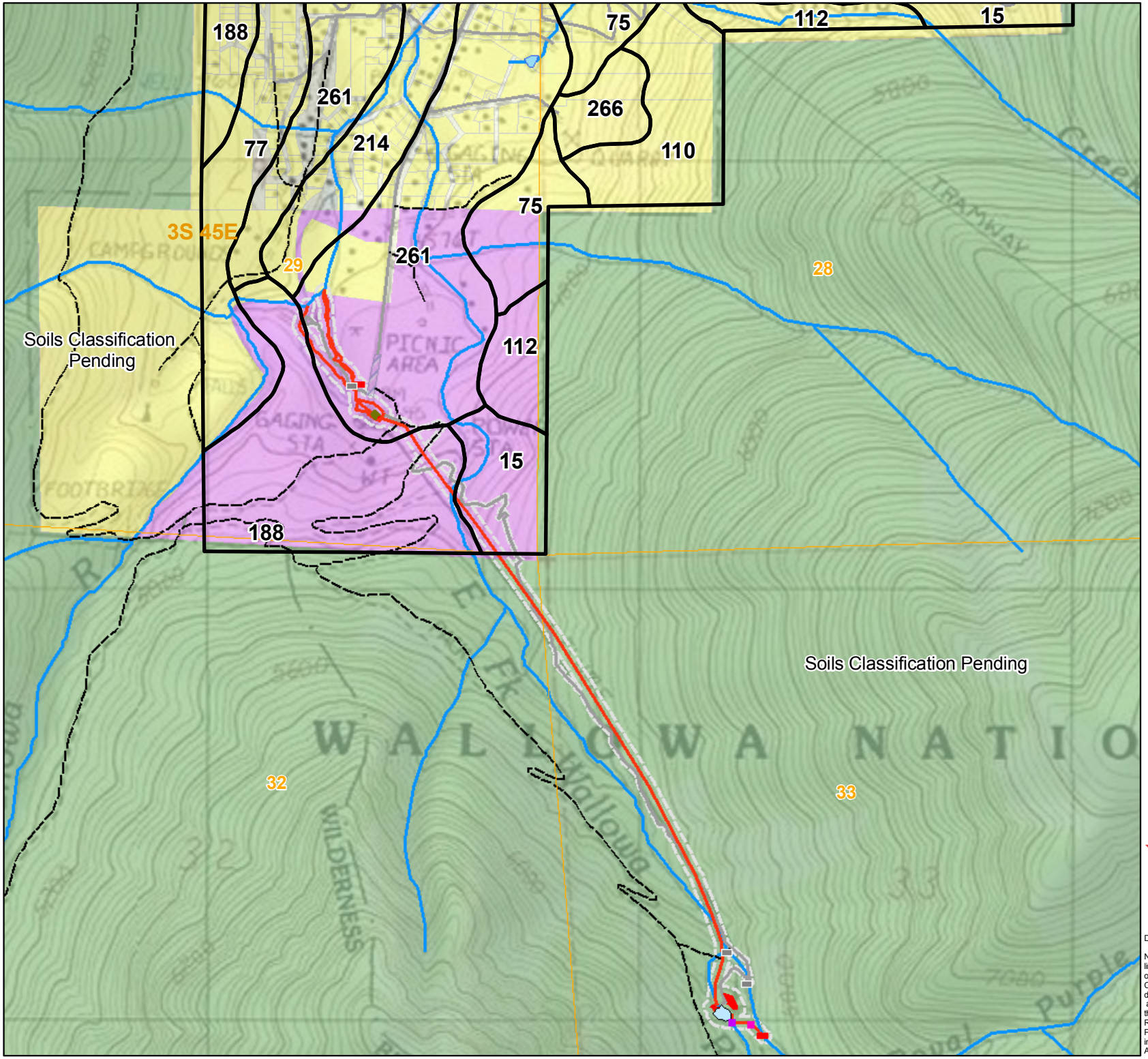


Figure 3.1.1
Project Vicinity
Soil Types

Legend

- Proposed Project Boundary
- Road
- Trail
- Trailhead Parking
- CULVERT
- anchor block
- royal purple pipe outlet
- PacifiCorp Facility
- Wallowa Falls Forebay
- Wallowa Falls Powerhouse
- PLSS-Section
- SDEADMIN.ADM_TOWNSHIP
- Waterbody
- Stream

Land Ownership - County Data

- Other
- PACIFICORP
- USA

Soils Data

- X Mine or Quarry
- Detailed Soil Map Units

Map Unit Symbol	Map Unit Description
15	Anatone-Klicker-Rock outcrop complex, 60 to 90 percent slope
75	Ferguson very fine sandy loam, 15 to 30 percent north slopes
77	Ferguson very fine sandy loam, 15 to 30 percent north slopes
110	Harl-Anatone-Rock outcrop complex, 60 to 90 percent north slopes
112	Harl-Limberjim-Rock outcrop complex, 60 to 90 percent north slopes
188	Limberjim-Anatone complex, 30 to 60 percent north slopes
214	Mippon loam, 0 to 3 percent slopes
261	Rondowa bouldery loam, 2 to 15 percent slopes
266	Rubble land-Rock outcrop complex, 60 to 90 percent slopes

N

0 500 1,000 Feet

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GIS Support Services
Solutions Group
gisdept@Pacificorp.com

Data are projected in UTM Zone 10, NAD83, meters.

A section of the lower Project penstock is on north facing Limberjim-Anatone complex soils. This soil type occurs between 4,700 and 5,400 feet msl and is comprised of Limberjim type soils on north facing concave backslopes (50 percent of the area) and Anatone type soils on north facing convex backslopes (35 percent of the area). The remaining 15 percent of the area is contrasting inclusions. The Limberjim soil type is derived from volcanic ash over colluvium and residuum derived from basalt and andesitic tuff breccias with a depth to bedrock of 40 to 60 inches.

Management considerations for Anatone, Klicker, and Limberjim soil types that are applicable to the Project include the following:

- High erodability in areas of low plant cover.
- Site disturbance including construction activities may result in slope instability problems such as soil erosion, sloughing, and raveling.
- Cool soil temperatures and a short growing season limit the period of plant growth.
- Soils are prone to compaction.
- Erosion control; measures may be needed to reduce soil loss from cut and fill slopes.
- Soil is susceptible to being pushed from its natural position during equipment operations.
- Un-surfaced roads on hillsides are sticky and soft when wet and dusty when dry.
- Special precautions may be needed to control soil loss following activities that expose the soil.

The powerhouse, tailrace, and short section of penstock immediately above the powerhouse are on the Rondowa bouldery loam, 2 to 15 percent, soil type. Parent material is mixed glacial till with an influence of loess and minor amounts of ash in the upper part. Soil depth to bedrock is typically over 60 inches. Management considerations for Rondowa soils applicable to the Project include the following:

- Soil is prone to compaction.
- Disturbed areas are subject to soil erosion.
- Excavation increases the risk of water erosion.
- Excavation is hampered by the boulders and cobbles in the soil.

With the exception of periodic maintenance required to repair erosion and/or slumps to the existing Project forebay access road, no soil stability issues are known to exist that would require modifications or repairs outside of normal routine annual maintenance, including maintenance of the penstock as required. The erosion and slump occurring on the upper portion of the forebay access road is likely of the Anatone-Klicker-Rock Outcrop soils type and is subject to the management considerations described above.

3.1.3 Shorelines and Stream Banks

The floor of the Project forebay is generally composed of river cobbles with some sediment, and shoreline slope is estimated at less than 15 percent. The Project bypass reach (East Fork Wallowa River) is generally composed of bedrock, boulders and cobbles. In the upper mile of

the bypass reach, stream banks are generally steep as the river is in a V-shaped canyon. The lower .75 mile has more gently sloping stream banks with a more developed floodplain. The majority of the bypass reach is well vegetated with native species, while the area near the confluence with the West Fork Wallowa River is a mix of native and nonnative (residential lawns and landscaping) species.

3.2 Water Resources

3.2.1 Hydrology

The entire Wallowa River basin covers a drainage area of 950 square miles from its headwaters to its confluence with the Grande Ronde River (USGSa). Ninety five percent (907 sq. mi.) of the basin is along the mainstem of the Wallowa River downstream of the confluence of the East and West Forks. The two Project diversion dams are located in the East Fork Wallowa River sub-basin which has a drainage area of approximately 10 square miles including Royal Purple Creek (USGSb). The Project tailrace discharges into the West Fork Wallowa River which has a drainage area of 33 square miles (USGSc).

Historical hydrologic data for the Project is incomplete. For example the East Fork Wallowa River above the Project diversion has never been gaged and therefore no direct measurements of flow exist. However, the USGS gathered data at two locations pertinent to the Project for a 58-year period from October 1924 through September 1983. Further, page 6 of Appendix A (Environmental Assessment) of the existing License cites the following stream flow information (although the source and gage location of this information is not identified):

Streamflow:

- Low flow: 10.9 cfs; Flow parameter: Monthly mean flow (March).
- High flow: 63.4 cfs; Flow parameter: Monthly mean flow (June).
- Average flow: 22.0 cfs Flow parameter: Average yearly flow.

The historic USGS gages were located in the Project tailrace (Station 13324500) and the bypass reach one quarter mile upstream of the confluence with the West Fork (Station 13325000). The USGS Station 13325001 is a reporting station that is a summation of data collected at these two sites. This data can essentially be considered the total contribution of the East Fork Wallowa River including Royal Purple Creek at the confluence of the East and West Forks. This currently represents the best data available characterizing the hydrology of the East Fork in the Project vicinity. However, there are at least two unnamed tributaries in the Project bypass reach and there may be additional natural spring accretion in the bypass reach as well. Therefore, this data does not accurately represent flow at the Project Diversion.

The entire USGS period of record was used to calculate data in the following table. Average monthly minimum flows ranged from 7.67 cfs in March to 25.2 cfs in June while average monthly maximum flows ranged from 14.6 (March) to 142.2 cfs (June). Average mean monthly flows ranged from 11 cfs (February and March) to 61 cfs (June). Table 3.2-1 lists all average monthly minimum, mean and maximum flow data for Station 13325001.

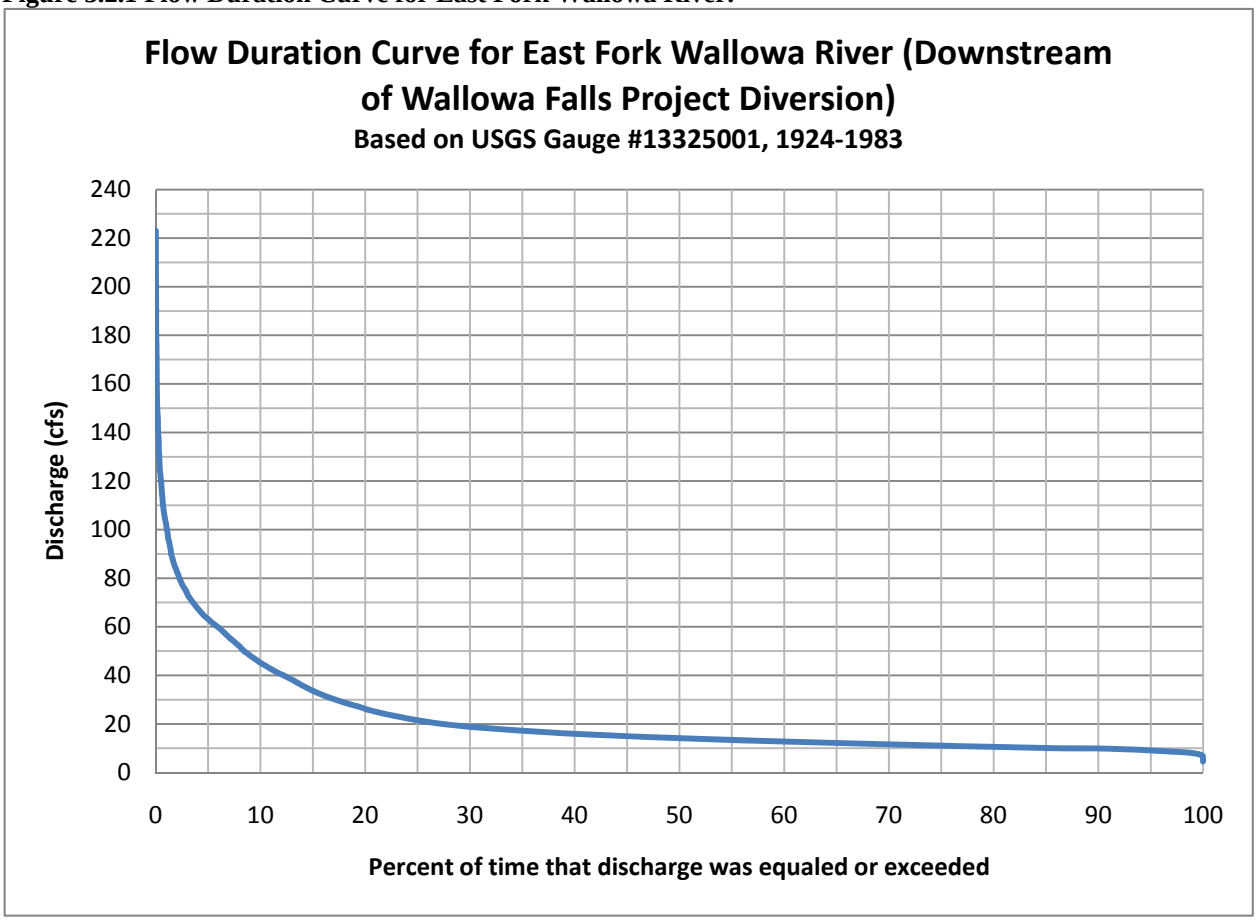
Table 3.2-1 Average monthly flow data for USGS gaging station 13325001(East Fork Wallowa River and Wallowa Falls power plant tailrace near Joseph, Oregon) for the 58 year period of record 1924 - 1983.

Month	Average Minimum Flow (cfs)	Average Mean Flow (cfs)	Average Maximum Flow (cfs)
January	8.4	12	16.8
February	8.02	11	15
March	7.67	11	14.6
April	8.59	13	18.4
May	14.9	30	59.1
June	25.2	61	142.2
July	11.8	44	98.2
August	9.62	20	37.3
September	9.68	16	26.5
October	9.97	15	24.8
November	9.26	14	20.9
December	9.06	13	18.9

Figure 3.2.1 provides a flow duration curve for the total contribution of the East Fork Wallowa River as described above. Flows for Gage Site 13325001 meet or exceed 10 cfs 90 percent of the time, 14 cfs 50 percent of the time and 45 cfs 10 percent of the time.

A Dependable Capacity of 505 kW was estimated using the critical month method. The critical month method uses the lowest monthly average flow for the period of record (7.67 cfs) from the USGS gage 13325001 and considered this to be the approximate minimum inflow one can expect at the Project diversion. The minimum in-stream flow for the bypass reach of 0.5 cfs was subtracted from the lowest monthly average flow as this would not be available for generation. A simple rating table conversion for the power-plant was then used to convert 7.17 cfs to 505 kW.

Figure 3.2.1 Flow Duration Curve for East Fork Wallowa River.



3.2.2 Water Rights and Uses of Project Waters

PacifiCorp holds two water right certificates from the State of Oregon for the purposes of power generation at the Project. Up to 15 cfs may be diverted from the East Fork Wallowa River (under OR state permit no. 4595-5401) and up to one cfs may be diverted from Royal Purple Creek (under OR state permit no. 8365) for a total water right of 16 cfs. "Project waters" consists of water within the Project area that has been diverted pursuant to this right.

PacifiCorp is not aware of any existing or proposed uses of Project waters for irrigation, domestic water supply, industrial or other purposes that would impose upstream or downstream constraints to Project operations. The small community of Wallowa Lake did withdraw water for domestic purposes from the bypass reach at one time. However, this diversion was replaced by a ground water source circa 1988 and has since been abandoned (Pers. Comm. Mike Hayward, Wallowa Co. Commissioner, September 2010).

Other than the Project itself, there are no known in-stream flow uses, existing water rights or pending water rights in the Project vicinity upstream of Wallowa Lake that would be affected by continued operation of the Project.

3.2.3 Water Quality

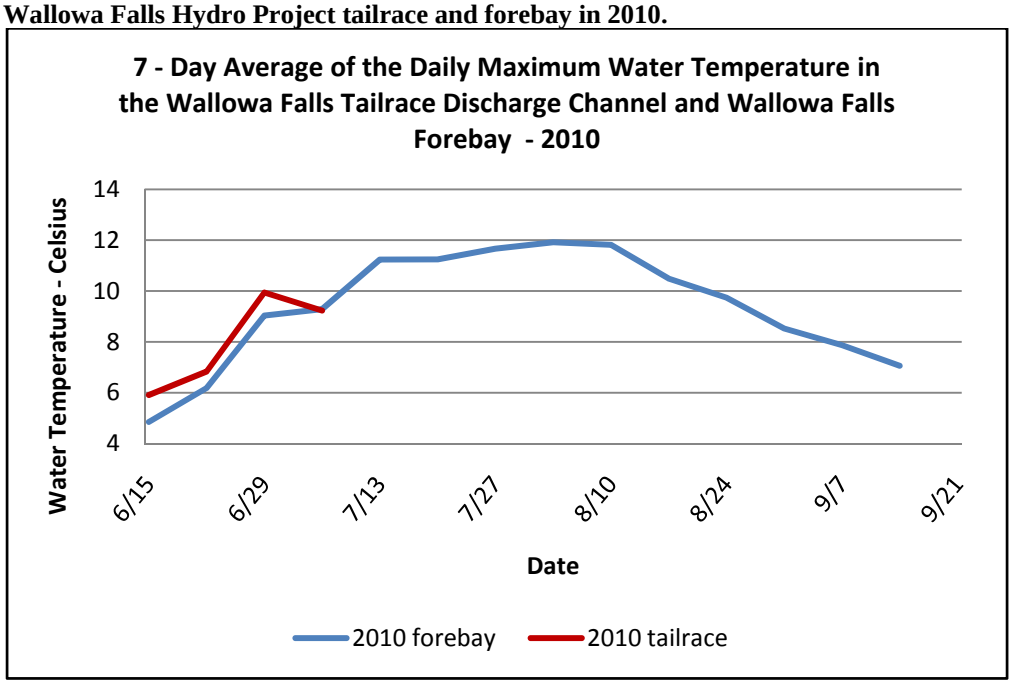
Limited information exists concerning water quality in the Project area and surrounding vicinity, specifically the East Fork Wallowa River. Section 303 of the Clean Water Act requires states to develop Total Maximum Daily Loads (TMDLs) for water bodies with pollutant levels in excess of established water quality standards. Oregon Department of Environmental Quality's Lower Grand Ronde Subbasin Total Maximum Daily Loads (TMDL) was approved by the U.S. Environmental Protection Agency (EPA) on September 24, 2010. The Lower Grand Ronde Subbasins TMDL, which includes the Wallowa River Subbasin, establishes temperature and bacteria TMDLs for thirty-seven impaired water bodies. Sections of the Wallow River downstream of Wallowa Lake are listed as impaired for both temperature and bacteria. However, no section of the East Fork Wallowa River is currently on the Oregon 303(d) list.

Per Oregon Administrative Rule (OAR) 340-041-151, Figures 151A and 151B, the East Fork Wallowa River is designated as Bull Trout Spawning and Juvenile Rearing habitat. The seven-day-average maximum temperature of a stream identified as having bull trout spawning and juvenile rearing use may not exceed 12.0 degrees Celsius (OAR 340-041-0028(4)(f). Stream temperature standards are calculated using the average of seven consecutive daily maximum temperatures on a rolling basis (7-dadmax).

The only water quality information currently available exists as hourly water temperature readings recorded in the Project tailrace channel directly downstream from the turbine discharge in 2006-2008, and 2010; and from the Project forebay directly in front of the penstock intake in 2010 (Figure 3.2.2). To date, a total of 21,256 hourly temperature data points have been recorded within the Project area. PacifiCorp is not aware of information on any water quality parameter other than temperature.

Seven day averages of daily maximum (7-dadmax) water temperatures were extrapolated from the hourly temperature readings and then compared for June through September as this represents the warmest water temperatures of the year (Figure 3.2.2). PacifiCorp was unable to confirm the conditions under which the 2006 and 2007 temperature data was collected. Therefore, that data is not presented here. The 2010 data, though incomplete in the Project tailrace due to instrument vandalism, is presented in graph format below (Figure 3.2.2).

Figure 3.2.2 Comparison of 7-dadmax water temperature readings (June-September) in the Wallowa Falls Hydro Project tailrace and forebay in 2010.



3.3 Fish and Aquatic Resources

3.3.1 Habitat

The Project reservoir/forebay is approximately 0.2 surface acres in size and averages 1.5 meters (m) deep. Because the Project operates as run of river, there is no measurable storage. Water diverted from 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 300 m long tailrace discharge channel that empties into the West Fork Wallowa River. This channel has an average wetted-width of 3.1 m and an average depth of 0.3 m. The habitat type within the tailrace channel is dominated by high gradient riffle with very few pools.

The bypassed portion of the East Fork Wallowa River within and near the Project area is approximately 2,800 m 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 m averaging 19 percent and the lower 1,200 m averaging 8.5 percent. Habitat type 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 West Fork is a shallower gradient with habitat consisting of numerous riffles and pools.

Wallowa Lake, and portions of the East and West Forks of the Wallowa River are listed under the Bull Trout Critical Habitat Designation Final Ruling (Federal Register, Vol. 75, No. 200 – October 2010 pgs. 63,898 – 64,070). The waterways upstream of the irrigation dam at the terminus of Wallowa Lake are listed as Essential Fish Habitat for spring Chinook and Coho under the Magnuson-Stevens Fishery Conservation and Management Act (NOAA 2008).

3.3.2 Fish Community

Fish species known to occur by direct observation in the Project area and East Fork Wallowa River bypass reach include wild and hatchery stock rainbow trout (*Oncorhynchus mykiss*), native and introduced kokanee (*Oncorhynchus nerka*), non-native introduced brook trout (*Salvelinus fontinalis*), and Endangered Species Act (ESA) listed bull trout (*Salvelinus confluentus*).

Limited information exists concerning current fish presence within the Project area and East Fork Wallowa River bypass reach. Fish abundance, distribution, and species composition information comes mainly from three data sources:

(1) the Oregon Department of Fish and Wildlife (ODFW) annual fish propagation reports;
(2) fish salvages of the approximately 300 meter long tailrace discharge channel immediately downstream of the Project powerhouse performed prior to or during de-watering events in 2009 and 2010; and,
(3) snorkel surveys performed in 2010 within the Project tailrace and bypass reach in the East Fork Wallowa River.

According to the 2008 ODFW Propagation Annual Report, Aneroid Lake, a small highland lake five miles upstream and which flows directly into the Project forebay, was most recently stocked with 4,000 rainbow trout fry in 2008 (ODFW 2008). Aneroid Lake currently is on a three-year stocking cycle with the small lake scheduled for an additional 4,000 rainbow trout fry in 2011 (Pers. Comm. Bill Knox, ODFW, September 2010).

Historically, Wallowa Lake supported a native stock of kokanee. The native population experienced a precipitous collapse in the early 1960's which lead to artificial supplementation of kokanee from out of basin. The lake was last stocked with kokanee in 1982. The current population is self-sustaining though genetically not comprised of the native stock (Cramer and Witty 1998). In the past, kokanee have been known to spawn in the lower gradient reaches of both the Project tailrace channel and the bypass section of the East Fork Wallowa River. This was verified during a recent survey on September 15, 2010 when numerous adult individuals were observed actively constructing redds and spawning in the lower 40 m of the Project tailrace channel and lower 200 m of the bypass section.

Historically, non-native introduced brook trout were stocked in Aneroid Lake starting in the early 1900's with the last hatchery plant occurring in the 1950's (Pers. Comm. Bill Knox, ODFW, September 2010). These fish have naturally persisted and dispersed throughout the Project vicinity as evidenced by numerous individuals observed in the bypassed East Fork Wallowa River during a September 15, 2010 snorkel survey, as well as individuals captured in the Project tailrace during fish salvages during de-watering events (Figure 3.3.1).

In 1997, 600 bull trout ranging in size from 70 – 380 millimeters (mm) were salvaged from a decommissioned hydroelectric plant's power canal located on Big Sheep Creek in the Imnaha River drainage and transplanted into Wallowa Lake. Bull trout were first documented within the Project area on July 12, 2010, during a salvage of the Project tailrace due to a planned de-watering event. Two individuals were captured (Figure 3.3.1) 100 m downstream of the powerhouse, prior to the channel being de-watered, and were subsequently released into the

West Fork Wallowa River, per the conditions of PacifiCorp's Oregon State Fish Collection Permit #15214. During a September 15, 2010, snorkel survey, one individual bull trout was observed 20 m downstream of the turbine discharge. Later during that same survey, two bull trout were observed in the bypass section of the East Fork Wallowa River approximately 250 m upstream from the confluence with the West Fork Wallowa River. The two bull trout were observed paired up near a partially completed redd.

Historically, anadromous sockeye salmon were present in Wallowa Lake and the East and West Fork Wallowa Rivers. Due to anthropogenic causes (over-harvest, faulty hatchery practices), anadromous sockeye in Wallowa Lake became extinct in 1905 (Cramer and Witty 1998). In 1916, further prohibiting anadromous fish reestablishment in Wallowa Lake, an 18 foot irrigation dam was constructed at the outlet of Wallowa Lake. This dam was subsequently raised to 26.8 feet in 1929. No fish passage was engineered as part of the original construction of this dam and currently it remains a total barrier to anadromous fish migration (Cramer and Witty 1998). Given the Project's location upstream of the irrigation dam at the terminus of Wallowa Lake and in absence of anadromous fish passage at the dam, no anadromous fish species are currently present in the Project area or East Fork Wallowa River bypass reach.

Figure 3.3.1 illustrates the number of fish captured, by species, during salvages of the Project tailrace channel in 2009 and 2010. The channel was dewatered and salvaged for fish three times during this two-year span, once on July 20, 2009; and twice in 2010 on July 12 and August 2. The bulk of fish captured were comprised of rainbow trout (91 percent) followed by brook and bull trout at 4.5 percent each respectively.

Figure 3.3.2 illustrates the size distribution of fish captured in the Project tailrace discharge channel during fish salvages in 2009 and 2010. Of the total fish captured, 77 percent were between 101 and 200 millimeters (mm).

3.3.3 Aquatic Invertebrate Community

No specific information is available for the macroinvertebrate community inhabiting the natural and bypassed portions of the East Fork Wallowa River and Royal Purple Creek.

Figure 3.3.1 Number of fish captured in the Project tailrace discharge channel in 2009 and 2010 during fish salvages during planned Project de-watering events.

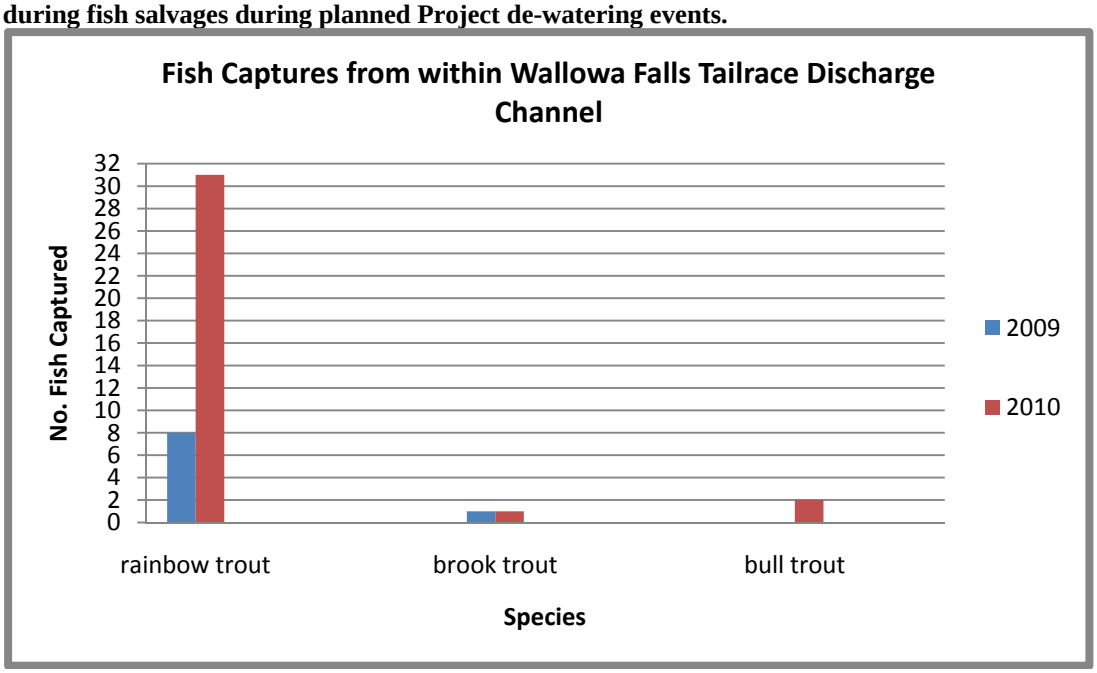
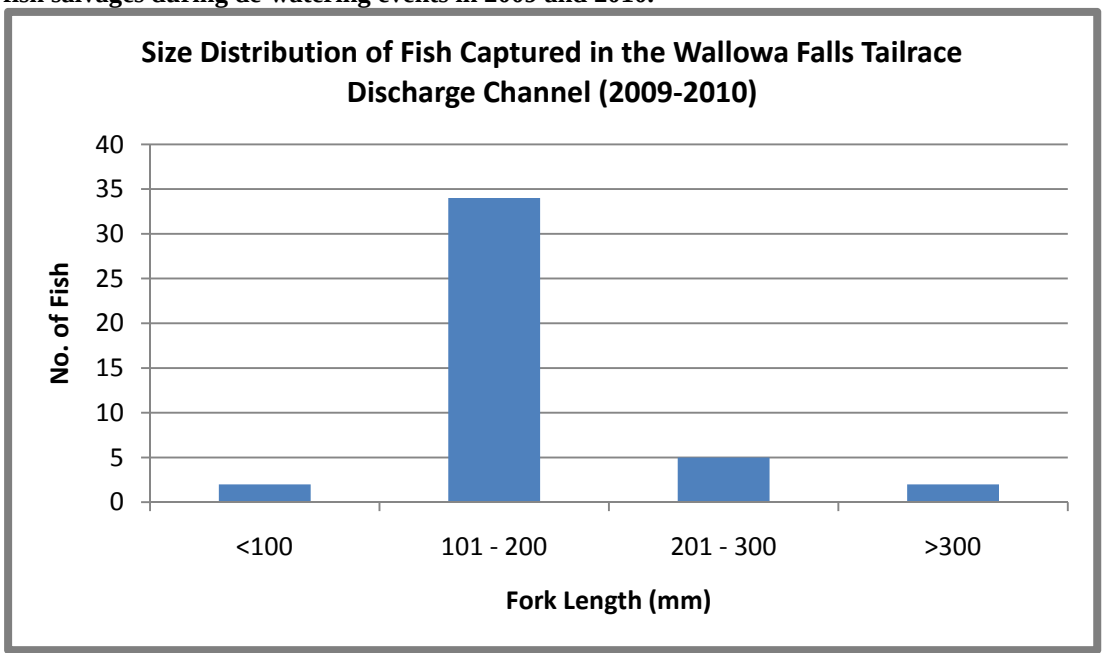


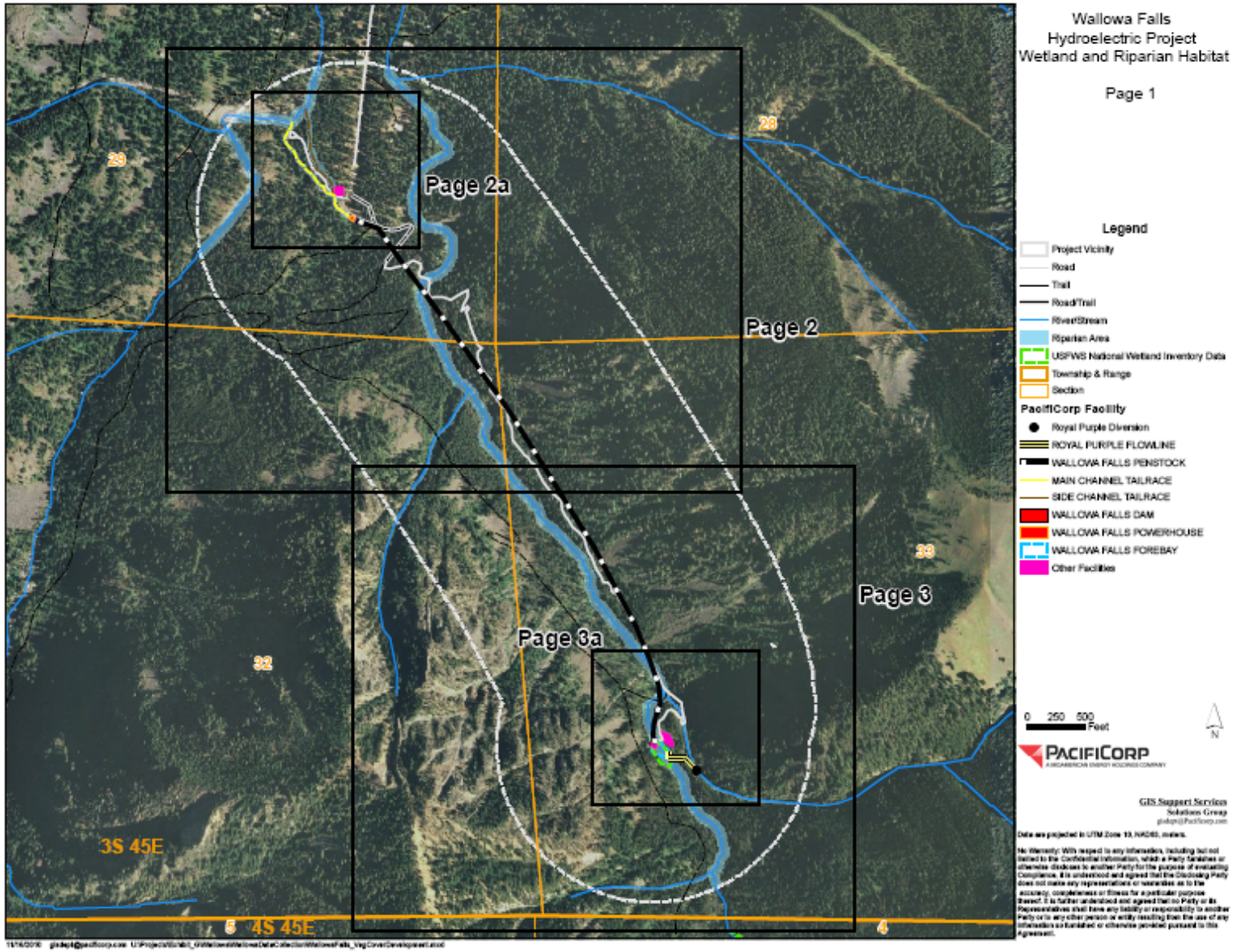
Figure 3.3.2 Size distribution of fish captured in the Project tailrace discharge channel from fish salvages during de-watering events in 2009 and 2010.

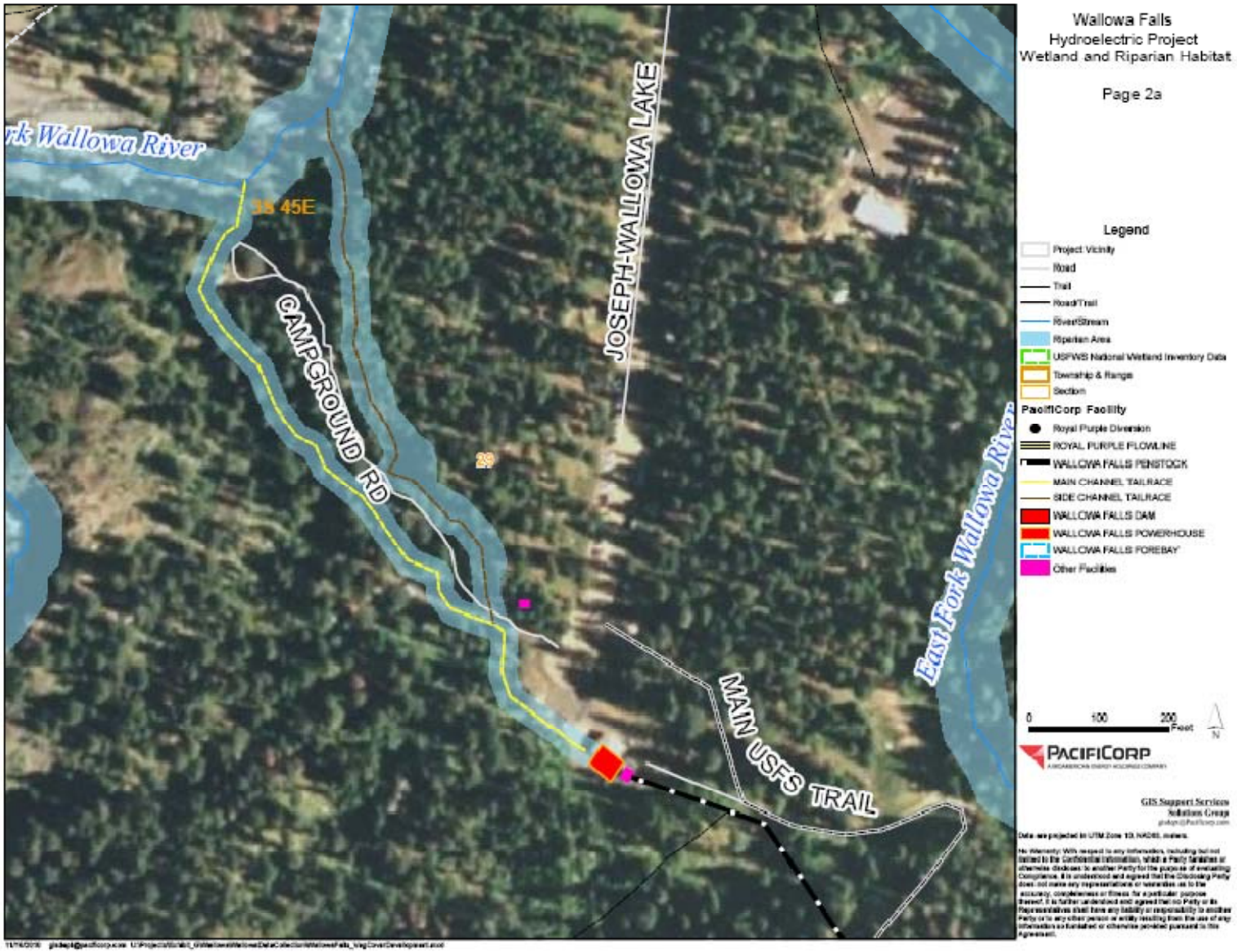


3.4 Wildlife and Botanical Resources

The Project is located in the Wallowa Mountains on the East and West Forks of the Wallowa River. The area is typical of mountain valleys in that it is constrained by steep topography and mountain peaks and the valley floor and lower slopes are largely forested with areas of exposed ridges, rock outcrops, and talus slopes. The Project begins at the Royal Purple Diversion at an elevation of 5838 feet and ends approximately 6100 feet to the northwest at the powerhouse which is at an elevation of 4680 feet. For the purpose of assessing wildlife habitat and potential species presence, Project vicinity was delineated to include all lands within 0.25 miles of major Project features (i.e., penstock, dam, powerhouse). There are essentially four habitat types within the Project vicinity: riparian, open water/wetland, mix montane forests, and exposed rock. Figure 3.4.1 shows an aerial image of the area with the Project vicinity, major Project features, and wetland and riparian areas identified.

Figure 3.4.1 Wallowa Falls Hydroelectric Project Wetland and Riparian Habitat.

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PacifiCorp Facility
Royal Purple Diversion
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SIDE CHANNEL TAILRACE
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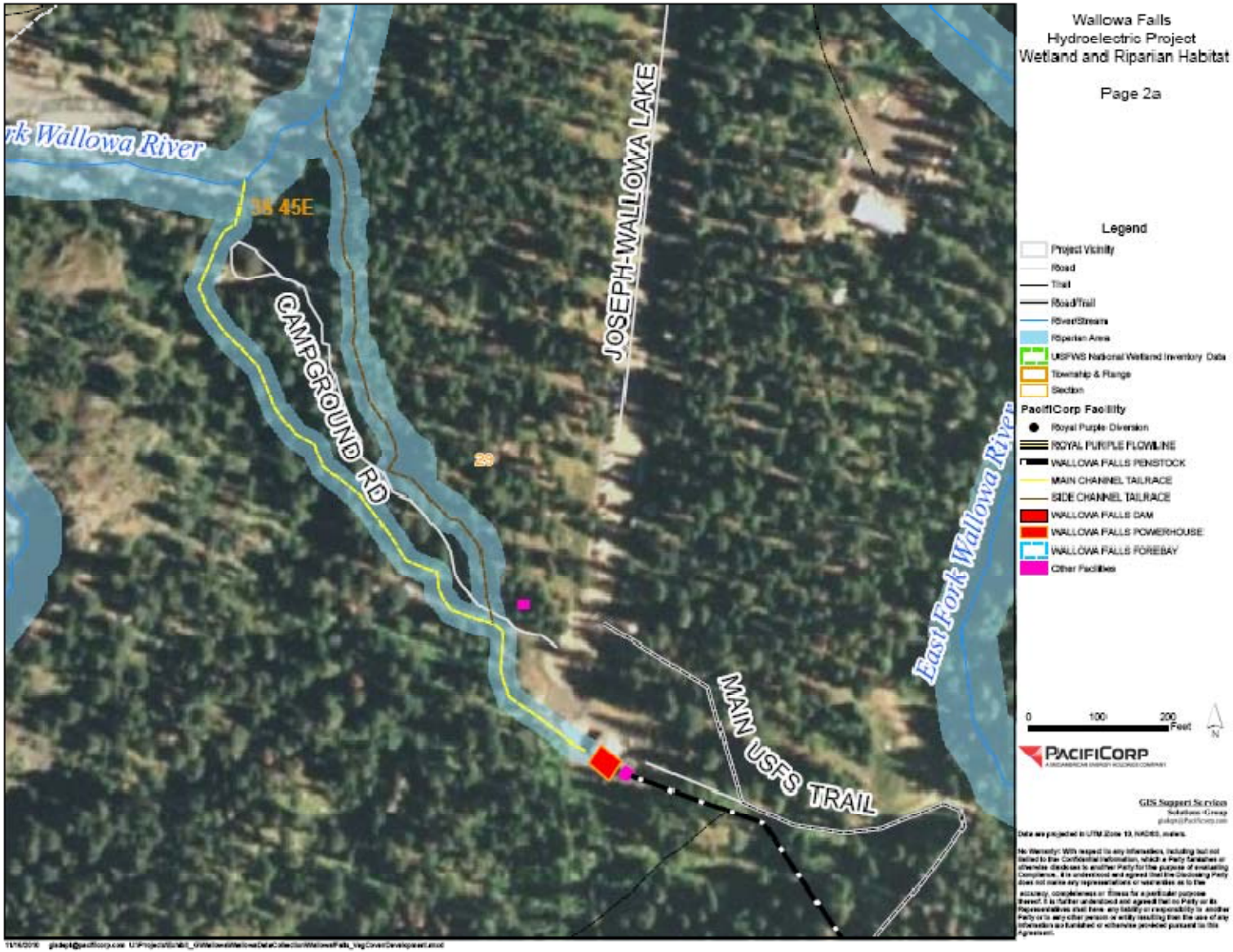
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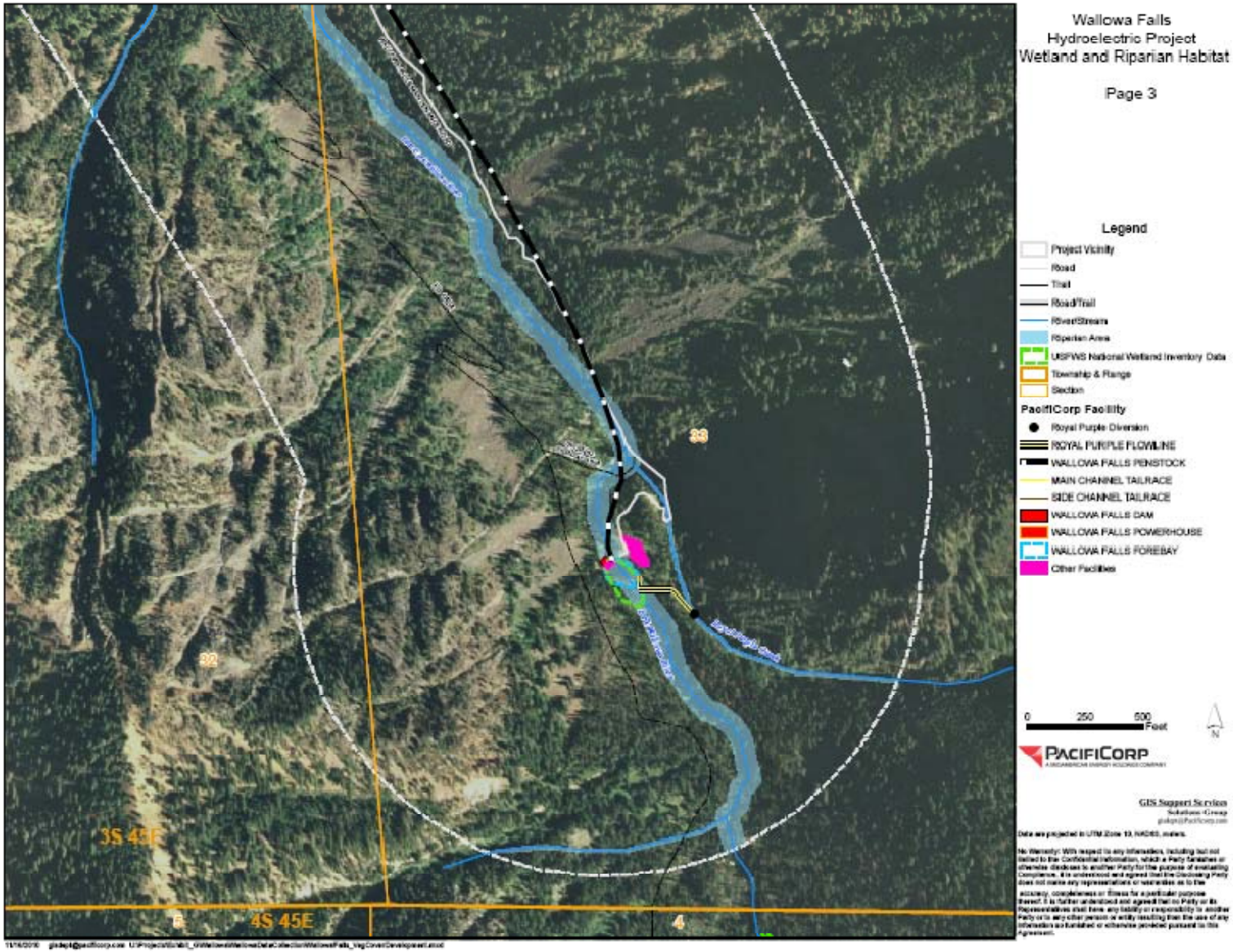
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Royal Purple Diversion
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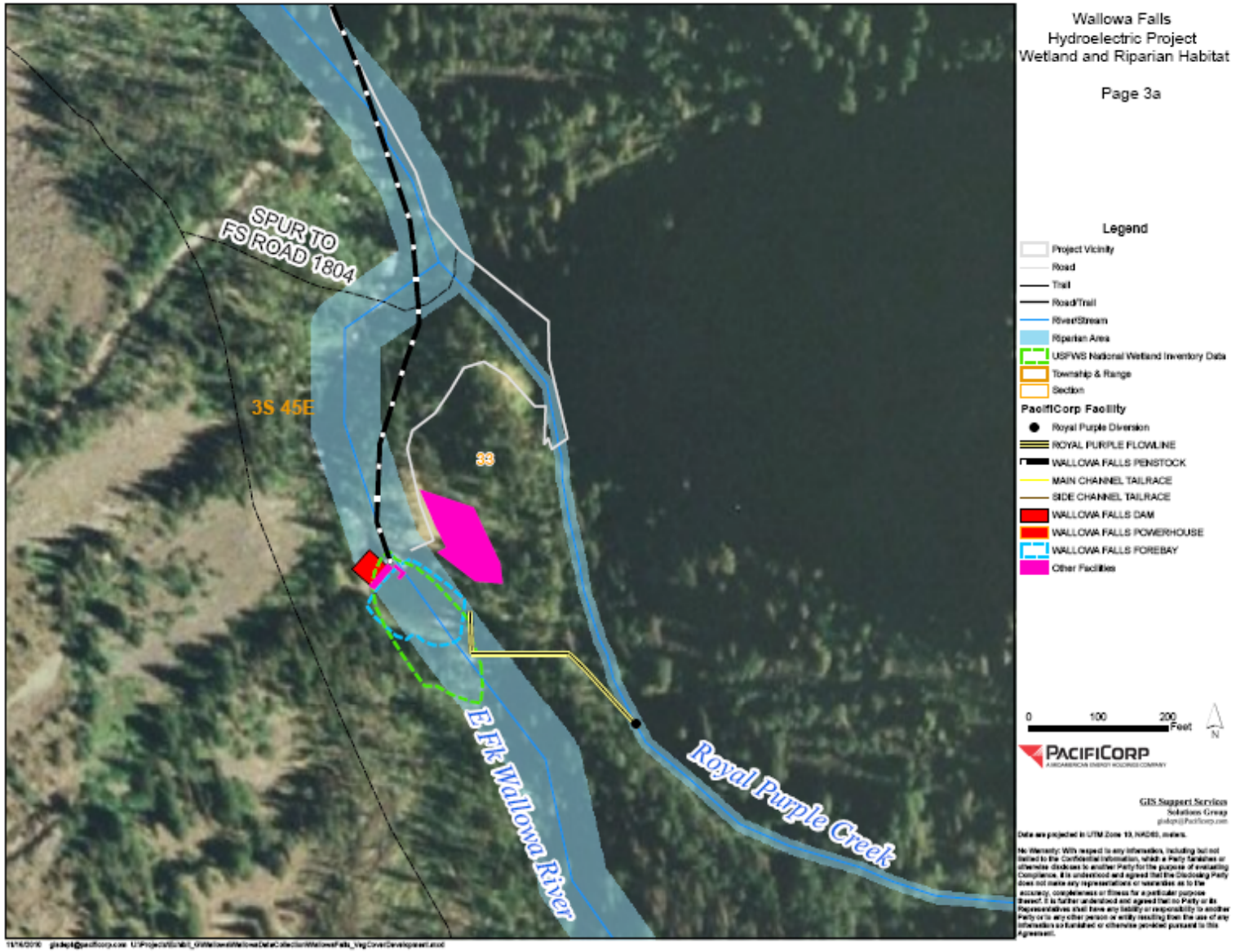
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3.4.1 Wildlife Habitats

The Project vicinity is almost entirely comprised of upland habitats that are mostly mix montane forest and lesser amounts of exposed rock.

Mix Montane Forest

The forested areas are a mix of conifer/deciduous trees with grand fir (*Abies grandis*), subalpine fir (*Abies lasiocarpa*), western larch (*Larix occidentalis*), Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*), ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), black cottonwood (*Populus balsamifera*), and quaking aspen (*Populus tremuloides*). The trees vary in size from young seedlings to large mature trees (> 30 in. diameter at breast height). The canopy cover varies from fairly open (40 percent) to dense (≥75 percent). Depending upon the canopy cover and aspect, the understory ranges from relatively open areas comprised of grasses and forbs with isolated shrub to bare ground with thick layers of duff (Photograph 1).

Photograph 1: Example of the mix montane forest within the Project Vicinity.

Many wildlife species are associated with mix montane forest and may be found within the Project vicinity. This includes many big game species that would use the forest for both forage and cover, such as rocky mountain elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus hemionus*), and black bear (*Ursus americanus*). The trees provide the necessary structure, food, and cover for many neo-tropical migrant birds. There are several snags of various diameters and heights to provide forage for woodpeckers, as well nest sites for cavity nesting birds.

Photograph 2: Example of the talus slope (exposed rock) within the Project vicinity.

Exposed Rock

Exposed rock within the Project vicinity consists of ridges, rock outcrops, and talus slopes (Photograph 2). The rock outcrops and

ridges are at the higher limits of the valley and are therefore in the outer extent of the Project vicinity. In contrast the talus slopes extend from the ridges and the base of the rock outcrops down to the valley bottom. And as a result, talus slopes are immediately adjacent to the penstock and forebay access road (Figure 3.4.1). These slopes are steep and consist of several layers of rock that vary in size from bowling ball to large boulder. They are mostly void of vegetation, other than a few isolated clusters of shrubs. The species within the Project vicinity that would be associated with exposed rock habitats include the American pika (*Ochontona princeps*) and yellow bellied marmots (*Marmota flaviventris*).

Riparian Habitat

The riparian habitat within the Project vicinity is limited to the areas adjacent to the East and West Forks of the Wallowa River, Royal Purple Creek, an unnamed tributary, and the tailrace channels. Because of the area's steep rocky terrain and high gradient, the stream and river channels are very constrained limiting the hydrologic influence on the vegetation to the areas immediately adjacent to the shorelines. To identify riparian habitat within the Project vicinity it was assumed that the riparian habitat for the East and West Forks of the Wallowa River was limited to 50 feet either side of the river center and for the tailrace channels, unnamed tributary, and Royal Purple Creek it was 10 feet either side of the stream center (Figure 3.4.1). This estimated the total riparian habitat within the Project vicinity to be 29.43 acres. Because of the limited amount of riparian habitat, it is unlikely that species strongly associated with riparian habitats would be found within the Project vicinity. Photographs 3 and 4 are of the East Fork Wallowa River in the bypass reach and show the typical riparian vegetation for the Project vicinity.


Photographs 3 and 4: Examples of the riparian vegetation along the bypass reach of the East Fork Wallowa River

Wetland

The only known wetland within the Project area is the Project forebay, which is 0.2 acres in size. The National Wetland Inventory (NWI) has identified this as a 0.44 acre freshwater pond, or more specifically as a palustrine consolidated bottom that is dike/impounded and permanently flooded (United States Fish and Wildlife Service [USFWS] 2010a). Both the forebay and NWI wetland are identified in Figure 3.4.1. The forebay averages 5 feet deep with the deepest point at the dam and then gradually tapering to an estimated 1.0-foot depth along the shores and at the inlet. Because the Project is run of the river there is a continuous flow within the forebay. As a result, the substrate is entirely sediment and or river cobbles with little to no emergent or aquatic vegetation. The

Photograph 5: Project forebay. The photograph was taken from the top of the dam facing southeast (upstream).

forebay provides slow moving open water, which is uncommon within the Project vicinity and can attract wetland associated species, such as ducks and amphibians. However due to the remote location and lack of wetland vegetation it unlikely the forebay supports many wetland associated species throughout their entire life history.

Wildlife Species

The Wallowa Mountains are a vast wilderness area renowned for their abundant and diverse wildlife. The Blue Mountain Province has been identified as an important wildlife corridor connecting habitats and animal migration routes between the Rocky Mountains and Oregon Cascade Mountains (USFS 2010a). Within the Blue Mountain National Forests, which includes the Wallowa-Whitman National Forest, there is an estimated 250 native wildlife species. Many of these species are commonly associated with mix montane forest habitat and have the potential to occur within the Project area (USFS 2010a). This may include animals such as cougar (*Felis concolor*), black bear, deer, gray wolf (*Canis lupus*), elk, American marten (*Martes Americana*), mink (*Mustela vison*), beaver (*Castor Canadensis*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), river otter (*Lutra canadensis*), red squirrel (*Tamiasciurus husonicus*), and golden-mantled ground squirrel (*Spermophilus laterlais*). Avian species would include ruffed grouse (*Bonasa umbellus*), blue grouse (*Dendragapus obscures*), pileated woodpecker (*Dryocopus pileatus*), northern flicker (*Colaptes aurauys*), great horned owl (*Bubo virginianus*), and various neo-tropical migrants. Due to steep topography, aspect, and elevation, it is unlikely that reptiles are abundant in the Project vicinity, however, the western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*) and rubber boas (*Charina bottae*) may have potential to occur in the Project vicinity. Amphibians within the Project vicinity may include long-toed salamander (*Ambystoma macrodactylum*), western toad (*Bufo boreas*), pacific chorus frog (*Pseudacris regilla*), and/or tailed frogs (*Ascaphus truei*).

Botanical Resources and Invasive Plant Species

The Wallowa Mountains are well-known for steep topography, very large ranges in elevation, and complex geological history. This has created a distinct mosaic pattern across the landscape of heavily forested slopes with open, rugged areas of herblands or exposed rock. These forested slopes and open areas are comprised of diverse, and in some cases unique, plant communities that vary depending on the elevation, canopy cover, aspect, and slope. The majority of the Project vicinity is mix-montane forest that varies in species dominance and tree size as the Project increases in elevation. In 1992 a botanical survey was conducted to determine the potential impacts of the Project Dam Reparation Project. This survey identified over 157 plant species in the Project area that include 12 species of trees, 22 species of shrubs, 94 species of forbs/herbs, 6 species of ferns, and 23 species of grasses (PacifiCorp 1993). The complete plant list is provided in Appendix B.

In general, invasive plant species are increasingly displacing native species and altering ecosystems structure, composition, and function (USFS 2010b). Rapid identification, prevention, and control are the best methods for controlling and preventing new infestations. The Project vicinity has relatively very few invasive plant species present. However the heavily used pedestrian and equestrian trail, parking lot, campground, and forebay access road are

pathways to introduce or promote invasive plant species in the area. The only Oregon Department of Agriculture (ODA) Noxious Weed observed during a June 2010 site visit to the Project Area was Canada thistle (*Cirsium arvense*).

3.5 Rare, Threatened, and Endangered Species

3.5.1 Aquatic

In the late 1960's and all through the 1970's an effort to introduce Dolly Varden (*Salvelinus malma)* was attempted within Wallowa Lake (Cramer and Witty 1998). These attempted Dolly Varden introductions evidently did not take hold, as no catch was reported shortly after the last hatchery plant in 1978 (Buchanan et. al 1997).

In 1997, 600 bull trout ranging in size from 70 – 380 millimeters (mm) were salvaged from a decommissioned hydroelectric plant's power canal located on Big Sheep Creek in the Imnaha River drainage and transplanted into Wallowa Lake. Big Sheep Creek bull trout typically exhibit a resident or fluvial life-history (Al-Chockhachy et al. 2005). Unfortunately, due to lack of available resources to monitor this population after the reintroduction, the status and life-history exhibited by these fish is currently unknown (Pers. Comm. Bill Knox, ODFW, September 2010).

Based on lack of empirical data and no sightings of bull trout since 2004 (either during kokanee spawning surveys of the West Fork Wallowa River or during angler creel checks, (Pers. Comm. Bill Knox, ODFW, September 2010), bull trout were listed in the 2005 ODFW Oregon Native Fish Status Report as extinct in Wallowa Lake and its tributaries (ODFW 2005).

No bull trout had been observed or reported upstream of the irrigation dam at the outlet of Wallowa Lake for six years until June 9, 2010, when a PacifiCorp biologist caught a bull trout (estimated fork length 515mm) when angling near the Wallowa River inlet to Wallowa Lake. Prior to release, genetic material was gathered (non-lethally) from the captured bull trout and stored in an ethanol filled vial for later analysis.

Subsequently on July 12, 2010, during a planned annual maintenance event, the Project tailrace discharge channel was de-watered and two bull trout were encountered. Prior to the channel being completely de-watered, a fish salvage was performed by two PacifiCorp biologists using a Smith-Root LR-24 backpack electrofisher. The salvage began at the confluence of the tailrace channel with the West Fork Wallowa River and proceeded in an upstream manner. Two bull trout were captured during the salvage (520mm and 430mm fork length).

In the event of future re-capture, both of the bull trout captured during the July 12, 2010, fish salvage were tagged with a full-duplex Passive Integrated Transponder (PIT) tag in the dorsal sinus prior to release into the West Fork Wallowa River. Both bull trout also had tissue taken from the upper lobe of the caudal fin using a hand-held single paper hole punch. This genetic tissue was sent to the United States Fish and Wildlife Service's Abernathy Fish Genetics Lab for analysis. Finally, on September 15, 2010, during a snorkel survey of the Project tailrace discharge channel by a PacifiCorp biologist, an individual bull trout with an estimated fork length of 350mm was observed just downstream of the Project powerhouse. That same day, a

snorkel survey was also performed in the lower gradient portion of the East Fork Wallowa River bypass reach to its confluence with the West Fork Wallowa River. Two bull trout were observed paired-up, with the female actively constructing a redd.

The female bull trout (assessed after observing active redd construction and frayed caudal fin-rays) was estimated to have a fork length of 270mm while the male was estimated to be 400mm in fork length. After closer underwater examination, the larger male was identified as one of the two bull trout captured during the July 12, 2010, fish salvage of the Project tailrace channel as evidenced by a healed scar incurred from a PIT tag insertion needle near its dorsal fin as well as a healed scar on its upper caudal lobe incurred from a paper hole punch. A large (est. 300mm fork length) brook trout exhibiting meristics of a sexually mature male (vivid coloring, enlarged kype) was also observed directly adjacent to, and at times between, the bull trout pair.

Based on the above series of observations, it appears a population of bull trout reside within waters upstream of the irrigation dam at the outlet of Wallowa Lake. Whether these fish are from the 1997 transplant from Big Sheep Creek, are progeny from the 1997 transplant, or a remnant of the native stock is not known.

3.5.2 Terrestrial

The Oregon Biodiversity Information Center (ORBIC) maintains an extensive database on rare, threatened, and endangered species of Oregon (ORBIC 2010a). ORBIC has identified 49 records of terrestrial wildlife species in Wallowa County that have either:

- United States Fish and Wildlife (USFWS) Status that is Listed Endangered (LE), Listed Threatened (LT), Proposed Endangered (PE), Proposed Threatened (PT), Candidate (C), Species of Concern (SOC), Partial Status (PS);
- Oregon Department of Fish and Wildlife (ODFW) Status that is LE, LT, PE, PT, Sensitive Critical (SC), or Sensitive Vulnerable (SV); or
- ORBIC List 1 or 2.

Table 3.5-1 lists each of the 49 species, their USFWS, ODFW, and ORBIC status, brief description of habitat, and whether or not the species or its associated habitat is known to exist within in the Project vicinity.

Table 3.5-1 Oregon Biodiversity Information Center List of Rare, Threatened and Endangered, Candidate, or Special Status Wildlife Species in Wallowa County.

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Amphibians							
Rocky Mountain tailed frog	*Ascaphus montanus*	SOC	SV	2	Cold, clear, rocky perennial streams in mature forests (Washington Herp Atlas 2009).	Suspected	Yes
Columbia spotted frog	*Rana luteiventris*	C	SV	2	Slow-flowing streams, ponds, springs, and marshes with emergent vegetation. Egg masses are placed in areas where they receive little or no shading from vegetation. Waters that remain aerobic and do not freeze to the sediments (such as springs and creeks) are most likely necessary for winter survival in areas subject to freezing. (Washington Herp Atlas 2009).	Suspected	Yes
Birds							
Northern goshawk	*Accipiter gentilis*	SOC	SV	4	Mature stands with large trees, a high canopy closure, and an open understory. The stands are generally located on moderate slopes, benches, toe of slope, level ground, and typically close to perennial water (Marshall et al. 2003).	Suspected	Yes
Grasshopper Sparrow	*Ammpdramus savannarum*	--	SV	2	In Oregon their distribution is restricted to grasslands (Marshall et al. 2003).	No	No
Western burrowing owl	*Athene cunicularia hypugaea*	SOC	SC	4	Open grasslands and shrub-steppe areas including rangelands, pastures, golf course, and airports (Marshall et al. 2003).	No	No

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Bufflehead	*Bucephala albeola*	--	--	2	High-elevation forested lakes. It uses cavities and artificial best boxes in trees close to water to nest. In migration and winter they use sheltered freshwater lakes, ponds, sewage ponds, slow-moving rivers, bays, and backwaters (Marshall et al. 2003).	Suspected	No
Ferruginous hawk	*Buteo regalis*	SOC	SV	4	Open country such as grasslands, shrub steppe, desert woodlands. Nest on cliffs and ledges, isolated trees, or riparian woodlands (Csuti et al. 1997, Marshall et al. 2003).	No	No
Swainson's hawk	*Buteo swainsoni*	--	SV	4	Open country such grasslands, sagebrush flats, juniper woodlands, and larger meadows in mountainous regions (Csuti et al. 1997).	No	No
Yellow-billed cuckoo	*Coccyzus americanius*	C	SC	2-ex	Large expanses of riparian forest that include Oregon Ash (*Fraxinus latifolia*), black cottonwood, and willow (*Salix* spp.) (Marshall et al. 2003).	No	No
Olive-sided flycatcher	*Contopus cooperi*	SOC	SV	4	Conifer forests with uneven age or open canopy stand with tall trees and snags for perching (Csuti et al. 1997)	Yes - observed	Yes
Bobolink	*Doliochonyx oryzivorus*	--	SV	2	Open prairies, grasslands, wet meadows, pastures, and grain crops (Csuti et al. 1997).	No	No
Pileated woodpecker	*Dryocopus pileatus*	--	SV	4	Dense mixed conifer forests in late-seral stages with large diameter trees and snags (Marshall et al. 2003).	Yes-observed	Yes
Willow flycatcher	*Empidonax traillii adastus*	SOC	SV	4	Tall brushy vegetation along streams, along the edge of forest clearings, or other openings (Csuti et al. 1997).	Suspected	Yes
Spruce grouse	*Falcipennis canadensis*	--	SV	3	In the Wallowa Mountains only and typically found in mix younger dense conifer forest with lodgepole pine, Engelmann spruce, and subalpine fir (Csuti et al. 1997, Marshall et al. 2003).	Suspected	Yes

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
American peregrine falcon	*Falco peregrinus anatum*	Delisted	SV	2	Cliffs greater than 75 ft in height and within 1.0 mile of water (Marshall et al. 2003).	Suspected	Yes
Bald eagle	*Haliaeetus luecocephalus*	Delisted	LT	4	Associated with large bodies of water. Nest in forested areas near oceans, rivers, estuaries, lakes, and reservoirs (Marshall et al. 2003).	Yes - Documented	Yes
Harlequin duck	*Histrionicus histrionicus*	SOC	--	2	Breeds in low-gradient, slower reaches of mountain streams in forested areas primarily in the western cascade mountains. The Wallowa Mountain reports are prior to 1935 (Csuti et al. 1997, Marshall et al. 2003).	No	No
Yellow-breasted chat	*Icteria virens*	SOC	SC	4	The edges of large, dense thickets in riparian areas and swales, floodplains areas adjacent to streams and rivers, and in unmanaged dense leafy vegetation surrounding ponds and swamps (Marshal et al. 2003).	No	No
Wallowa rosy-finch	*Leucosticte tephrocotis wallowa*	--	--	1	Nest in rock crevices and crannies in high alpine habitat (Marshall et al. 2003).	No	No
Lewis' woodpecker	*Melanerpes lewis*	SOC	SC	2	Associated with open woodland habitat near water. Breeds in Oregon white oak (*Quercus garryana*), ponderosa pine, and riparian cottonwood communities (Marshall et al. 2003).	Suspected	Yes
Long-billed curlew	*Numenius americanus*	--	SV	4	Open grasslands, prairies, and meadows, often near scattered shrubs and usually near water or wet meadows in flat or rolling topography (Csuti et al. 1997, Marshall et al. 2003).	No	No
Mountain quail	*Oreortyzx pictus*	SOC	SV	4	Generally found in shrub dominated communities in open forests, ridge tops, mountain slopes (Marshall et al. 2003).	Suspected	Yes

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Flammulated owl	*Otus flammeolus*	--	SV	4	In dry open forest in mid-elevation range between 3,800 and 4,600 feet. Nest in mixed forest dominated with ponderosa pine (Marshall et al. 2003).	Suspected	Yes
Northern waterthrush	*Parkesia noveboracensis*	--	--	2	Dense and tall willow thickets in slow or standing water (Marshall et al. 2003).	No	No
White-headed woodpecker	*Picoides albolarvatus*	SOC	SC	2	In open ponderosa pine or mixed-conifer forests dominated by ponderosa pine. It requires large trees and snags for nesting and foraging (Csuti et al. 1997, Marshall et al. 2003).	Suspected	Yes
Black-backed woodpecker	*Picoides arcticus*	--	SV	4	Found in a variety of mix conifer forests dominated with ponderosa pine or lodgepole pine, typically below 4,500 ft with a high proportion of dead trees (Csuti et al. 1997, Marshall et al. 2003).	Suspected	Yes
American three-toed woodpecker	*Picoides dorsalis*	--	SV	4	Found in a variety of mix conifer forests dominated with or mixed with lodgepole pine, typically above 4,500 ft and contains high proportion of dead trees (Csuti et al. 1997, Marshall et al. 2003).	Suspected	Yes
Horned grebe	*Podiceps auritus*	--	--	2	Large open water areas surrounded with emergent vegetation (Csuti et al. 1997).	No	No
Great gray owl	*Strix nebulosa*	--	SV	4	Inhabit mature to old-growth coniferous forest adjacent to forest openings and clearings such as meadows (Csuti et al. 1997).	No	No
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	SOC	SC	2	Found in grassland or grass-shrub habitats and utilize deciduous shrubs and trees for wintering (Marshall et al. 2003).	No	No

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Mammals							
Gray wolf	*Canis lupus*	LE	LE	2	Habitat generalists and will establish territories anywhere there is a sufficient food source (ODFW 2010a).	Suspected	Yes
Townsend's big-eared bat	*Cornorhinus townsendii*	SOC	SC	2	Occurs in wide variety of habitats, but commonly found in desert scrub, pinõn-juniper and pine forests. Roost in caves, mines, and buildings (Verts and Caraways 1998).	No	No
Spotted bat	*Euderma maculatum*	SOC	SV	2	A wide variety of habitat that contain cliffs and crevices for roosting and opening for foraging (Verts and Caraways 1998).	Suspected	Yes
California Wolverine	*Gulo gulo*	C	LT	2	Open forest at higher elevations and vast amounts of wilderness (Csuti et al. 1997, Verts and Caraways 1998).	Suspected	Yes
Silver-haired bat	*Lasionycteris noctivagans*	SOC	SV	4	Associated with older conifer forests, roosts under loose bark, and forages over ponds and streams (Csuti et al. 1997, Verts and Caraways 1998).	Suspected	Yes
Hoary bat	*Lasiurus cinereus*	--	SV	4	Solitary forest-dwelling species that roosts in trees and forages along riparian corridors and brushy areas in the forest (Csuti et al. 1997).	Suspected	Yes
White-tailed jackrabbit	*Lepus townsendii*	--	SV	3	Open habitats with sagebrush deserts and grasslands (Csuti et al. 1997).	No	No

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Canada lynx	*Lynx canadensis*	LT	--	2	Canada lynx den in forests with large woody debris, such as downed logs and windfalls, to provide denning sites with security and thermal cover for kittens. Forests older than 200 years with lodgepole pine, spruce, and subalpine fir have been used for denning in Washington. Den sites must provide for minimal disturbance by humans and proximity to foraging habitat (early successional forests), with denning stands at least 2.5 acres in size. Intermediate-age forests allow for lynx access between den sites and foraging areas, movement within home ranges, and random foraging opportunities (USFWS 2009). USFS has identified the Project area as within Lynx Core Habitat Area and the habitat within the Project area as non-habitat, unsuitable, and no data (USFS 2010c).	Suspected	Yes
American marten	*Martes americana*	--	SV	4	Mature forest with closed canopies with adequate structure and down logs (Csuti et al. 1997).	Suspected	Yes
Fisher	*Martes pennanti*	SOC	SC	2	Mature, closed canopy forest with some deciduous component, particularly along riparian corridors (Csuti et.al. 1997).	Suspected	Yes
California myotis	*Myotis californicus*	--	SV	4	Forages around the edges of clumps of trees or over or near open water. Roost in cliff faces, crevices in trees, and caves (Csuti et al. 1997).	Suspected	Yes
Western small-footed myotis	*Myotis ciliolabrum*	SOC	--	4	Associated with arid grasslands in cliffs and rocky canyons, ponderosa pine, or mixed-conifer forests. Roosts in rock crevices, under boulders, and bark (Csuti et al. 1997).	No	No

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Long-eared myotis	*Myotis evotis*	SOC	--	4	Associated with forested habitats and forest edges including juniper woodlands, open areas in ponderosa pine woodlands, Douglas-fir, spruce, true fir, and subalpine forest (Csuti et al. 1997).	Suspected	Yes
Fringed myotis	*Myotis thysanodes*	SOC	SV	2	Cave dweller found a variety of forested vegetation (Csuti et al. 1997, Verts and Caraways 1998).	Suspected	Yes
Long-legged myotis	*Myotis volans*	SOC	SV	4	Coniferous forests and roosts in crevices in cliff faces, abandon buildings, caves and mines (Csuti et al. 1997).	Suspected	Yes
Yuma myotis	*Myotis yumanensis*	SOC	--	4	Closely associated with open water and forests. Uses abandon buildings and other man-made structures for roosting (Csuti et al. 1997, Verts and Caraways 1998).	Suspected	Yes
Preble's shrew	*Sorex preblei*	SOC	--	3	Occurs near permanent or intermittent streams in arid to semi-arid shrub/grass associations and dense high-elevation coniferous forests (Csuti et al. 1997).	No	No
Grizzly bear	*Ursus artos horribilis*	LT	--	2-ex	Rugged and most inaccessible wilderness areas with adequate food, dens, and cover. Grizzly bears have been extirpated from Oregon since 1931 (Verts and Caraway 1998).	No	Yes
Reptiles							
Painted turtle	*Chrysemys picta*	--	SC	2	Shallow quiet waters, such as ponds, marshes, and small streams with muddy or sandy substrates with aquatic vegetation and basking sites (Csuti et al. 1997).	Suspected	Yes

The following discusses the recovery, management, and designated critical habitat for species that are suspected to be present in the Project vicinity and are listed or proposed to be listed as endangered or threatened under the federal Endangered Species Act (ESA) and/or the Oregon Endangered Species Acts (OESA).

Bald Eagle

The bald eagle was removed from the federal list of endangered and threatened species on August 8, 2007, (72 FR 37346) and continues to be protected as a threatened species under the state of OESA and Bald and Golden Eagle Protection Act of 1940. The ORBIC data system for rare, threatened and endangered plant and animal records lists bald eagle nests and two winter roosts within 1.0 mile of the Project (ORBIC 2010b). These nests and roost sites are along the shores of the south end of Wallowa Lake and are greater than 0.5 miles from the Project. Although bald eagles are known within the area, it unlikely they use the Project vicinity for nesting or roosting because of lack of and distance from quality foraging habitat.

Gray Wolf

Currently the gray wolf is both federally- and state-listed as endangered and is managed under the federal laws that authorize the harassment or take of wolves. There is no designated critical habitat or USFWS recovery plan for gray wolves in Oregon (USFWS 1987, USFWS 2010). Oregon has developed its own Wolf Conservation and Management Plan to meet the requirements of both the OESA and the Oregon Wildlife Policy; however this plan is preempted by federal laws as long as the gray wolf remains federally listed (ODFW 2010b). Currently there are two confirmed wolf packs in Oregon, both of which are located in Wallowa County, and to date in 2010 there have been 37 unconfirmed reports of wolf signs or sightings in northeast Oregon (ODFW 2010a). Although there is no confirmed known wolf activity in the Project vicinity it is expected that over time, wolves will occupy this area.

California Wolverine

The wolverine is a USFWS candidate species and is state listed as threatened. There are no records of wolverines within the Project vicinity, but due to the vast and rugged wilderness of the Wallowa Mountains wolverines are suspected to inhabit the area. There is no recovery plan or designated critical habitat for wolverines.

Canada lynx

The Canada lynx is federally listed as threatened and has no state status. There is no designated critical habitat in Oregon and only a recovery plan outline has been finalized (USFWS 2010c). The recovery plan outline identifies the Wallowa Mountains as a “peripheral area” due to the sporadic historical records and lack of evidence that the area sustains a lynx population. The USFS has identified the Project vicinity as a core lynx habitat area, but the habitat is categorized as unsuitable or no data (USFS 2010c).

Vascular Plant Species

The ORBIC maintains an extensive database on rare, threatened, and endangered species of Oregon (ORBIC 2010a). ORBIC has identified 49 records of vascular plant species in Wallowa County that have either:

- United States Fish and Wildlife (USFWS) Status that is Listed Endangered (LE), Listed Threatened (LT), Proposed Endangered (PE), Proposed Threatened (PT), Candidate (C), Species of Concern (SOC), Partial Status (PS);
- Oregon Department of Agriculture (ODA) Status that is LE, LT, PE, PT, C
- ORBIC List 1 or 2

Table 3.5-2 lists each of the 49 species, their USFWS, ODA, and ORBIC status, a brief description of habitat, and whether or not the species or its associated habitat is known to exist within in the Project vicinity.

There are no federally listed or proposed to be listed as endangered (LE, PE) and/or threatened (LT, PT) plant species within the Project vicinity. There are, however, state listed as threatened and candidate species that are suspected to occur within the Project vicinity. However, because these species are only protected under the OESA there is no designated critical habitat or recovery/management plans.

Table 3.5-2 Oregon Biodiversity Information Center List of Rare, Threatened and Endangered, Candidate, or Special Status Vascular Plant Species in Wallowa County.

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Wallowa ricegrass	*Achnatherum wallowaensis*	SOC	--	1	Grows in shallow, rocky soils from 3,280 – 5,250 feet (Oregon Flora Project 2010).	Suspected	Yes
Blue Mountain onion	*Allium dictuon*	SOC	--	1	Occurs at middle to upper elevations (4,200-5,200 feet), on moderately steep slopes (0-55 degrees) with unstable substrates. The surface is dominated by loose gravel (Washington Natural Heritage Program [WNHP] 2010).	Suspected	Yes
Geyer's onion	*Allium geyeri var. geyeri*	--	--	2	Moist meadows, banks, and rock outcrops in the lowland, steppe and montane zones (E-flora BC 2010).	Suspected	Yes
Davidson's rockcress	*Arabis davidsonii*	--	--	2	Found in subalpine forests and alpine fell fields at higher elevation between 5,000 and 11,500 feet (Calflora 2010).	Suspected	Yes
Hell's Canyon rock-cress	*Arabis hastatula*	SOC	--	1	Rocky outcrops and mountain ridges between 4,990-7,612 feet (Oregon Flora Project 2010).	Suspected	Yes
Green Spleenwort	*Asplenium trichomanes-ramosum*	--	--	2	Found on cliffs in subalpine forest between 7,000 and 8,000 feet (Calflora 2010).	No	No
Oregon bolandra	*Bolandra oregana*	--	C	4	Occurs along the Columbia River drainage mostly at low elevations; it is usually found near streams and moist, rocky places in deep shade (WNHP 2010).	No	No
Upward-lobed moonwort	*Botrychium ascendens*	SOC	C	1	Prefers well-drained open habitats that include alpine meadows, avalanche meadows, pastured forest meadows, and grassy roadsides (USFS 2010d).	Suspected	Yes (PacifiCorp 1993)
Prairie moonwart	*Botrychium campestre*	SOC	--	2	Occurs primarily on well-drained soils in non-forested habitats, although it may grow under shrubs in or at the margins of these habitats. The one known location in Oregon is in an avalanche meadow (USFS 2010d) .	No	No
Crenulate grape fern	*Botrychium crenulatum*	SOC	C	1	It generally occurs in western redcedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), and Engelmann spruce forests with greater than 70% canopy cover. Elevation ranges from 2000 to 5200 feet (WNHP 2010).	Suspected	Yes (PacifiCorp 1993)

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Western moonwort	*Botrychium hesperium*	--	--	2	Found in open-canopied forests and meadows at higher altitudes, prefers gravelly soils, including areas with compacted substrates such as roadsides (USFS 2010d).	Suspected	Yes
Slender Moonwort	*Botrychium lineare*	--	--	1	Occurs in heavily forested sites, grassy meadows, fen-like seeps, and gravelly roadsides in relatively high elevation areas. In the Wallowa Mountains, the plants have been discovered growing in packed gravel of roadside shoulders and ditches and in boulder-laden substrate in an old avalanche meadow (USFS 2010d)	Suspected	Yes
Moonwort	*Botrychium lunaria*	--	--	2	Occurs at high latitudes and altitudes in open to lightly wooded meadows and vegetated scree slopes. At lower elevations it occurs in mesic woodlands, meadows, and sparsely vegetated sand dunes. It most commonly occurs on moist but well-drained soils with a neutral pH (USFS 2010d).	Suspected	Yes (PacifiCorp 1993)
Mountain grape fern	*Botrychium montanum*	SOC	--	2	The preferred habitat is under old growth western red cedar on alluvial terraces along small streams where the soil is moist and high in organic matter. The other primary habitat is fens, seeps and meadows along streams where the substrate is saturated (USFS 2010d).	Yes (ORBIC 2010b, PacifiCorp 1993)	Yes (PacifiCorp 1993)
Twin-spike moonwort	*Botrychium paradoxum*	SOC	C	1	Mesic to wet subalpine mountain meadows dominated by grasses, sedges and in some cases, dense herbaceous cover (USFS 2010d).	Suspected	Yes (PacifiCorp 1993)
Stalked moonwort	*Botrychium pedunculosum*	SOC	C	1	Occurs in mountain meadows, roadsides, brushy secondary woodlands, and open to closed canopy forests (USFS 2010d).	Suspected	Yes (PacifiCorp 1993)
Green-band mariposa lily	*Calochortus macrocarpus var. maculosus*	SOC	--	1	Pristine habitats at low, mid, or upper elevations in rocky, basaltic soils and substrates on hillsides, rock outcrops and cliff bands. The species has also been observed in grasslands on steep slopes (WNHP 2010).	No	No
Blackened Sedge	*Carex atrosquama*	--	--	2	Moist to mesic slopes, meadows and thickets in the subalpine and alpine zones (E-flora BC 2010).	Suspected	Yes (PacifiCorp 1993)

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Capillary sedge	*Carex capillaris*	--	--	2	Moist to wet shorelines, bogs, fens, stream banks, and seepage slopes in the montane to alpine zones (E-flora BC 2010).	Suspected (ORBIC 2010b)	Yes
Low northern sedge	*Carex concinna*	--	--	2	Moist to dry forests in the montane and subalpine zones (E-flora BC 2010).	Suspected (ORBIC 2010b)	Yes (PacifiCorp 1993)
Cordilleran Sedge	*Carex cordillerana*	--	--	2	Moist to dry meadows, shaded rocky slopes in the montane or subalpine zones (E-flora BC 2010)	Suspected	Yes
Yellow bog sedge	*Carex gynocrates*	--	--	2	Bogs, swamps, fens and wet meadows in the upper montane to alpine zones (E-flora BC 2010)	Suspected	Yes
Slender sedge	*Carex lasiocarpa* var. *americana*	--	--	2	Bogs, swamps, shorelines, marshes and fens in the lowland, steppe and montane zones (E-flora BC 2010).	No	No
Intermediate sedge	*Carex media*	--	--	2	This species is found near perennial streams and ponds and in moist meadows at an elevation of 4,900 to 7,120 ft (WNHP 2010).	Suspected	Yes
Small-footed sedge	*Carex micropoda*	--	--	2	Moist meadows, stream banks, seeps, snowbeds and areas irrigated by meltwater at various elevations (E-flora 2010).	Suspected	Yes
Spikenard sedge	*Carex nardina*	--	--	2	Dry fellfields, ridgecrests, rock outcrops, meadows and scree slopes in the alpine zone (E-flora BC 2010).	Suspected (ORBIC 2010b)	Yes
A sedge	*Carex pelocarpa*	--	--	2	Grows on alpine slopes, ridge crests, and rocky lakeshores between 8,860–12,140 ft (E-flora 2010).	Suspected	Yes
Russet sedge	*Carex saxatilis*	--	--	2	Grows on poorly developed soils in wet meadows and boggy areas, especially near streams and lakes at mid to high elevations (USFS 2010e).	Suspected	Yes
Dark Alpine Sedge	*Carex subnigricans*	--	--	2	Grows in moist-mesic meadows and along lakes and streams above 8,200 feet (Yates 2009, E-flora 2010).	No	No
Native Sedge	*Carex vernacula*	--	--	2	A high-elevation subalpine-alpine species of rocky substrates (Yates 2009).	No	No

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Holmgren Rustic paintbrush	*Castilleja flava*	--	--	2	Sagebrush foothills between 6,500-9,000 feet (Hitchcock and Cronquist 1973).	No	No
Fraternal paintbrush	*Castilleja fraterna*	SOC	--	1	Alpine meadows and talus slopes in Wallowa Mountains (Hitchcock and Cronquist 1973).	Suspected	Yes
Purple alpine paintbrush	*Castilleja rubida*	SOC	--	1	Rocky, open ground on alpine summits between 7,350-9,840 feet (Oregon flora Project 2010)	No	No
Fee's Lipfern	*Cheilanthes feei*	--	--	2	Occurs on limestone cliff crevices, outcrops and steep slopes, from 850 to 2,650 feet elevation (WNHP 2010).	No	No
Steller's rock-brake	*Cryptogramma stelleri*	--	--	2	This species grows on moist, shaded cliffs and ledges at middle and upper altitudes in the mountains. (WNHP 2010).	Suspected	Yes
A Cyperus	*Cyperus lupulinus ssp. lupulinus*	--	--	2	In well-drained, open roadsides, fields, pine barrens, and dunes (E-floras 2010).	Suspected	Yes
Bolander's spikerush	*Eleocharis bolanderi*	--	--	2	Fresh, often summer-dry meadows, springs, seeps, stream margins in elevation between 3,280–11,155 feet (E-floras 2010).	Suspected	Yes
White cushion erigeron	*Erigeron disparipilus*	--	--	2	Dry rocky hillsides (University of Washington 2010).	Suspected (ORBIC 2010b)	Yes
Englemann's daisy	*Erigeron engelmannii var. davisii*	SOC	--	2	Woods, meadows, and open hillsides from foothills to mid-elevation mountains (Hitchcock and Cronquist 1973).	Suspected	Yes
Diffuse stickweed	*Hackelia diffusa* var. *diffusa*	--	C	4	Shaded areas, cliffs, talus, wooded flats and slopes at lower elevations (WNHP 2010).	No	No

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Three-flowered Rush	*Juncus triglumis* var. *albescens*	--	--	2	An alpine species that grows in wet meadows, on edges of streams and river bars, and near snow banks. It grows in wet microsites with shallow soils or saturated sandy gravel that are subject to needle ice disturbance or frost hummocks (USFS 2010e).	Suspected	Yes
Bellard's kobresia	*Kobresia bellardii*	--	--	2	Often dry to somewhat moist places in high montane areas above timberline (Hitchcock and Cronquist 1973).	Suspected	Yes (PacifiCorp 1993)
Simple kobresia	*Kobresia simpliciuscula*	--	--	2	Grows in alpine areas in moist, peaty soils found in bogs, wet meadows, and along the edges of beaver ponds. It does well in calcareous habitats having pH 5.8 to 7.2. It also grows well in frost-shattered limestone, limestone grassland, boggy calcareous meadows, sugar limestone, and calcareous springs (USFS 2010e).	Suspected	Yes (PacifiCorp 1993)
Aristrulate lipocarpha	*Lipocarpha aristrulata*	--	--	2	Grows in moist soil and mud, often comprised of fine sand and silt, in bottomlands, sandbars, and beaches at low elevations of 330 to 1,300 feet (WNHP 2010).	No	No
Northern twayblade	*Listera borealis*	--	--	2	Generally montane in moist or wet forest conditions of variable light (Hitchcock and Cronquist 1973)	Suspected	Yes (PacifiCorp 1993)
Greenman's desert parsley	*Lomatium greenmani*	SOC	LT	1	This species occurs between approximately 7,700 to 8,600 feet in the Wallowa Mountains. It prefers open subalpine meadows, fell fields and eroded ridge tops with islands of subalpine fir-white bark pine *(Abies lasiocarpa-Pinus albicaulis)* (USFS 2010d).	Suspected (ORBIC 2010b)	Yes
Membrane-leaved monkeyflower	*Mimulus hymenophyllus*	SOC	C	1	Occurs in wet, mesic forests in the Snake River Canyon between elevation of 2,790 and 4,265 feet (Oregon Flora Project 2010).	No	No
Stalked-leaved monkeyflower	*Mimulus patulus*	--	C	4	Moist basaltic seeps, ephemeral seeps with fine gravel in relatively undisturbed, winter-wet, summer-dry canyon grasslands (WNHP 2010).	No	No

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
MacFarlane's four o'clock	*Mirabilis marfarlanei*	LT	LE	1	Rock slides and canyon walls, in sandy to gravelly talus in the Snake and Imnaha River Canyons (Oregon Flora Project 2010).	No	No
Least phacelia	*Phacelia minutissima*	SOC	C	1	Ephemerally moist open places at middle elevations (4,600 to 8,200 feet) in the mountains (WNHP 2010).	Yes	Yes
Henderson phlox	*Phlox hendersonii*	--	--	2	Moderate to high elevation mountains (Hitchcock and Cronquist 1973).	Suspected	Yes
Small Northern bog-orchid	*Platanthera obtusata*	--	--	2	A facultative wetland species that occurs in damp or wet places in forests with an average canopy cover of 50 percent, marshes, bogs, meadows, and along stream banks. Elevations range from 800 to 5,000 feet. (WNHP 2010).	Yes	Yes (PacifiCorp 1993)
Wallowa primrose	*Primula cusickiana*	--	--	2	Mid-montane to subalpine (Hitchcock and Cronquist 1973).	Suspected (ORBIC 2010b)	Yes
Rough pyrrocoma	*Pyrrocoma scaberula*	--	--	1	Occurs in large tracts of natural grasslands in the Palouse and Snake River Canyons/Camas Prairie regions (Bjork, C. and M. Darrach 2009).	No	No
Bartonberry	*Rubus bartonianus*	SOC	C	1	Occurs in Snake River Canyon on rock talus and cliff crevice, or forms thickets along stream banks (USFS 2010d, Oregon Flora Project 2010).	No	No
Farr's willow	*Salix farriae*	--	--	2	Wet to moist meadows and stream banks in the montane and subalpine zones (E-flora BC 2010)	Suspected (ORBIC 2010b)	Yes (PacifiCorp 1993)
Wolf's willow	*Salix wolfii*	--	--	2	Occurs in stream banks, springs, wet meadows, and bogs between 6,500-12,450 feet (E-flora 2010)	Suspected	Yes
Wedge-leaf saxifrage	*Saxifraga adscendens* ssp. *oregonenesis*	--	--	2	Moist cliffs, ledges, and scree slopes in the alpine zone (E-flora BC 2010).	Suspected	Yes

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Spalding's catchfly	*Silene spadlingii*	LT	LE	1	Occurs primarily within open grasslands with a minor shrub component and occasionally with scattered conifers. It is found most commonly in the Idaho fescue/snowberry association at elevations of 1,900-3,050 feet. Populations have been found on all aspects, although there seems to be a preference for north face slopes (WNHP 2010).	No	No
Violet suksdorfia	*Suksdorfia violacea*	--	--	2	Moist rocky ledges, crevices and shady sandy places in the montane and subalpine zones (E-flora BC 2010).	Suspected	Yes
Mountain townsendia	*Townsendia montana*	--	--	2	Grows in meadows and granite and limestone ridges at elevations between 6,560–10,170 ft (E-flora 2010).	Suspected (ORBIC 2010b)	Yes
Parry's townsendia	*Townsendia parryi*	--	--	2	Dry rocky slopes in the alpine zone between 4,900 and 8,200 feet (E-flora BC 2010).	Suspected	Yes
American globeflower	*Trollius laxus var. albiflorus*	--	--	2	Wet to moist meadows and stream banks in the subalpine and alpine zones (E-flora BC 2010).	Suspected	Yes
Lesser bladderwort	*Utricularia minor*	--	--	2	An obligate wetland species that occurs in low nutrient lakes and peatbog pools in the lowland and montane zones at elevations from 135 to 4,000 feet (WNHP 2010).	No	No

3.6 Recreation and Land Use

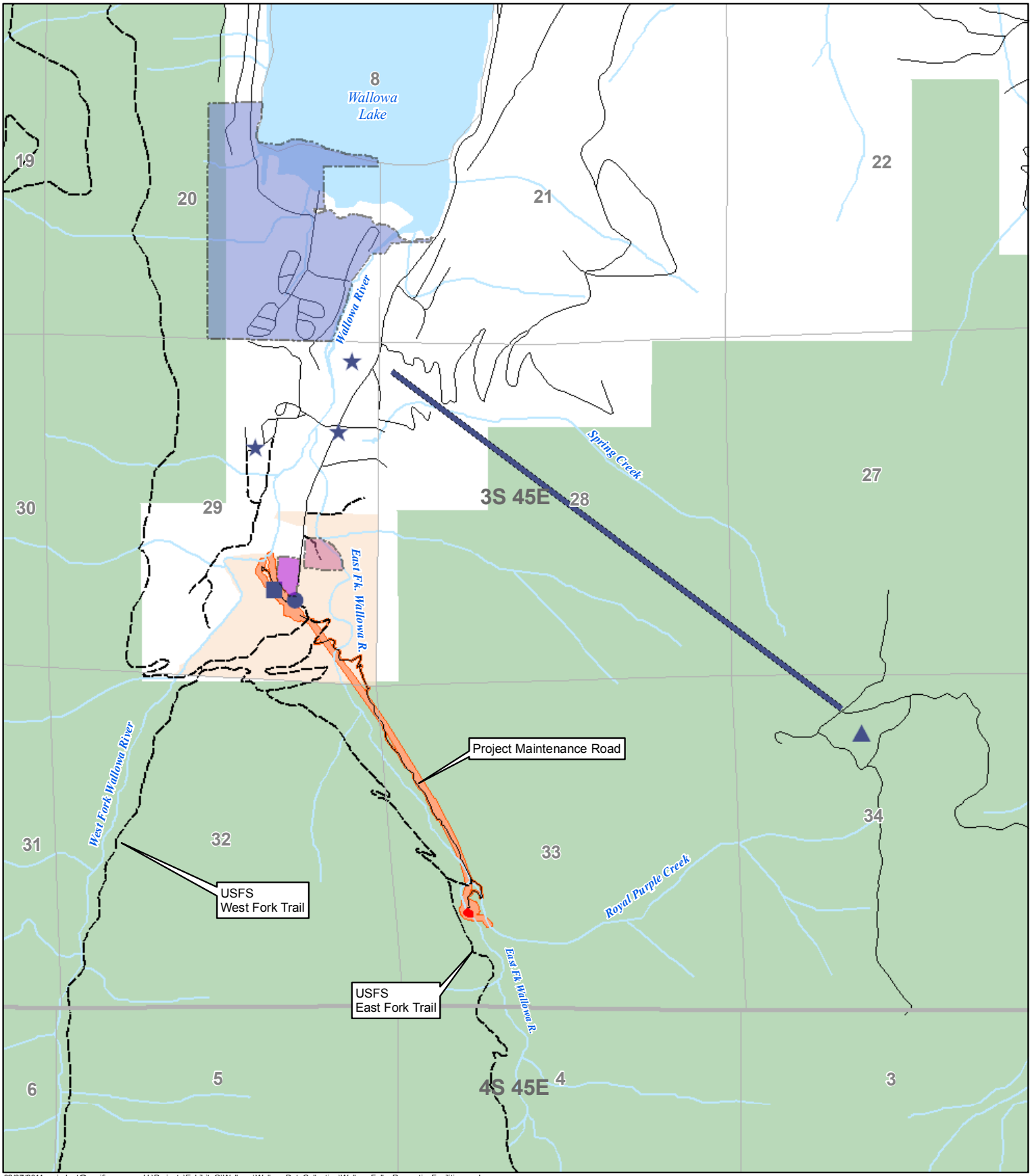
Recreational uses of lands within the Project area include camping, hiking, horseback riding, day-use/picnicking and fishing. There are no specific requirements to provide recreation facilities in the current Project license. However, PacifiCorp has developed and continues to manage Pacific Park, a 10 unit campground along the Project tailrace on lands owned by the company but outside the current Project boundary. The Project forebay access road does provide public access to the bypass reach on National Forest and company lands, and receives some hiking and equestrian use. Additionally, there are two wood benches and a user defined trail at the Project forebay. This area is within the Wallowa-Whitman National Forest and is managed by the U.S. Forest Service. Photos of recreation facilities in the Project area are provided in Appendix C.

The Form-80 recreation use report for Pacific Park filed with FERC in 2009 reported recreation use in 2008 of 541 total user days and a peak weekend average of 60 user days. The campground is used under a reservation system and is managed and maintained by PacifiCorp. Facility capacity is estimated at 75 percent. Data on recreation use of National Forest lands within the Project area including the forebay access road and forebay was not available at the time of this writing.

Additional recreation facilities in the immediate vicinity of the Project include the USFS managed trailhead adjacent to the powerhouse, USFS managed East Fork and West Fork trails, Eagle Cap Wilderness, Little Alps State Park (day use), Wallowa Lake State Park (day use and camping), Wallowa Lake Tramway, two private campgrounds and a church camp. The little Alps State Park and a State Park maintenance facility are on lands owned by PacifiCorp and leased to the Oregon State Parks and Recreation Department. A map of recreation facilities in the Project vicinity is shown in Figure 3.6.1.

There are no shoreline buffer zones within the Project area, nor is there a shoreline management plan for the Project forebay.

The current Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP) was published in February 2008 and is effective through 2012. The SCORP identifies a number of important demographic and social changes facing outdoor recreation providers in the coming years including a rapidly aging Oregon population, fewer Oregon youth learning outdoor skills, an increasingly diverse Oregon population and Oregon's physical activity crisis. These issues are then described in detail and key planning recommendations are made on a programmatic basis rather than regionally. Results and key findings identified in the SCORP that have relevance to the Project are listed below:



02/07/2011 gisdept@pacificorp.com U:\Projects\Exhibit_G\Wallowa\WallowaDataCollection\WallowaFalls_RecreationFacilities.mxd

Figure 3.6.1
Project Vicinity
Recreation Facilities

N

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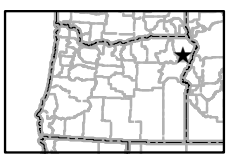
Feet



Wallowa County, Oregon

PacifiCorp Ownership
Wallowa Whitman NF

Oregon State Parks
Wallowa Lake State Park
Little Alps State Park
OSP Maintenance Facility

Legend

Recreation Facility/Area
Private Campground
Mount Howard
USFS Trailhead
Pacific Park - PacifiCorp Operated
Wallowa Lake Tramway

Project Area
Project Forebay
Road
Trail
Stream
Water Body
Section
Township/Range

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GIS Support Services
Solutions Group
gisdept@Pacificorp.com

Data are projected in UTM Zone 11, NAD83, meters.

- Walking and\or hiking is the top outdoor recreation activity engaged in across all age groups and ethnic groups both in terms of participation rate and intensity.
- Camping in tents was the preferred youth program activity across all youth age categories.
- Tent camping in a park setting will also expose children to a variety of other preferred youth outdoor activities such as biking, swimming, fishing, horseback riding, hiking, and unstructured general play.

The SCORP planning effort also included a county-level analysis to identify priority Projects for the distribution of Local Government Grant Program funds for both close-to-home areas (located within an urban growth boundary (UGB) or unincorporated community boundary and dispersed areas (located outside of these boundaries). A support document for the SCORP titled Local Government Grant Program Rating Criteria Point Summary (OPRD No date) describes the larger process used to distribute funds through the state administered Local Government Grant Program, and summarizes the results of the county level needs assessment (Pers. Comm. Terry Bergerson, OPRD, October 2010). A total of 220 public recreation providers across the state of Oregon completed an online survey by rating the importance of county-level funding need for a variety of recreation Projects in their jurisdiction in the coming five years. Data was collected and analyzed to identify need in each of Oregon's 36 counties.

Dispersed area needs for Wallowa County in order of importance include dispersed walk-in tent camp sites, non-motorized trails, and non-motorized boat launches. The county-level data was also combined to identify statewide need. Statewide dispersed area needs in order of importance include non-motorized trails, group campgrounds and facilities, nature study/wildlife viewing sites, overnight camping facilities and interpretive displays.

The Project is not within or adjacent to a river segment included in or under study for inclusion in the National Wild and Scenic Rivers System or State protected status. A 10-mile section of the Wallowa River from its confluence with the Minam River to its confluence with the Grande Ronde River was designated Wild and Scenic in 1996. This section is approximately 45 miles downstream of the Project.

No Project lands are designated as or under study for inclusion as a Wilderness Area or component of the National Trails System. The Eagle Cap Wilderness boundary is approximately 0.5 miles south of the Project forebay.

Regionally important recreation areas in the Project vicinity include the Wallowa-Whitman National Forest, Wallowa Lake State Park, and the Eagle Cap Wilderness Area.

Non-recreational land uses within and/or adjacent to the Project area include hydropower production, aquatic and terrestrial habitat, open space and timber production.

3.7 Aesthetic Resources

The Wallowa Falls Project is located in a heavily forested mountainous area. Local topography has been shaped largely by glaciation. The visual character of this area is dominated by the

conifer forest breaking into high elevation rock outcrops and talus slopes on steep canyon sides. This character is modified somewhat by the development of access roads, trails, parking areas, recreational homes, park facilities and other recreational facilities near the Project. Noise associated with recreational activities in this area, as well as operation of the Project generator, alter somewhat the area's aesthetic nature. Photos showing the general visual character and setting of the Project facilities are provided in Appendix C.

3.8 Cultural Resources

There are no known historic or archaeological sites in the Project area that have been determined eligible for or listed on the National Register of Historic Places (NRHP). Consultation with the Oregon State Historic Preservation Office during the last Federal Energy Regulatory Commission licensing process determined that there were no known National Register-eligible properties in the Project vicinity at the time the license was issued. By letter dated December 13, 1984, the Oregon State Historic Preservation Officer (SHPO) stated that the Project would have no effect upon the properties listed in or eligible for inclusion in the NRHP. Additionally, the SHPO stated "…while the Wallowa Falls Hydroelectric Project is over seventy years old and is of historical interest, in our opinion its scope and design are not sufficiently distinctive to meet the criteria of the National Register. Moreover, its role as the principal power supply for the Wallowa Valley was superseded by the Joseph Hydroelectric Project within eight years of its construction."

There have been several pedestrian surveys for archaeological resources conducted in the Project vicinity since the current license was issued. However, other than the Project dam itself, which may be considered a site, no archaeological sites have been recorded in the vicinity (Pers. Comm. Dennis Griffin, OR SHPO, October 2010).

Indian tribes that may attach religious and cultural significance to historic properties within the Project area or in the Project vicinity are listed below:

- Nez Perce Tribe,
- Confederated Tribes of the Umatilla Indian Reservation,
- Confederated Tribes of the Colville Reservation.

PacifiCorp is not currently aware of any historic properties with traditional cultural or religious significance to Indian tribes within the Project area or in the Project vicinity.

3.9 Socio-economic Resources

Wallowa County encompasses over two million acres of land of which the overwhelming majority is committed to uses compatible with open space values, such as: timber production, livestock production, cropland, and designated wilderness and recreation areas (Wallowa County Planning Department. 2010). Over 50 percent of the County's land area is owned by the Federal Government and managed by the United States Forest Service. Table 3.9-1 below presents land use figures from the Wallowa County Comprehensive Plan.

Table 3.9-1 Land Use Figures from Wallowa County Comprehensive Plan.

Land Use Category	Acres	Percent of County
Cropland	101,696	5.0%
Pasture	4,067	0.2%
Range	421,021	20.6%
Private Forest	309,155	15.2%
Other	16,271	0.7%
Federal	1,159,334	57.0%
Urban	16,271	0.7%
Water Area	4,067	2.0%
TOTAL	**2,033,920**	**99.6%**

The U.S. Census Bureau estimated the 2009 population of Wallowa County to be 6889 (U.S. Census Bureau. 2010). The 2000 census recorded a population of 7,226 for the County. Thus, there is an estimated decrease in population of 4.7 percent between 2000 and 2009. Data posted on the Wallowa County Chamber of Commerce website suggests that the population decrease has occurred in the unincorporated portion of the County while the incorporated communities of Enterprise, Joseph, Lostine, and Wallowa have seen slight increases in population since 2000 (Wallowa County Oregon Chamber of Commerce. 2010).

The economy of Wallowa County has traditionally relied heavily on timber production and agriculture and, to a lesser extent, recreation, government, and the arts (Wallowa County Planning Department. 2010). The timber and agriculture sectors of the economy have been in severe decline for several years. Most sectors of the economy are seasonal with the heaviest rate of unemployment experienced during the winter months. Wallowa County's unemployment rate is consistently higher than the Oregon average. To alleviate high seasonal unemployment, development of winter oriented activities and non-seasonal industry is a County Planning Department goal, but Wallowa County's long cold winters will still result in some seasonal employment variations. The Project is operated remotely and requires only occasional on-site operation and maintenance support. On-site operational support is provided on an as-needed basis by local lineman based in Enterprise, OR. Because of this, the Project has only a minor influence on the local labor market.

3.10 Tribal Resources

The Oregon State Legislative Commission on Indian Services has identified the following Native American Indian Tribes as being associated with the region where the Project is located:

- Nez Perce Tribe
- Confederated Tribes of the Umatilla Indian Reservation
- Confederated Tribes of the Colville Reservation

There are no tribal lands within or immediately adjacent to the Project area.

PacifiCorp is not currently aware of any tribal cultural, economic or resource interests that would be potentially affected by continued maintenance and operation of the Project. On July 7, 2010,

PacifiCorp sent letters to the tribes identified above and the U.S. Bureau of Indian Affairs requesting any information on resources potentially affected by the Project. To date, no responses have been received.

3.11 River Basin Description

The Wallowa River Basin covers a drainage area of 950 square miles from its headwaters to its confluence with the Grande Ronde River (USGSa). Ninety five percent (907 sq. mi.) of the basin is along the mainstem of the Wallowa River downstream of the confluence of the East and West Forks. There are three Project-affected tributaries within the basin. The West Fork Wallowa River is approximately 14 miles long and has a drainage area of 33 square miles (USGSb). The East Fork Wallowa River is approximately 7 miles long, with a drainage area of 10 square miles including Royal Purple Creek (USGSc). Royal Purple Creek is considered a sub-basin of the East Fork and is approximately 2 miles long. Per the Projects' State of Oregon water right, up to 15 cfs may be diverted from the East Fork Wallowa River to the Project. A second state water right allows up to one cfs to be diverted from Royal Purple Creek. Combined, up to 16 cfs may be discharged into the West Fork of the Wallowa River by the Project.

Major land uses in the basin including the Project area are federal and private forest, range, and cropland. Primary water uses in the greater Project vicinity include aquatic habitat, irrigation, industrial, and domestic uses.

There is one dam in addition to the two Project diversion dams in the Wallowa River basin. Wallowa Lake Dam is an irrigation dam owned by the Associated Ditch Companies, Inc, of, Joseph, OR. This dam is used for irrigation purposes only and has no electric generation facilities. It is located at the outlet of Wallowa Lake, approximately 5 miles downstream of the Project tailrace.

4.0 PRELIMINARY ISSUES AND STUDIES LIST

4.1 Issues Pertaining to Identified Resources

4.1.1 Geology and Soils

Continued maintenance and operation of the Project has the potential to affect soils through surficial slumping and soil erosion, particularly along the upper portion of the forebay access road.

4.1.2 Water Resources

4.1.2.1 Hydrology

As described in Section 3.2.1 above, hydrologic data for the Project affected river reaches is incomplete. Stream flow data will be relevant to the assessment of in-stream flow needs, potential future power generation, and effects on water quality and habitat conditions, particularly in the bypass reach. Therefore, additional stream flow gaging to develop a more complete record of hydrologic conditions in the Project area and East Fork Wallowa River bypass reach is warranted.

4.1.2.2 Water Quality

ODEQ currently designates Project waters and the East Fork Wallowa River as bull trout spawning and rearing habitat which carries with it stringent criteria, especially with respect to water temperature (OAR 340-041-0028(4)(f)).

Within the small, incomplete temperature data-set available, deviations outside the ODEQ temperature criterion under confirmed monitoring conditions are unknown at this time. Because of the short time-span of the currently available data-set, it is not known if or what temperature deviations occur within the Project tailrace. If temperature deviations do occur within the Project area, it remains to be seen whether they occur on an annual basis or are an anomaly from one year to the next. Concurrently, because of the lack of corresponding forebay to tailrace temperature data, it is unknown what contribution the Project has to water temperature. Based on this, additional long-term water quality monitoring of a suite of water quality parameters within the Project area is warranted for comparison to state water quality standards.

4.1.3 Fish and Aquatic Resources

Based on the fact that no data exists on the benthic macroinvertebrate community within the Project waters and the East Fork bypass reach, issues concerning species that reside within these waters are unknown and warrant further documentation especially with concern to composition and relative abundance.

Rainbow and brook trout use of, as well as relative abundance within, Project waters and the East Fork bypass reach should be further examined. The only data currently available stems from the annual salvages of the Project tailrace during planned de-watering events. Trout residing within

the diverted and bypassed portion of the East Fork Wallowa River need to continue to be managed per the ODFW Statewide Trout Management Plan (ODFW 1987).

With the recent re-discovery of bull trout residing within the Project vicinity their current use of the Project waters and the East Fork bypass reach as it relates to foraging, migration, over-wintering, and spawning needs to be identified and monitored in accordance with the USFWS 2002 Bull Trout Draft Recovery Plan (USFWS 2002).

Bull trout inhabiting waters upstream of Wallowa Lake reside within the Grande Ronde Recovery Unit as out-lined in the draft recovery plan. Four key issues were identified in the draft recovery plan specific to the Grande Ronde Recovery Unit and they are as follows:

1. Maintain current distribution of bull trout and restore distribution in previously occupied areas within the Grande Ronde River Recovery Unit.
2. Maintain stable or increasing trends in abundance of bull trout.
3. Restore and maintain suitable habitat conditions for all bull trout life history stages and strategies.
4. Conserve genetic diversity and provide opportunity for genetic exchange (USFWS 2002).

4.1.4 Wildlife and Botanical Resources

There is limited information on the wildlife, wetland, and botanical resources that exist within the Project area. The existing data sources for rivers, streams, and wetlands in the Project area frequently contain inaccuracies that either overestimate the size or show incorrect locations for these resources. Given the Project's small size and limited geographic footprint, the Project and current operations likely have negligible impacts on wildlife and botanical resources. However, baseline information for these resources should be documented as part of the relicensing process to fully assess impacts from future Project activities that require ground disturbance (e.g. access road repair etc).

4.1.5 Recreation and Land Use

The primary issues related to recreation resources in the Project area include the adequacy (both in terms of type of opportunities and facility capacity) of the existing recreation opportunities provided at the Project and their consistency with the goals and objectives of local, state and federal agency plans.

4.1.6 Aesthetic Resources

The small size and scale of the Project facilities suggest they present only a minor intrusion to the visual character of the area. The diversion of up to 16 cfs out of the bypassed reach may affect the visual character of the reach. Noise associated with operation of the Project generator may alter the aesthetic character in the immediate vicinity of the powerhouse to a modest degree. The key issue for aesthetic resources pertains to the consistency of the Project with existing management designations, plans and objectives.

4.1.7 Cultural Resources

There are currently no known cultural resources that have been determined eligible for listing on the NRHP potentially affected by the Project. However, a comprehensive inventory of cultural resources in the Project area of potential effects has not been conducted since the current license was issued in 1986. Survey protocols and evaluation standards have changed considerably since that time. Therefore, a contemporary study to identify NRHP-eligible cultural resources and other resources that are of interest to tribes and may be potentially affected by the Project is warranted.

4.1.8 Socio-economic Resources

As described in Section 3.9 above, the Project has only a minor influence on the local labor market. However, continued operation of the Project will have a modest positive effect on socioeconomic conditions within the region. Although relatively small compared to most hydropower Projects, the power generated by the Project will offset negative impacts associated with non-renewable energy sources. The Project does not produce any solid waste, greenhouse gases or other air pollutants. As a result, the Project helps to maintain local air quality and address concerns about global warming and depletion of the ozone layer. It is expected that the power generated at the Project will meet local electrical load resulting in the majority of economic benefits remaining in the local area. There are no socio-economic issues warranting further study.

4.2 Potential Studies

4.2.1 Geology and Soils

PacifiCorp proposes to conduct a risk and needs assessment of the forebay access road to identify long term surficial soil erosion and slumping potential and possible stabilization measures.

4.2.2 Water Resources

4.2.2.1 Hydrology

PacifiCorp proposes to conduct gaging of Project affected waters including, the two natural inflow points above Royal Purple and East Fork Wallowa diversions, the East Fork Wallowa River bypass reach, and the Project tailrace.

4.2.2.2 Water Quality

PacifiCorp proposes to conduct a study to monitor a suite of water quality parameters (temperature, dissolved oxygen, total dissolved gas, pH, chlorophyll, conductivity, turbidity) within the two natural inflow points above Royal Purple and East Fork Wallowa diversions, the bypassed East Fork Wallowa River, the Project forebay, and the Project tailrace. A special emphasis will be placed on temperature and dissolved oxygen measurements during the May – October time-frame. A one-time assessment of selected heavy metals also will be included.

4.2.3 Fish and Aquatic Resources

PacifiCorp proposes to conduct the following studies of fish and aquatic resources:

Aquatic and Riparian Habitat Survey of the Project Tailrace and Bypassed East Fork Wallowa River

Evaluate and quantify all fish habitat within the Project tailrace and bypassed East Fork Wallowa River using methods described in the USDA-FS Region 6 Stream Inventory Handbook (Forest Service, 2010).

Water Flow Evaluation as it Pertains to Habitat in the East Fork Wallowa River

Evaluate the total habitat currently available within the bypassed East Fork Wallowa River at current license minimum instream flows. After habitat mapping, identify the most relevant method (Tennant, Instream Flow Incremental Methodology, discharge to wetted width) to estimate and quantify how the total habitat within the study area changes during alternative flow regimes.

Analysis of Stream Macroinvertebrates Residing in the Project Tailrace and Bypassed East Fork Wallowa River

Take one seasonal (spring, summer, fall) sample of stream macroinvertebrates at selected sites within the low gradient portion of the bypassed East Fork Wallowa River and the Project tailrace using a stream kick-net or Serber Sampler to quantify species composition and relative abundance.

Evaluation of Fish Use of the Project Tailrace and Bypassed East Fork Wallowa River

Conduct electro-fishing and snorkel surveys to gain a better understanding of seasonal (spring, summer, fall) presence/absence, species composition, relative abundance and spatial and temporal distribution of fish in the Project tailrace and bypassed East Fork Wallowa River.

Evaluate Extent of Bull Trout Use of the Project Tailrace and Bypassed East Fork Wallowa River

An attempt will be made to identify a bull trout staging area within Wallowa Lake to aid in the capture and tagging of available individuals with a half-duplex PIT tag (13mm or 23mm tag, depending on fish size). Regardless of whether or not a staging area is identified, all bull trout of appropriate size captured within the Project area or vicinity thereof will be tagged with a half-duplex PIT tag. Upon completion of capture/tagging activities and if a sufficient number of tags are deployed, set up PIT arrays within the Project tailrace and East Fork Wallowa River to better understand bull trout migratory patterns and survival.

4.2.4 Wildlife and Botanical Resources

PacifiCorp proposes to conduct the following studies of wildlife and botanical resources to identify potential impacts of continued operation of the Project (e.g. access road repair etc).

Vegetation Cover Type Mapping

This study will map the type and extent of plant species composition to determine the quantity and quality of wildlife habitat within the Project area.

Noxious Weed Surveys

This survey will document the location and extent of noxious weed infestations within the Project area.

Riparian and Wetland Delineation and Mapping

This study will delineate and map wetland boundaries and ordinary high water marks for all rivers and streams within the Project area.

Sensitive Plant Surveys

This study will inventory and map locations of any rare, endangered, threatened, and special – status plant species within the Project area.

Wildlife Observations

While conducting the 4 botanical studies identified above, wildlife observations will be recorded anecdotally. No protocol wildlife surveys are proposed.

4.2.5 Recreation and Land Use

Based on the identified relevant recreation issues within the Project area listed above, PacifiCorp proposes the following recreation resource and land use studies:

Existing Recreation Facilities and Opportunities Assessment

Existing recreation facilities and opportunities (recreation resource supply) in the Project vicinity will be identified and mapped.

Recreation Use and Needs Assessment

Use of recreation facilities in the Project study area including Pacific Park, the USFS- Trailhead, Little Alps State Park, and Wallowa Lake State Park will be summarized. PacifiCorp proposes to conduct a recreation user survey for one recreation season (May-September) at Pacific Park. The purpose of the survey will be to characterize current recreation user opinions on the adequacy of existing facilities and opportunities in the Project area. A questionnaire will be distributed to all camping groups upon check-in. A Projection of future recreation demand for

recreation opportunities in the Project area will be based on a review of existing local, state, and federal management plans, consultation with agency representatives, and survey data.

Evaluation of Project Consistency with Existing and Planned Land Uses

PacifiCorp will conduct an evaluation of the potential impacts of continued Project operation on existing land uses (timber production, hydroelectric generation, residential, etc…), zoning, planned use, and adopted policies of the Wallowa-Whitman National Forest and Wallowa County within and adjacent to the Project area. The evaluation will be based on a review of adopted land use plans, specifically the Wallowa-Whitman National Forest Land and Resource Management Plan and the Wallowa County Comprehensive Plan, review of land ownership and consultation with respective planning staff. Any inconsistencies with stated objectives outlined in these plans will be described. If appropriate, a discussion with the USFS and County Planners will be conducted to resolve potential Project related conflicts with existing land use plans.

4.2.6 Aesthetics and Scenic Resources

PacifiCorp proposes the following aesthetic resource studies:

Inventory of Existing Aesthetic Conditions Due to Project Facilities and Operations

A detailed description, including photo documentation, of the location, size, and visual characteristics of each Project facility will be prepared. The study will also include photo documentation of a range of flows in the Project bypass reach.

Evaluation of Project Consistency with Existing Aesthetic Designations, Plans or Management Objectives

Visual compatibility of the Project facilities with the existing landscape will be based on the USFS Visual Management System. PacifiCorp will identify local, state and federal goals for aesthetic and scenic quality in the Project area following a review of the Wallowa-Whitman National Forest Plan, Wallowa county general plan and other relevant documents. PacifiCorp will also consult with appropriate agencies to identify proposed modifications to the existing plans.

4.2.7 Cultural Resources

PacifiCorp proposes to conduct the cultural resource studies described below in the Project's Area of Potential Effects (APE). The APE will be identified through consultation with the Oregon SHPO, appropriate tribes, and agencies. Cultural resources that may be present in the Project area include extant historic period structures, archaeological sites and Indian traditional cultural properties.

Inventory of Historic Buildings and Structures

PacifiCorp will conduct background research at the SHPO, and appropriate repositories for previous studies on recorded historic buildings within the APE. Field surveys will record and

evaluate the historic era hydropower facilities including the two dams, water conveyance system, powerhouse and associated out-buildings. PacifiCorp will prepare a brief historic context statement for the study area and compare the characteristics of the buildings and structures with the criteria the NRHP to evaluate which structures may be eligible for listing. Inventory forms and NRHP eligibility recommendations will be submitted to SHPO for review.

Pedestrian Survey of Archaeological Sites

PacifiCorp will conduct background research at the SHPO and other repositories to identify recorded archaeological sites within the APE. This information will be used to develop a detailed study plan for field survey of the APE. Project archaeologists will prepare a brief context for the study area and then use the available information to form an opinion on the NRHP eligibility of any sites that are discovered. Inventory forms and NRHP eligibility recommendations will be submitted to SHPO for review.

Traditional Properties Study

PacifiCorp will research ethnographic and ethnohistoric literature to prepare a context statement for the study area of traditional Indian land and resource use. Researchers will then consult with each of the potentially affected tribes to discuss any concerns they may have about potential Project effects on traditional places and resources, including the places and resources discussed in Section 3.10 above. Tribal concerns about confidentiality could possibly preclude a site specific inventory of traditional cultural places.

4.3 Relevant Resource Management Plans

Section 10(a)(2)(A) of the Federal Power Act (FPA), 16 U.S.C. section 803 (a)(2)(A), requires the Commission to consider the extent to which a Project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the Project.

The Commission will accord FPA section 10(a)(2)(A) comprehensive plan status to any federal or state plan that:

(1) is a comprehensive study of one or more of the beneficial uses of a waterway or waterways;
(2) specifies the standards, the data, and the methodology used; and,
(3) is filed with the Secretary of the Commission.

The filed documents for the state of Oregon and the United States that are listed in the Commission's July 2010 List of Comprehensive Plans were reviewed to determine their applicability to the Project.

4.3.1 Applicable Comprehensive Plans

A Commission-listed Comprehensive Plan was determined to be applicable to the Project if the following criteria were met:

(1) The Project is under the jurisdiction of the plan.
(2) The Project is within the boundary of the waterway(s) that receive a beneficial uses from the plan.
(3) The plan's specified standards, data, and methodologies can be applied to the Project.

Of the 115 listed plans, the following 33 were determined to be applicable and will be reviewed during relicensing to ensure that the Project is consistent with the plan's goals and objectives. Some of the Commission-listed plans have been updated and the current version is not listed. In these cases, PacifiCorp will review the most current version of each listed plan title.

1. Bureau of Land Management. U.S. Forest Service. 1996. Status of the Interior Columbia Basin: Summary of scientific findings. Portland, Oregon. November 1996.
2. Department of the Army, Corps of Engineers. Portland District. 1993. Water resources development in Oregon. Portland, Oregon. 78 pp.
3. Forest Service. 1990. Wallowa-Whitman National Forest land and resource management plan. Department of Agriculture, Baker City, Oregon. April 1990.
4. Governor's Hydroelectric Planning Group. 1985. Preliminary site resource inventory: report to the 63rd Legislative Assembly. Salem, Oregon. March 1985. 146 pp.
5. Hydro Task Force and Strategic Water Management Group. 1988. Oregon comprehensive waterway management plan. Salem, Oregon.
6. National Park Service. 1982. The nationwide rivers inventory. Department of the Interior, Washington, D.C. January 1982.
7. Northwest Power and Conservation Council. 2009. Columbia River Basin fish and wildlife program. Portland, Oregon. Council Document 2009-09. October 2009.
8. Northwest Power and Conservation Council. 2010. The Sixth Northwest conservation and electric power plan. Portland, Oregon. Council Document 2010-09. February 2010.
9. Northwest Power and Conservation Council. 1988. Protected areas amendments and response to comments. Portland, Oregon. Council Document 88-22. (September 14, 1988).
10. Oregon Department of Energy. 1987. Oregon final summary report for the Pacific Northwest rivers study. Salem, Oregon. November 1987. 89 pp.
11. Oregon Department of Environmental Quality. 1978. Statewide water quality management plan. Salem, Oregon. November 1978. Seven volumes.
12. Oregon Department of Fish and Wildlife. 1986. Oregon Bighorn sheep management plan. Portland, Oregon. November 1986. 17 pp.
13. Oregon Department of Fish and Wildlife. 1987. The statewide trout management plan. Portland, Oregon. November 1987. 77 pp.
14. Oregon Department of Fish and Wildlife. 1987. Trout mini-management plans. Portland, Oregon. December 1987. 58 pp.
15. Oregon Department of Fish and Wildlife. 2003. Oregon's elk management plan. Portland, Oregon. February 2003.
16. Oregon Department of Fish and Wildlife. 1993. Oregon black bear management plan, 1993-1998. Portland, Oregon. 33 pp.
17. Oregon Department of Fish and Wildlife. 1993. Oregon wildlife diversity plan. Portland, Oregon. November 1993. 512 pp.

18. Oregon Department of Fish and Wildlife. 2006. Oregon cougar management plan. Roseburg, Oregon. May 2006.
19. Oregon Department of Fish and Wildlife. 2001. Oregon wildlife and commercial fishing codes: 2001-2002. Portland, Oregon.
20. Oregon Department of Fish and Wildlife. 1995. Biennial report on the status of wild fish in Oregon. Portland, Oregon. December 1995. 217 pp.
21. Oregon Department of Fish and Wildlife. 1996. Species at risk: Sensitive, threatened, and endangered vertebrates of Oregon. Portland, Oregon. June 1996.
22. Oregon Department of Fish and Wildlife. 1997. Oregon plan for salmon and watersheds. Salem, Oregon. December 1997.
23. Oregon Department of Fish and Wildlife. 2006. Oregon conservation strategy. Salem, Oregon. February 2006.
24. Oregon Department of Transportation. 1985. Grande Ronde and Wallowa River scenic waterway study. Salem, Oregon. June 1985. 51 pp.
25. Oregon State Game Commission. 1963-1975. Fish and wildlife resources - 18 basins. Portland, Oregon. 21 reports.
26. Oregon State Parks and Recreation Department. Oregon Outdoor Recreation Plan (SCORP): 2003-2007. Salem, Oregon. January 2003.
27. Oregon State Parks and Recreation Division. 1987. Recreational values on Oregon Rivers. Salem, Oregon. April 1987. 71 pp.
28. Oregon Water Resources Board. 1973. Surface area of lakes and reservoirs. Salem, Oregon. 43 pp.
29. Oregon Water Resources Commission. 1987. State of Oregon water use programs. Salem, Oregon. 295 pp.
30. Oregon Water Resources Department. 1988. Oregon water laws. Salem, Oregon.
31. Pacific Fishery Management Council. Appendix A - identification and description of Essential Fish Habitat, adverse impacts, and recommended conservation measures for salmon: Amendment 14 to the Pacific coast salmon plan. Portland, Oregon. August 1999. 146 pages.
32. U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C
33. U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. Environment Canada. May 1986.

4.3.2 Qualifying Comprehensive Plans Deemed Not Applicable

A Commission-listed Comprehensive Plan was determined to be not applicable to the Project if the following criteria were not met:

1. The Project is under the jurisdiction of the plan
2. The Project is within the boundary of the waterway(s) that receive a beneficial uses from the plan.
3. The plan's specified standards, data, and methodologies can be applied to the Project

Of the 115 listed plans, the following 82 were determined to not be applicable to the Project and will not be reviewed during relicensing.

1. Bureau of Land Management. 1990. Resource assessment of the Grande Ronde River. Department of the Interior, Baker, Oregon. August 1990.
2. Bureau of Land Management. 1993. Wallowa & Grande Ronde Rivers final management plan. Department of the Interior, Baker City, Oregon. December 1993. Chapters 1-3.
3. Bureau of Land Management. 1985. A five-year comprehensive anadromous fish habitat enhancement plan for Oregon coastal rivers. Department of the Interior, Portland, Oregon. May 1985. 20 pp.
4. Bureau of Land Management. 1989. Baker resource management plan. Department of the Interior, Baker, Oregon. July 1989. 151 pp.
5. Bureau of Land Management. 1985. John Day resource area management plan. Department of the Interior, Burns, Oregon. August 1985. 40 pp.
6. Bureau of Land Management. 1986. Two Rivers resource area management plan. Department of the Interior, Prineville, Oregon. June 1986. 61 pp.
7. Bureau of Land Management. 1987. Spokane resource area management plan. Department of the Interior, Spokane, Washington. May 1987. 62 pp.
8. Bureau of Land Management. 1989. Brothers/LaPine resource management plan. Department of the Interior, Prineville, Oregon. July 1989. 133 pp.
9. Bureau of Land Management. 1990. Issues and alternatives for management of the lower Deschutes River. Department of the Interior, Prineville, Oregon. January 1990. 72 pp.
10. Bureau of Land Management. 1990. Resource assessment of the Powder River. Department of the Interior, Baker, Oregon. August 1990.
11. Bureau of Land Management. 1990. Final eligibility and suitability report for the Upper Klamath Wild and Scenic River study. Department of the Interior, Klamath Falls, Oregon. March 1990. 131 pp.
12. Bureau of Land Management. 2000. Klamath Falls Resource Area - annual program summary. Klamath Falls, Oregon. July 2000. 139 pp.
13. Bureau of Land Management. 1992. Three Rivers resource management plan. Department of the Interior, Hines, Oregon. September 1992. 232 pp.
14. Bureau of Land Management. 1992. South Fork of the Walla Walla River area plan amendment. Department of the Interior, Vale, Oregon. August 1992. 29 pp.
15. Bureau of Land Management. 1992. Quartzville Creek National Wild and Scenic River management plan. Department of the Interior, Salem, Oregon. November 1992. 54 pp.
16. Bureau of Land Management. 1993. Donner and Blitzen National Wild and Scenic River management plan. Department of the Interior, Hines, Oregon. May 1993. 116 pp.
17. Bureau of Land Management. 1995. Roseburg District resource management plan. Department of the Interior, Roseburg, Oregon. June 1995. 216 pp.
18. Bureau of Land Management. 1995. Medford District resource management plan. Department of the Interior, Medford, Oregon. June 1995. 248 pp.

19. Bureau of Land Management. 1995. Eugene District resource management plan. Department of the Interior, Eugene, Oregon. June 1995. 263 pp.
20. Bureau of Land Management. 1995. Coos Bay District resource management plan. Department of the Interior, North Bend, Oregon. May 1995. 99 pp.
21. Bureau of Land Management. 1995. Salem District resource management plan. Department of the Interior, Salem, Oregon. May 1995. 76 pp.
22. Bureau of Land Management. 2003. Draft-Upper Klamath River management plan. Department of the Interior, Lakeview, Oregon. April 2003.
23. Bureau of Land Management. 1996. High desert management framework proposed plan amendment and final environmental impact statement for the Lake Abert area of critical environmental concern. Department of the Interior, Lakeview, Oregon. February 1996. 42 pp.
24. Bureau of Land Management. Bureau of Reclamation. 1992. Lower Crooked Wild and Scenic River (Chimney Rock segment) management plan. Department of the Interior, Prineville, Oregon. October 1992. 60 pp.
25. Bureau of Land Management. Forest Service. Oregon State Parks and Recreation Department. 1992. Middle Deschutes/Lower Crooked Wild and Scenic Rivers management plan. Department of the Interior, Prineville, Oregon. Department of Agriculture, Ochoco National Forest. December 1992.
26. Bureau of Land Management. Forest Service. 1994. Standards and guidelines for management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. Washington, D.C. April 13, 1994.
27. Bureau of Land Management. 1993. Lower Deschutes River management plan. Department of the Interior, Prineville, Oregon.
28. Bureau of Land Management. Forest Service. 1993. North Fork Crooked River management plan. Department of the Interior, Prineville, Oregon. Department of Agriculture, Ochoco National Forest. April 1993. 30 pp.
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5.0 SUMMARY OF CONTACTS

5.1 List of Contacts by Mail

On July 7, 2010 the following entities were sent a letter requesting any existing information pertinent to the preparation of the PAD:

Bureau of Indian Affairs, Umatilla Agency, P.O. Box 520, Pendleton, OR 97801

Confederated Tribes of Umatilla, Tribal Historic Preservation Officer, 46411 Timine Way, Pendleton, OR 97801

Nez Perce, Tribal Historic Preservation Officer, P.O. Box 305, Lapwai, ID 83540

Confederated Tribes of the Colville Reservation, Tribal Historic Preservation Officer, PO Box 150 Nespelem, WA 99155

USDA FS Pacific Northwest Region, Mike Gerdes, 3160 NE 3rd St., Prineville, OR 97754

ODFW, Colleen Fagan, Northeast Region, 107 – 20th St., LaGrande, OR 97850

ODEQ, Marilyn Fonseca, Water Quality Division, 811 SW 6th Avenue, Portland, OR 97204

USFWS, La Grande Fish & Wildlife Office, 3502 Hwy 30, LaGrande, OR 97850

USDOI NPS, Pacific West Region

NMFS Northwest Regional Office, LaGrande Field Office

EPA Region 10, Oregon Operations Office, 805 SW Broadway, Suite 500, Portland, OR 97205

OPRD, State Historic Preservation Officer, 725 Summer St. NE, Suite C, Salem OR 97301

OPRD, Attn: Alexandra Phillips, 725 Summer St. NE, Suite C, Salem OR 97301

Wallowa County Planning Dept., 101 S. River St., Room B-1, Enterprise, OR 97828

City of Baker City, Attn: Planning Department, P.O. Box 650, Baker City, Oregon 97814

City of Haines, P.O. Box 208, Haines, OR 97833

City of La Grande, Planning Division, P.O. Box 670, La Grande, OR 97850

Joseph Chamber of Commerce, P.O. Box 13, Joseph, OR 97846

City of Enterprise, City Administrator's Office, 108 N.E. 1st St., Enterprise, OR 97828

5.2 List of Individuals Contacted for Assistance

The following individuals were contacted by phone or email for assistance in the preparation of the PAD:

Alexandra Phillips, OPRD
Bill Knox, ODFW
Cliff Alton, Oregon Biodiversity Information Center
Colleen Fagan, ODFW
Deb Schueller, ODGMI
Dennis Griffin, OPRD, SHPO
Karen Quigley, Oregon State Legislative Commission on Indian Services
Mike Hayward, Wallowa County Commissioner
Mike Gerdis, USDA Forest Service
Terry Bergerson, OPRD

5.3 List of Meetings with Interested Parties

The following meetings were held with interested parties regarding the relicensing of the Project:

A meeting with Mike Gerdis of the U.S. Forest Service was held on July 19, 2010, in Portland, Oregon to provide a Project introduction and information exchange with the U.S. Forest Service.

A site visit was held at the Project on September 16, 2010. Due to the high probability of inclement weather during the FERC scoping process in winter/spring 2011, FERC staff suggested an early site visit to the Project be held. Participants toured the Project and PacifiCorp staff provided background information on Project operations and natural resource conditions. Notice was published in the Federal Register by the Commission and the following individuals attended:

Matt Cutlip, Commission
Mark Ivy, Commission
Mike Gerdes, USFS
Colleen Fagan, ODF&W
Jerry Hustafa, USFS
Gary Miller, USFWS
Michelle Day, NMFS
Jeff Brown, NMFS
Todd Honeywell, Oregon State Parks and Recreation Department
Russ Howison, PacifiCorp
Kendel Emmerson, PacifiCorp
Briana Weatherly, PacifiCorp
Jeremiah Doyle, PacifiCorp
George Becker, PacifiCorp

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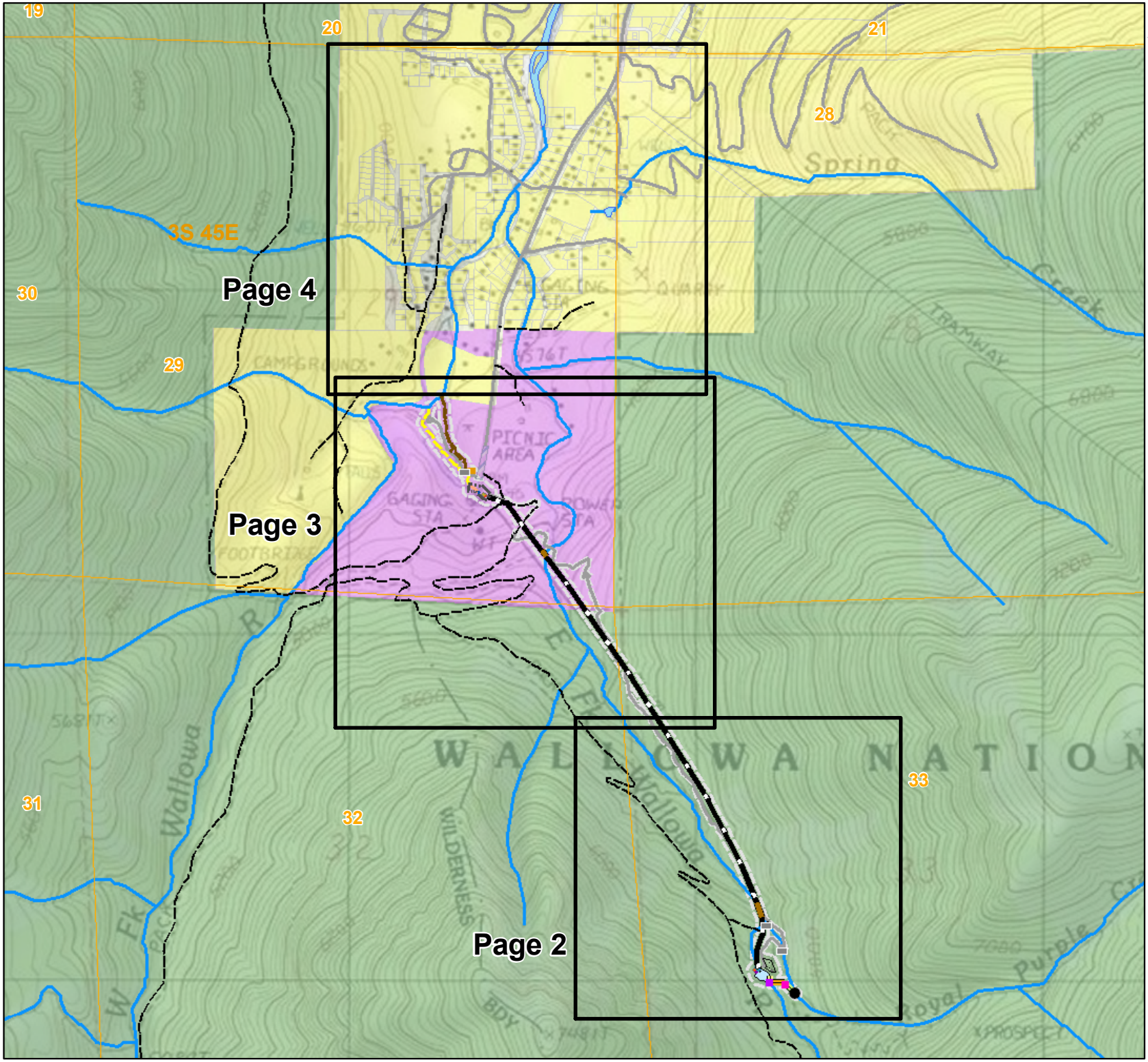
Appendix A

Project Maps



Appendix A
Wallowa Falls Project and Vicinity

Page 1

Legend

- Proposed Project Boundary
- Road
- Trail
- Trailhead Parking
- CULVERT
- anchor block
- royal purple pipe outlet

PacifiCorp Facility

- Recreation Storage Shed
- Royal Purple Diversion
- WALLOWA FALLS PLANT FENCE
- 7.2 KV TRANSMISSION LINE
- ELEVATED TRESTLE
- LOW LEVEL OUTLET
- ROYAL PURPLE DIVERSION CHANNEL
- ROYAL PURPLE FLOWLINE - BURRIED
- ROYAL PURPLE FLOWLINE - EXPOSED
- SPILLWAY CATWALK
- WALLOWA FALLS PENSTOCK
- LINED TAILRACE
- TAILRACE - UNLINED
- UNLINED TAILRACE - MAIN CHANNEL
- TAILRACE SIDE CHANNEL - NORTHERN BORDER
- TAILRACE SIDE CHANNEL CENTERLINE
- INTAKE AND CONTROL STRUCTURE
- LAYDOWN AND STORAGE AREA
- SPILLWAY
- STORAGE SHED
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- WALLOWA FALLS FOREBAY
- WALLOWA FALLS POWERHOUSE
- PLSS-Section
- SDEADMIN.ADM_TOWNSHIP
- Waterbody
- Stream

Land Ownership - County Data

- Other
- PACIFICORP
- USA

0 500 1,000 Feet

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

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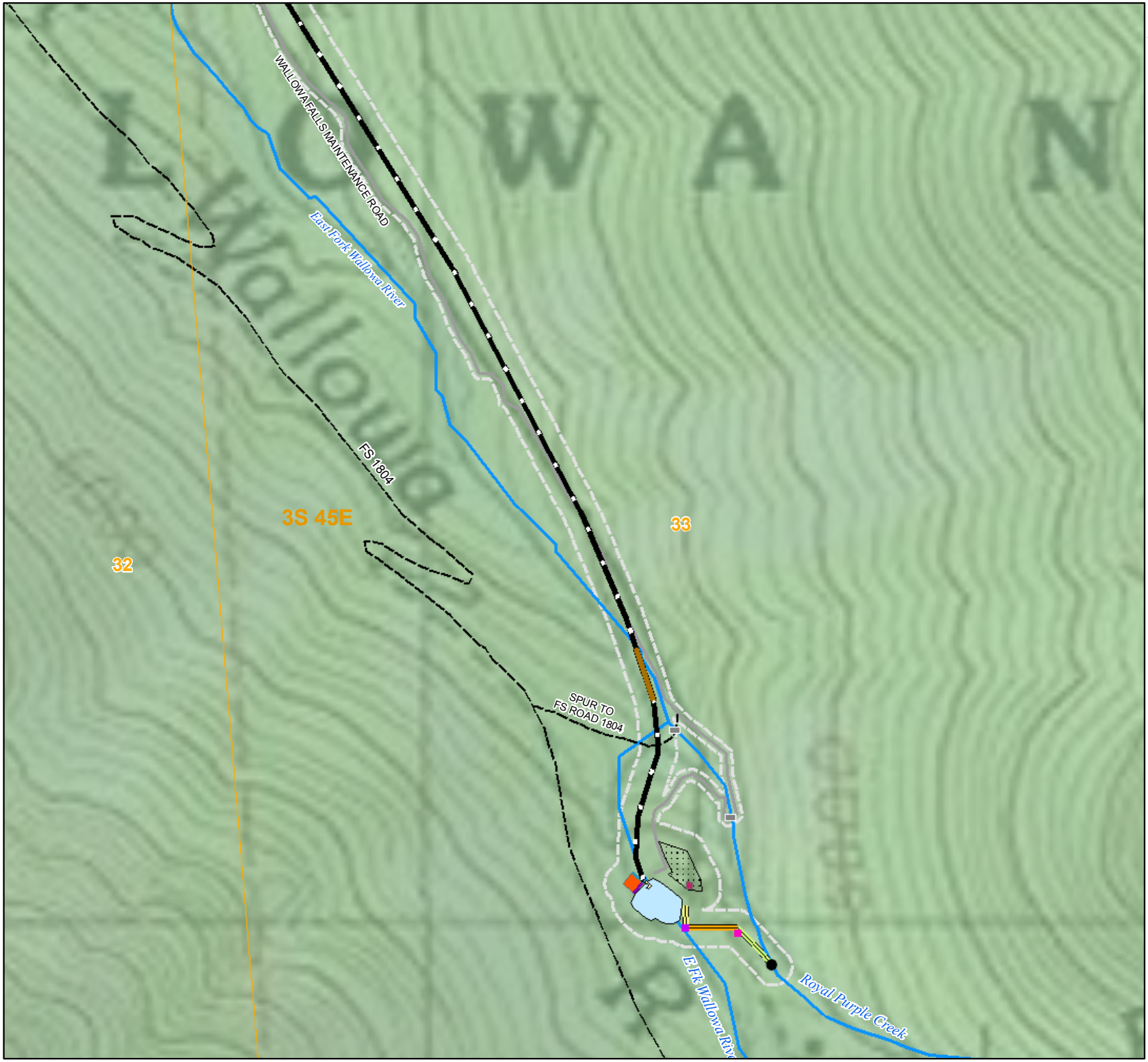
GIS Support Services
Solutions Group
gisdept@Pacificorp.com

Data are projected in UTM Zone 10, NAD83, meters.

Appendix A
Wallowa Falls Project and Vicinity

Page 2



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Land Ownership - County Data

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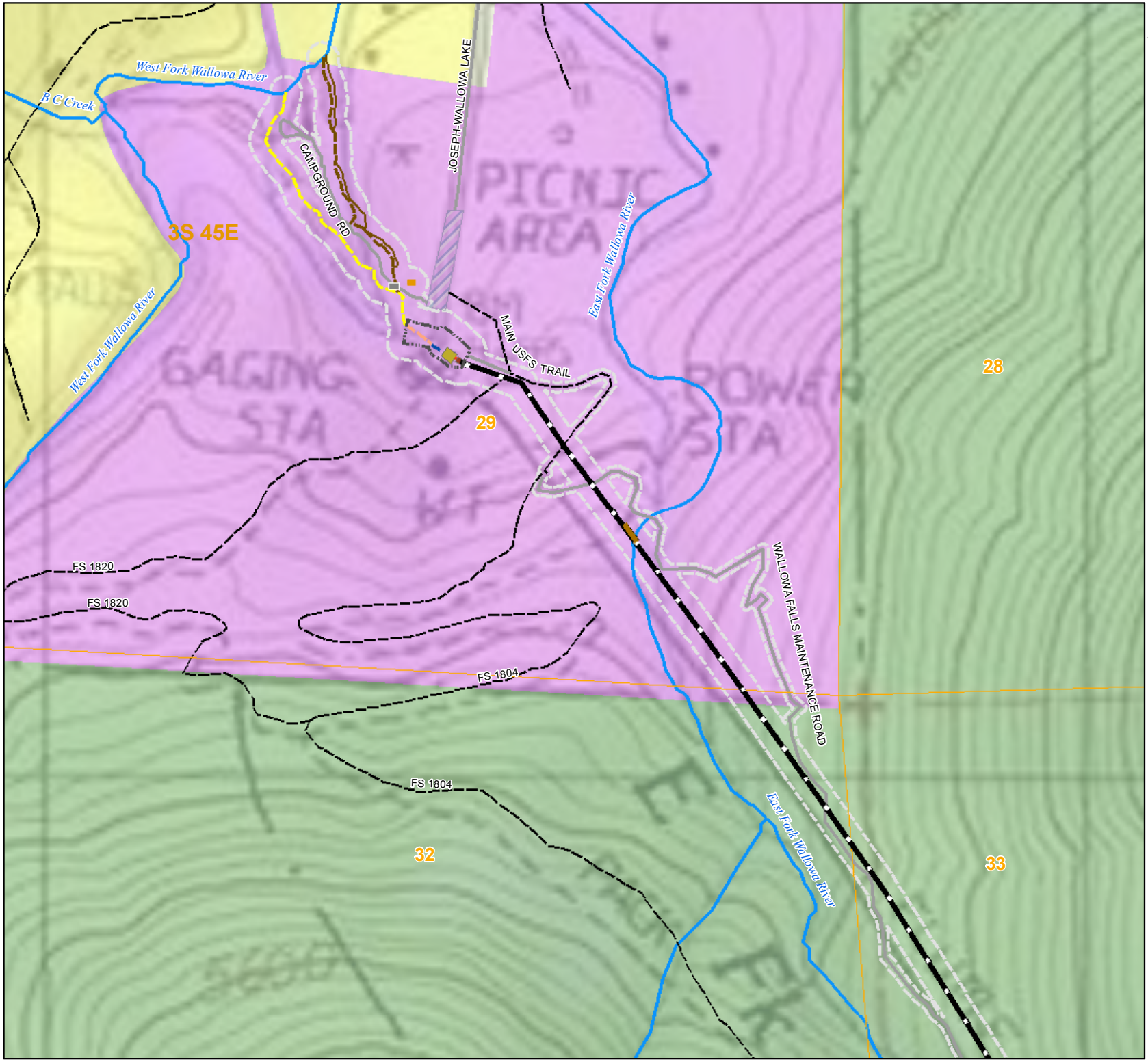
Appendix A
Wallowa Falls Project and Vicinity

Page 3



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Land Ownership - County Data

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- USA

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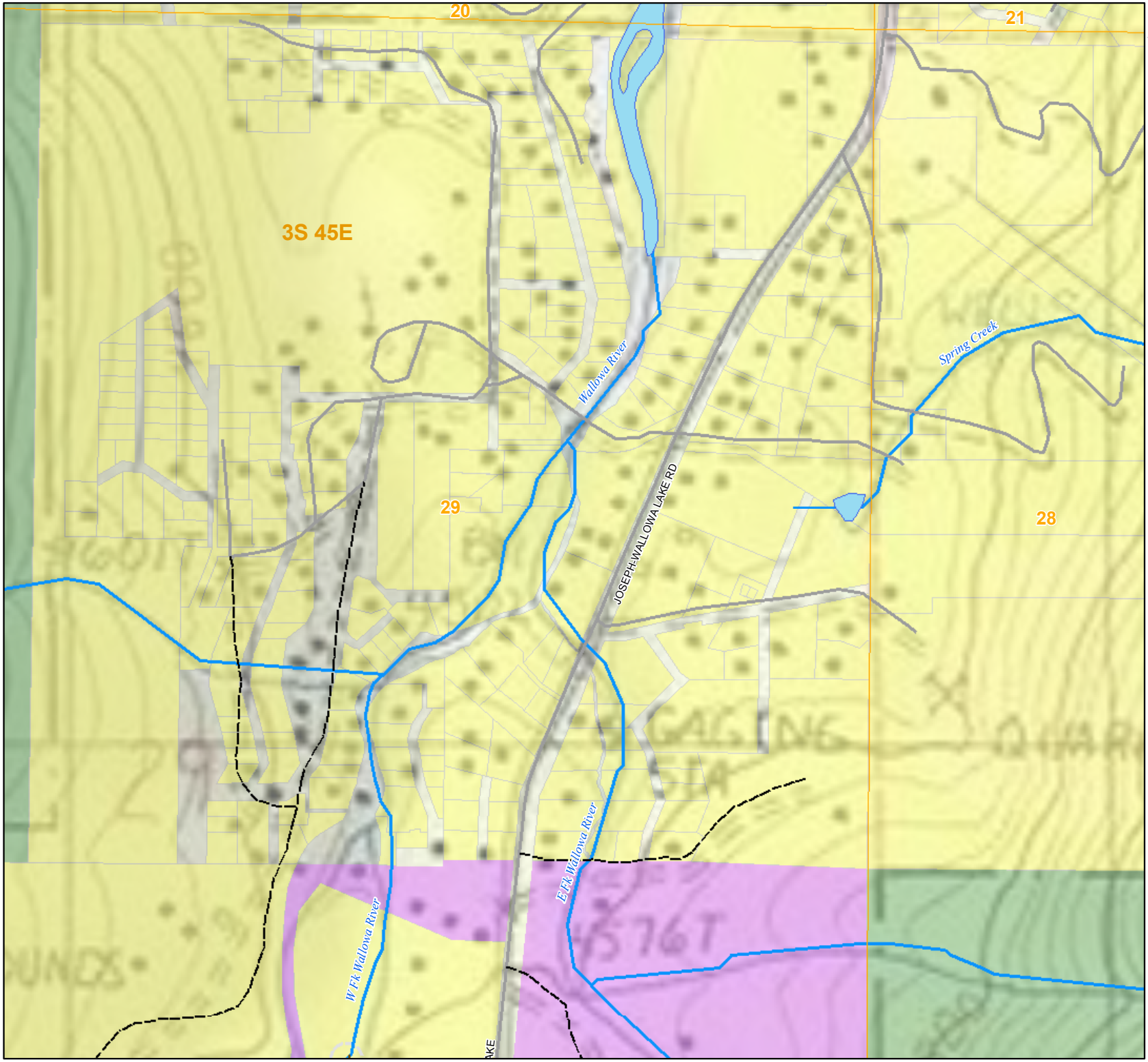
Appendix A
Wallowa Falls Project and Vicinity

Page 4



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Data are projected in UTM Zone 10, NAD83, meters.

Appendix B

Plant List – Wallowa Falls Reparation Project

Plant List
Wallowa Falls Reparation Project
Survey Dates 06/18/92 and 07/13/92-07/15/92

LYCOPODIACEAE	*Lycopodium annotinum*	stiff clubmoss
OPHIOGLOSSACEAE	*Botrychium spp.*	grape-fern
POLYPODIACEAE	*Cryptogramma crispa var. acrostichoides*	rock-brake
	Cystopteris fragilis	bladder-fern
	Gymnocarpium dryopteris	oak-fern
	Polystichum minutum var. minutum	sword-fern
	Woodsia scopulina	Rocky mountain woodsia
CUPRESSACEAE	*Juniperus communis var. montana*	common juniper
	Juniperus scopulorum	Rocky mountain juniper
PINACEAE	*Abies grandis*	grand fir
	Abies lasiocarpa	subalpine fir
	Larix occidentalis	western larch
	Picea engelmannii	Engelmann spruce
	Pinus contorta	lodgepole pine
	Pinus ponderosa	ponderosa pine
	Pseudotsuga menziesii	Douglas-fir
SALICACEAE	*Populus tremuloides*	quaking aspen
	Populus trichocarpa	black cottonwood
BETULACEAE	*Alnus sinuata*	Sitka alder
URTICACEAE	*Urtica dioica*	stinging nettle
POLYGONACEAE	*Polygonum douglasii*	Douglas' knotweed
	Rumex acetosella	field sorrel
PORTULACEAE	*Montia perfoliata*	miner's lettuce
CARYOPHYLLACEAE	*Arenaria macrophylla*	bigleaf sandwort
	Cerastium vulgatum	common cerastium

RANUNCULACEAE	*Aconitum columbianum*	
	var. columbianum	Columbian monkshood
	Actaea rubra	baneberry
	Aquilegia flavescens	yellow columbine
	Clematis columbiana	
	var. columbiana	Columbia clematis
	Ranunculus uncinatus	
	var. parviflorus	little buttercup
	Thalictrum occidentale	western meadowrue
BRASSICACEAE	*Arabis hirsuta*	
	var. glabrata	hairy rockcress
	Cardamine cordifolia	
	var. lyallii	large mountain bittercress
	Descurainia richardsonii	
	var. viscosa	mountain tanseymustard
	Draba crassifolia	thick leaved draba
SAXIFRAGACEAE	*Heuchera grossularifolia*	
	var. tenuifolia	gooseberry leaved alumroot
	Mitella stauropetala	side-flowered mitella
	Saxifraga arguta	brook saxifrage
	Saxifraga bronchialis	
	var. austromontana	matted saxifrage
	Saxifraga mertensiana	wood saxifrage
	Saxifraga occidentalis	
	var. occidentalis	western saxifrage
GROSSULARIACEAE	*Ribes aureum*	golden currant
	Ribes lacustre	swamp gooseberry
	Ribes viscosissimum	
	var. viscosissimum	sticky current
HYDRANGEACEAE	*Philadelphus lewisii*	mockorange
ROSACEAE	*Amelanchier alnifolia*	western service berry
	Fragaria vesca	woods strawberry
	Fragaria virginiana	strawberry
	Geum macrophyllum	
	var. perincisum	Oregon avens
	Holodiscus discolor	oceanspray
	Physocarpus malvaceus	ninebark
	Potentilla gracilis	
	var. pulcherrima	soft cinquefoil
	Rosa gymnocarpa	bald-hip rose

	Rubus idaeus var. *gracilipes*	red raspberry
	Rubus parviflorus	thimbleberry
	Sorbus scopulina	mountain-ash
	Spiraea betulifolia	birch-leaved spiraea
FABACEAE	*Astragalus canadensis*	Canadian milk-vetch
	Trifolium longipes	stalked clover
	Trifolium repens	white clover
	Vicia americana var. *truncata*	American vetch
ACERACEAE	*Acer glabrum* var. *douglasii*	Rocky Mountain maple
ELAEAGNACEAE	*Shepherdia canadensis*	buffalo-berry
VIOLACEAE	*Viola canadensis* var. *rugulosa*	western canada violet
ONAGRACEAE	*Circaea alpina*	enchanter's nightshade
	Epilobium angustifolium	fireweed
	Epilobium glandulosum var. *glandulosum*	common willow-weed
	Epilobium minutum	small flowered willow-weed
APIACEAE	*Angelica arguta*	sharptooth angelica
	Heracleum lanatum	cow-parsnip
	Ligusticum canbyi	Canby's lovage
	Ligusticum verticillatum	verticillate-umbel lovage
	Osmorhiza chilensis	sweet-cicely
ERICACEAE	*Chimaphila umbellata*	prince's pine
	Monotropa uniflora	indian pipe
	Pyrola chlorantha	green winter-green
	Pyrola secunda	side-bells pyrola
	Pyrola uniflora	single delight
	Vaccinium membranaceum	big huckleberry
	Vaccinium scoparium	grouse whortleberry
GENTIANACEAE	*Frasera speciosa*	giant frasera
	Gentiana amarella	northern gentian
POLEMONIACEAE	*Collomia linearis*	narrow-leaf collomia
	Linanthus septentrionalis	northern linanthus

	Polemonium pulcherrimum var. *calycinum*	showy polemonium
HYDROPHYLLACEAE	*Hydrophyllum capitatum*	ball-head waterleaf
BORAGINACEAE	*Hackelia micrantha*	blue stickseed
	Mertensia paniculata var. *borealis*	tall bluebells
SCROPHULARIACEAE	*Castilleja miniata* var. *miniata*	common paintbrush
	Mimulus guttatus var. *guttatus*	yellow monkey-flower
	Mimulus lewisii	great purple monkey-flower
	Pedicularis racemosa var. *alba*	leafy lousewort
	Penstemon deustus var. *deustus*	hot-rock penstemon
	Scrophularia lanceolata	lance-leaf figwort
	Verbascum thapsus	common mullein
	Veronica americana	American brooklime
	Veronica serpyllifolia var. *humifusa*	thyme-leaved speedwell
PLANTAGINACEAE	*Plantago lanceolata*	ribwort
RUBIACEAE	*Galium triflorum*	fragrant bedstraw
CAPRIFOLIACEAE	*Linnaea borealis*	western twinflower
	Lonicera utahense	Utah honeysuckle
	Sambucus cerulea	blue elderberry
	Symphoricarpos albus	common snowberry
DIPSACACEAE	*Dipsacus sylvestris*	teasel
ASTERACEAE	*Achillea millefolium*	yarrow
	Adenocaulon bicolor	pathfinder
	Anaphalis margaritacea	common pearly-everlasting
	Antennaria racemosa	raceme pussy-toes
	Antennaria umbrinella	umber pussy-toes
	Arnica cordifolia var. *cordifolia*	heart-leaf arnica
	Arnica latifolia var. *latifolia*	mountain arnica
	Artemisia ludoviciana	western mugwort

	Chrysanthemum leucanthemum	moon daisy
	Cirsium canovirens	gray-green thistle
	Erigeron peregrinus	
	ssp. *callianthemus*	
	var. *eucallianthemus*	wandering daisy
	Erigeron speciosus	
	var. *speciosus*	showy fleabane
	Hieracium albiflorum	white-flowered hawkweed
	Matricaria matricarioides	pineapple weed
	Rudbeckia occidentalis	
	var. *occidentalis*	black head
	Senecio crassulas	thick-leaved groundsel
	Senecio triangularis	
	var. *triangularis*	arrowleaf groundsel
	Taraxacum officinale	dandelion
	Tragapogon dubius	yellow salsify
JUNCACEAE	*Juncus drummondii*	
	var. *subtriflorus*	Drummond's rush
	Juncus ensifolius	dagger leaved rush
	Luzula campestris	
	var. *multiflora*	field woodrush
	Luzula parviflora	smallflowered woodrush
CYPERACEAE	*Carex geyeri*	elk sedge
	Carex hoodii	Hood's sedge
	Carex leporinella	sierra-hare sedge
	Carex microptera	small winged sedge
POACEAE	*Agrostis scabra*	tickle-grass
	Bromus vulgaris	
	var. *vulgaris*	Columbia brome
	Calamagrostis rubescens	pinegrass
	Cinna latifolia	woodreed
	Dactylis glomerata	orchard grass
	Deschampsia elongata	slender hairgrass
	Elymus cinereus	
	var. *cinereus*	giant wildrye
	Festuca idahoensis	
	var. *idahoensis*	Idaho fescue
	Koeleria cristata	prairie junegrass
	Melica bulbosa	
	var. *bulbosa*	oniongrass
	Phleum alpinum	alpine timothy
	Phleum pratense	common timothy

	Poa gracillima var. *gracillima*	slender bluegrass
	Poa scabrella	pine bluegrass
	Trisetum spicatum	spike trisetum
LILIACEAE	*Clintonia uniflora*	bead-lily
	Disporum trachycarpum	wartberry fairy-bell
	Smilacina racemosa	false Solomon-seal
	Smilacina stellata	starry Solomon plume
	Veratrum californicum	California false hellebore
ORCHIDACEAE	*Calypso bulbosa*	calypso orchid
	Corallorhiza maculata	spotted coral-root
	Cypripedium montanum	mt. lady's slipper
	Goodyera oblongifolia	rattlesnake orchid
	Habenaria unalascensis	Alaska rein-orchid
	Listera convallarioides	broad-lipped twayblade

Appendix C

Project Photos

Photo 1: Royal Purple Diversion Dam

Photo 2: Royal Purple Pipeline

Photo 3: Project Forebay and East Fork Wallowa River Inlet

Photo 4: Project Forebay and East Fork Wallowa River Inlet

Photo 5: Project Forebay and East Fork Wallowa River Inlet

Photo 6: Project Forebay and Intake Structure

Photo 7: Project Dam

Photo 8: Project Dam

Photo 9: Project Dam Spillway and Upper Bypass Reach

Photo 10: Project Forebay Access Road

Photo 11: Project Forebay Access Road

Photo 12: Project Forebay Access Road and Buried Penstock on Right

Photo 13: Upper Bypass Reach

Photo 14: Upper Bypass Reach

Photo 15: Upper Penstock Trestle

Photo 16: Buried Penstock Section

Photo 17: Upper Penstock Trestle

Photo 18: Lower Penstock Trestle and Bypass Reach

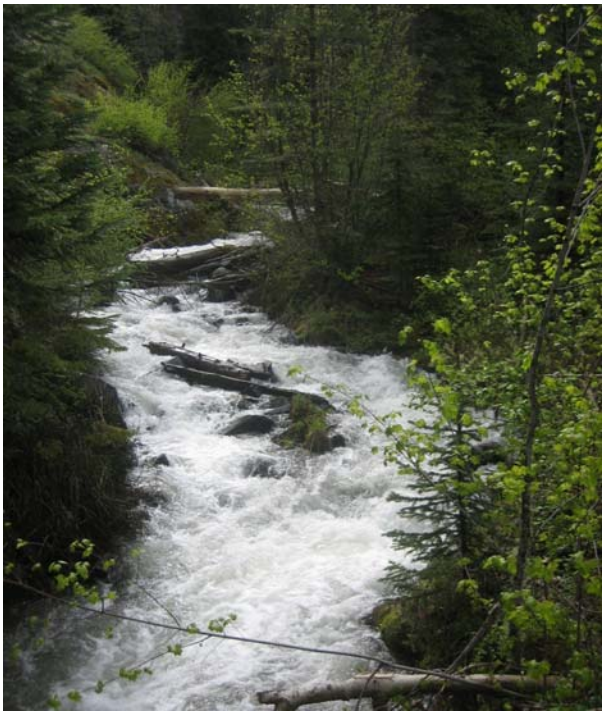

Photo 19: Lower Bypass Reach

Photo 20: Lower Bypass Reach

Photo 21: Lower Bypass Reach

Photo 22: Project Powerhouse and Substation

Photo 23: Project Powerhouse

Photo 24: Generator and Powerhouse Equipment

Photo 25: Project Powerhouse and Tailrace

Photo 26: Tailrace Looking Downstream From Powerhouse

Photo 27: Lower Project Tailrace

Photo 28: Pacific Park Campground

Photo 29: Pacific Park Campground and Tailrace

Photo 30: Pacific Park Campground