Environmental Assessment Wallula to McNary 230-kilovolt Transmission Line Project

Prepared for

U.S. Department of the Interior
Bureau of Land Management
Vale District
Baker Field Office

Bureau of Land Management
DOI-BLM-ORWA-V000-2016-0023-EA

Submitted by

PACIFIC POWER
A DIVISION OF PACIFICORP

March 2016

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Acronyms and Abbreviations

Applicant	Pacific Power
Baker RMP	*Baker Resource Management Plan and Record of Decision* (BLM, 1989)
BFD	bird flight diverter
BIA	USDI Bureau of Indian Affairs
BLM	USDI Bureau of Land Management
BPA	Bonneville Power Administration
CFR	Code of Federal Regulations
CRBG	Columbia River Basalt Group
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CUP	Conditional Use Permit
DEIS	Draft Environmental Impact Statement
DEQ	Oregon Department of Environmental Quality
DOI	Department of the Interior
EA	Environmental Assessment
EFU	Exclusive Farm Use
EO	Executive Order
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
kV	kilovolt
LUD	land use decision
MP	milepost
NESC	National Electric Safety Code
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
OAR	Oregon Administrative Rule
ODFW	Oregon Department of Fish and Wildlife
ORS	Oregon Revised Statute
PEM	palustrine emergent wetland characterized by erect, rooted, nonwoody plants
PM_{10}	particulate matter less than 10 micrometers in aerodynamic diameter
RMP	Resource Management Plan
ROW	right-of-way
SSS	special-status species

UCCP	*Umatilla County Comprehensive Plan*
UCDC	*Umatilla County Development Code*
U.S.	United States
USACE	U.S. Army Corps of Engineers
USBR	USDI Bureau of Reclamation
USC	United States Code
USDI	U.S. Department of the Interior
USFWS	USDI Fish and Wildlife Service
VRM	Visual Resource Management
Wanaket	Wanaket Wildlife Management Area

Introduction/Purpose and Need

1.1 Introduction

PacifiCorp, an Oregon corporation doing business as Pacific Power, proposes to construct a new, 230-kilovolt (kV) transmission (power) line from its Wallula substation near Wallula, Washington, to the Bonneville Power Administration's (BPA) McNary substation near Umatilla, Oregon (Figure 1-1). The total transmission line length would be 29.06 miles, of which 22.33 miles are in Umatilla County, Oregon, and 6.73 miles are in Walla Walla County, Washington. In Oregon, 18.70 miles of the proposed transmission line would be on private property. In Washington, 4.40 miles of the proposed transmission line would be on private property.

The proposed transmission line would cross one parcel owned and managed by the U.S. Department of the Interior (USDI) Bureau of Land Management (BLM) near the BPA McNary substation in Umatilla County, Oregon (Figure 1-1). The length of transmission line across this parcel would be approximately 0.51 mile. To construct the transmission line, Pacific Power must obtain a right-of-way (ROW) easement from BLM to cross this parcel.

1.1.1 Proposed Action

The Proposed Action for this Environmental Assessment (EA) is approval by BLM of the ROW easement across the parcel to construct the Wallula to McNary 230-kilovolt Transmission Line Project (project).

In addition to the Proposed Action, the following federal approvals and permits would be required to construct other segments of the transmission line between Wallula and McNary, outside of the identified parcels:

- BPA—Interconnection Agreement and Crossing Agreements
- U.S. Army Corps of Engineers (USACE)—Clean Water Act Section 404 Nationwide Permit for impacts to waters of the U.S.
- USDI Bureau of Reclamation (USBR)—Form SF299 for canal crossings
- USDI Bureau of Indian Affairs (BIA)/Confederated Tribes of the Umatilla Indian Reservation (CTUIR)—ROW easement
- USDI Fish and Wildlife Service (USFWS)—ROW easement

1.1.2 Project Location

This document addresses transmission line development at one parcel managed by BLM's Vale District (Figure 1-2). The 105-acre parcel—Tax Lot ID 5N281400 1600—is located about 1 mile southeast of BPA's McNary substation at milepost (MP) 2.56 to MP 3.08 along the proposed line. This document refers to the 105-acre parcel as the BLM Property. The BLM Property is in Umatilla County, generally located at the southeast ¼ of Section 14, Township 5 North, Range 28 East (see Figure 1-3).

The Proposed Action is within 250 feet to the north of BPA's existing 500-kV Lower Monumental-McNary transmission line, which has five steel lattice towers on the BLM Property (see Figure 1-3). In 2002, BPA had proposed to construct another transmission line across the BLM Property and analyzed potential impacts to this parcel in the *Wallula Power Project Draft Environmental Impact Statement*

(Wallula DEIS; BPA, 2002). With completion of the DEIS, BPA decided not to move forward with construction of the line because the power plant associated with this transmission line was not constructed.

1.1.3 Applicant

PacifiCorp, an Oregon corporation doing business as Pacific Power
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Portland, OR 97232
(503) 813-7237

1.1.4 Contact Person

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CH2M HILL Engineers, Inc. (CH2M)
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Portland, OR 97201
(503) 872-4734

1.2 Purpose and Need

The Wallula to McNary 230-kV Transmission Line Project is needed to:

- Integrate new resources into the transmission system and satisfy the current and projected demand for electrical transmission brought by regional development of energy resources, predominantly renewable wind
- Satisfy Pacific Power's contractual obligations to transmit electricity for customers within their service area
- Alleviate transmission system restraints
- Strengthen and improve the reliability of the transmission system serving the Boise Cascade plant at Wallula, which is served by Pacific Power's Wallula substation

The purpose of the project is to enable Pacific Power to increase electrical transmission capability and to better integrate energy resources, such as wind. The new line would reinforce the system, provide redundancy, and support the development of renewable resources, resulting in a more robust transmission system that can withstand and support planned and unplanned line outages. The proposed line would enhance regional renewable resource development and provide the transmission capacity required to move the new resources to market.

Both Washington and Oregon have adopted Renewable Portfolio Standards that require Pacific Power to acquire renewable energy resources to meet its retail electric loads (15 percent by 2020 in Washington and 25 percent by 2025 in Oregon). To meet the challenge, Pacific Power and other transmission service providers must develop sufficient transmission capability to allow the renewable resources to be developed and to move new resources to market.

BLM would grant, grant with conditions, or deny Pacific Power's application for a ROW to construct and maintain the proposed transmission line, which would traverse the BLM Property. The need for BLM action is established by the Federal Land Policy and Management Act of 1976 as amended, which requires BLM to respond to applications for an easement across public lands (43 United States Code [USC] 1761).

1.3 Conformance Statement

The Federal Land Policy and Management Act has established a "multiple use" framework for the management of public lands and their resource values, so that the public lands are utilized in a combination that will best meet the present and future needs of the public.

The BLM Property is located within the BLM Baker Resource Area of the Vale District. Management of BLM land within the Baker Resource Area is guided by the *Baker Resource Management Plan and Record of Decision* (Baker RMP) (BLM, 1989). Specific guidance on management of BLM land is provided in the *General Management Direction and Action for the Resources* section of Chapter 2 in the Baker RMP. Specific guidance on establishing utility corridors is provided in the Rights-of-Way subsection (pages 23-24). The Proposed Action is consistent with the guidance provided, specifically, routing the proposed transmission line adjacent to the transmission corridor identified on Map 6 of the Baker RMP. Map 6 shows a power line corridor in the general vicinity of the Proposed Action route. In addition, the Rights-of-Way subsection includes multiple references to siting new facilities adjacent to existing facilities. For example, page 23 states that, "Applicants will be encouraged to locate new facilities adjacent to existing facilities and sites to the extent technically and economically feasible." Page 23 states that, "All right-of-way applications should follow existing corridors wherever practical and will avoid proliferation of separate rights-of-way." For this project, Pacific Power (the Applicant) indicates that the route for the Proposed Action was specifically selected to position the proposed transmission line adjacent to and within 250 feet of BPA's existing 500-kV Lower Monumental-McNary transmission line where it crosses the BLM Property, in accordance with the guidance in the Baker RMP Rights-of-Way subsection.

According to the Baker RMP, the Proposed Action is located on a Zone 2 (Disposal Zone) parcel (BLM, 1989). Zone 2 lands are inefficient to manage because of their small size or isolated location, or have no known or lower resource values.

The development of a high-voltage transmission line in the Proposed Action area would be in conformance with the Baker RMP and would be subject to all applicable standard practices, best management practices, and mitigation measures. The transmission line will be documented and described in detail in BLM's Record of Decision for the Proposed Action.

1.4 Relationship to Statutes and Regulations

This section identifies the statutes and regulations applicable to the Proposed Action and any authorizations, permits, or approvals required.

1.4.1 Federal

- Clean Water Act Section 404 Wetland Fill Permit (USACE)
- Endangered Species Act of 1973 (USFWS)
- Migratory Bird Treaty Act (USFWS)
- Bald and Golden Eagle Protection Act of 1940 (USFWS)
- Federal Land Policy and Management Act of 1976 as amended (BLM)

The Proposed Action must be in accordance with Title V of the Federal Land Policy and Management Act of 1976 as amended (43 USC 1761) and the regulations found in 43 Code of Federal Regulations [CFR] 2800. These regulations govern the granting of the ROW (if approved), determination of cost reimbursement, determination of the rental value, and the compliance and monitoring requirements. Right-of-way decisions become effective upon approval by the Authorized Officer (43 CFR 2801.10 (b)).

1.4.2 State of Oregon

- Removal/Fill Law (Oregon Department of State Lands)
- Construction Stormwater Discharge Permit, National Pollutant Discharge Elimination System (NPDES) (1200-C) (Oregon Department of Environmental Quality [DEQ])
- Water Quality Certification, Clean Water Act Section 401 (DEQ)

The State of Oregon land use system requires that a local government implement Oregon statewide planning goals, Oregon Revised Statutes (ORS), and Oregon Administrative Rules (OAR) through a local comprehensive plan. A local comprehensive plan must be consistent with the statewide planning goals. The state reviews the plan for consistency with statewide planning goals, and if the State determines that the plan is consistent, the plan is deemed to be "acknowledged." State law requires that the local government adopt zoning and development ordinances, which put the acknowledged comprehensive plans into effect. Thus, a local government's comprehensive plan and zoning or development ordinance account for all statewide planning goals and most statutes and administrative rules governing land use.

Transmission lines on EFU-zoned land are "utility facilities necessary for public use" as provided for under ORS 215.283(1)(c). The Oregon Supreme Court has held that transmission lines on EFU-zoned land are considered uses as of right under ORS 215.283(1)(c) and are not subject to conditional use requirements. See *Save Our Rural Oregon v. Energy Facility Siting Council*, 339 Or. 353, 382-384121 P. 3d 1141 (2005). ORS 215.275 sets out what an applicant must prove in order to demonstrate that a utility facility is necessary on EFU land. The criteria in ORS 215.275 for siting a facility on land zoned EFU have been incorporated into state administrative rules at OAR 660-33-130(16).

1.4.3 Local

- Land Use Decision (LUD)/Conditional Use Permit (CUP) (Umatilla County Planning Department)

The BLM Property is within Umatilla County, and land use is regulated by the *Umatilla County Comprehensive Plan* (UCCP) and *Umatilla County Development Code* (UCDC). Umatilla County has adopted a county ordinance to implement the state land use law. See UCDC 152.617(II)(7). The BLM Property is within the North/South Agriculture UCCP designation and Exclusive Farm Use (EFU) zoning district.

The Umatilla County Planning Commission reviewed and approved approximately 22 miles of the Applicant's proposed transmission line route, including the short segment on the BLM Property, which would be constructed as a result of the Proposed Action (Casefile: LUD-083-09 and CUP-1137-08). However, the previously approved LUD and CUP expired December 8, 2014, and a new LUD and CUP application was submitted in August 2015. Once the LUD is reapproved, the Proposed Action would be a permitted use where proposed on EFU-zoned land, consistent with the UCCP and UCDC.

Figure 1-1: Site Vicinity Map

Figure 1-1
Site Vicinity Map
Wallula to McNary 230-kV Transmission Project

Figure 1-2: Proposed Action

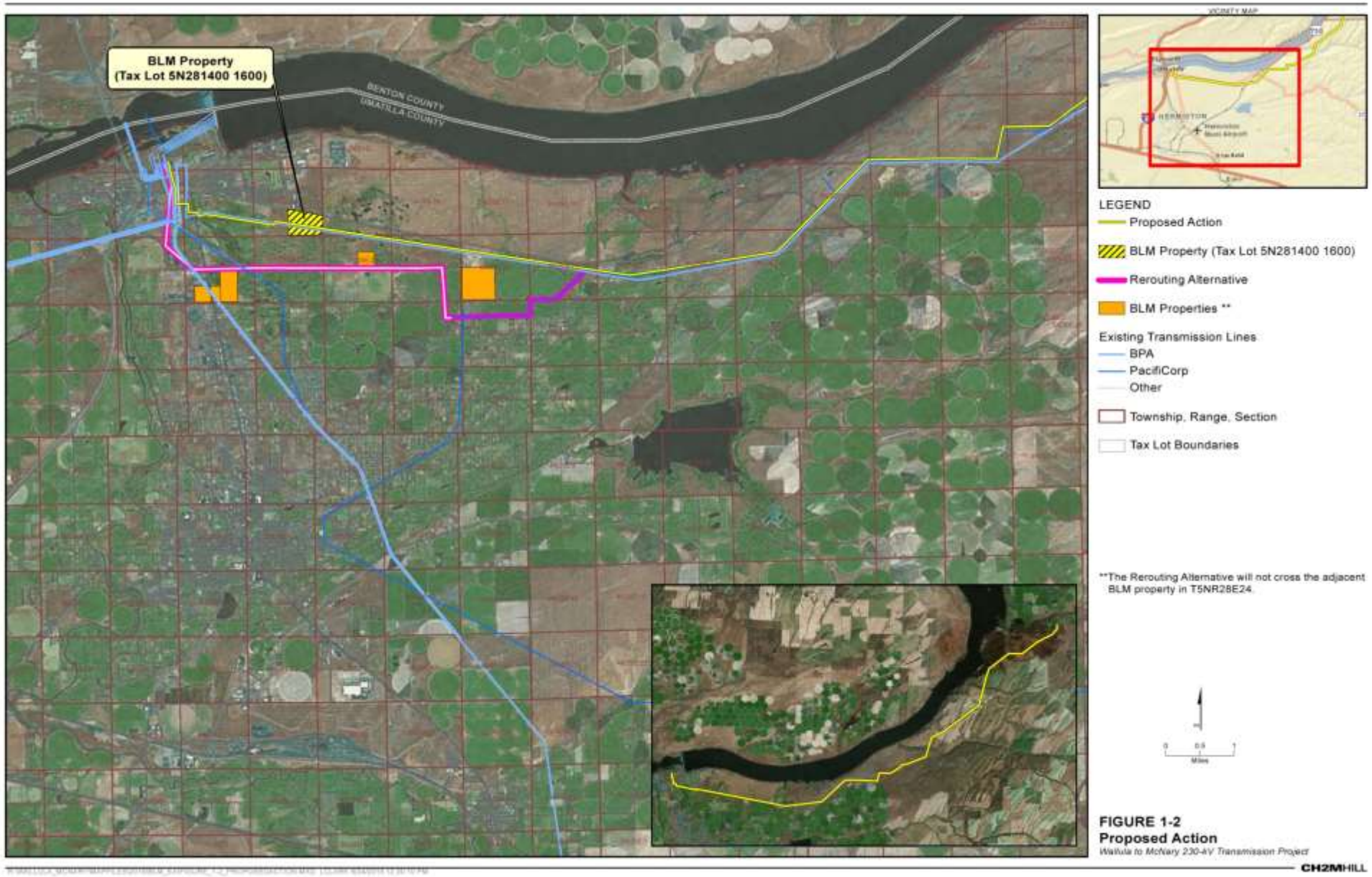
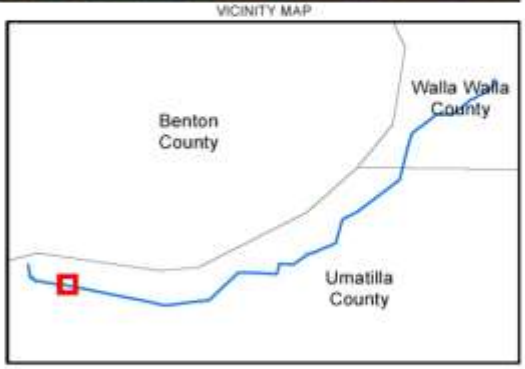


Figure 1-3: Tax Lot Crossed by the Proposed Action

LEGEND

- Proposed Action Milepost
- Proposed Action Transmission Pole Locations
- Existing Steel Lattice Towers
- Proposed Action Centerline
- BPA Existing 500-kV Lower Monumental-McNary Transmission Line
- Tax Lot 5N281400 1600

VICINITY MAP



0 250 500 1,000 Feet

N

FIGURE 1-3
Tax Lot Crossed by the Proposed Action
Wallula to McNary 230-kV Transmission Project

R:\WALLULA_MCNARY\MAPFILES\2015\BLM_EA\FIGURE_1-3_EASEMENTPERMITS.MXD LCLARK 9/24/2015 12:41:07 PM

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Alternatives

This section presents the Proposed Action and No Action alternatives. Additional alternatives to the Proposed Action were considered in the development of this EA, but subsequently were dismissed from further evaluation, as discussed in Section 2.4. Section 2 begins with an overview of the routing considerations for the entire transmission line from McNary to Wallula.

2.1 Overview

2.1.1 Route Considerations

The transmission line route must connect the Wallula and McNary substations, which anchor the termini and constrain the route selection. From the Wallula substation to the McNary substation, the approximate line distance is 29.06 miles in a southwesterly direction across shrub-steppe desert and agricultural land. The proposed route considers easements, structure locations, staging areas, and associated access roads. The overarching routing criteria strive for an alignment that connects the two substations, and lies within 500 feet of existing lines to minimize impacts and maximize conformance with Oregon Department of Energy and Energy Facility Siting Council guidelines, the Baker RMP, and Umatilla County. Initial screening yielded a 300-foot-wide, least-impact study corridor based on minimizing potential land use, cultural, and natural resources conflicts; minimizing the number of distinct land ownerships crossed; minimizing the number of crossings of existing transmission lines; avoiding known developments; and following existing transmission line and road corridors, to the extent practicable.

The corridor alignment was refined through discussions with affected landowners as part of the public outreach process. Attempts have been made to minimize the construction activity and easement acquisition on federal properties, including those managed by the BLM, as well as USACE, BPA, USFWS, CTUIR/BIA, and USBR. Additionally, the route was adjusted at several locations to avoid and minimize impacts to waters of the United States and other sensitive areas, and to be sensitive to landowner preferences for line location. Engineering criteria for pole locations consider terrain and ground clearance requirements. Where a practicable alignment cannot avoid crossing wetlands or other sensitive sites, pole locations have been adjusted to minimize temporary construction impacts and to site permanent structures outside them.

2.1.2 Constraints

The Oregon Department of Energy's guidelines and definition statutes [(ORS) 469.300(11) and ORS 469.300(11)(a)(C)] encourage the co-location of transmission lines in order to minimize environmental and other public impacts. If constrained to a linear corridor within 500 feet of an existing corridor occupied by high-voltage transmission lines with a capacity of 230,000 volts or more, the route alternatives are limited to paralleling: (1) the BPA existing 500-kV Lower Monumental-McNary transmission line and then the Pacific Power existing 230-kV McNary to Walla Walla transmission line; (2) the Pacific Power 230-kV McNary to Walla Walla transmission line; and (3) the Pacific Power McNary to Hinkle 230-kV transmission line and then the Pacific Power McNary to Wallula line. In order, these routes go from shortest to longest.

Other factors constraining the alignment include: (1) the location of an interconnection point at the BPA McNary substation; (2) availability of physical room for the new line with a 125-foot-wide permanent easement; (3) existing land uses and number of landowners along the route for each alternative; (4) the need to cross under (or over) existing lines; (5) the potential need to condemn landowner property to obtain an easement or ROW; and (6) the Umatilla County conditional and land use permit process.

Routing options are most constrained at the substation interconnections as a result of line congestion. At Pacific Power's Wallula substation, there is sufficient room to add equipment (for example, switches and breakers) needed to accommodate the proposed new line without expanding the existing substation footprint. At McNary, BPA would prepare the National Environmental Policy Act documentation for the McNary substation modifications. BPA would be responsible for the modifications if it concludes that the interconnection falls within the scope of their *Business Plan Final Environmental Impact Statement* (BPA, 1995).

In the general area of the City of Umatilla and south of the existing McNary substation, the following constraints were considered during route selection:

- Existing residential and other development on the north-side of U.S. Highway 730 (Highway 730) east of the McNary substation. This development makes it impractical to route the Proposed Action on the north side of Highway 730. This would also not meet ORS 469.300(11)(a)(C).
- Existing commercial development on Lind Road south of Highway 730. This narrows the available space for routing south from McNary.
- The existing BPA 500-kV double-circuit transmission line to the east of the McNary substation interconnection point and two existing BPA 230-kV transmission lines to the west. These lines have the effect of creating a narrow north-south corridor through which the proposed transmission line must pass to reach the McNary substation, or the proposed line would need to cross under the existing BPA lines.
- Expressed landowner concerns regarding the proposed line's location.
- Residential development approximately 1 mile south of McNary substation off U.S. Highway 395. To avoid this development, the proposed line would need to turn east before reaching the development, or continue 0.5 to 1 mile farther south along existing corridors before turning east. There are two BPA and two Pacific Power lines in this area that generally run north-south before turning to the southeast or east and that might have adjacent space for a new 125-foot-wide easement. If not, the existing Pacific Power lines could be converted from single- to double-circuit configuration.

East of the City of Umatilla to State Highway 207, the choices to meet ORS 469.300(11)(a)(C) are to parallel the BPA 500-kV Lower Monumental-McNary line from the McNary substation east to approximately State Highway 702 or to parallel a combination of the two existing Pacific Power transmission lines. Much of the transmission line route would cross agricultural land—pastureland, irrigated land, and dry land farms.

2.1.3 Route Selection

The analysis yielded a route corridor that was then refined through discussions with affected landowners. Adjustments were made to meet landowner concerns over land use impacts. Based on the field study analysis completed on the proposed transmission line route, Pacific Power made adjustments in management practices and design features to avoid or minimize impacts to wetlands, other waters, and other sensitive areas. Ultimately, the proposed transmission line route was selected to minimize impacts of the line, including those at the BLM Property.

As a result of these considerations and constraints, the preferred route would convert 0.7 mile of the existing Pacific Power 230-kV McNary-Walla Walla line from single- to double-circuit configuration, then turn east, crossing under existing BPA 500-kV lines three times to minimize the number of landowners affected and avoid wetlands; then reside to the south and within 500 feet of the BPA Lower Monumental-McNary line (west of the BLM Property); then parallel within 500 feet of the existing Pacific Power McNary-Walla Walla 230-kV line for the next 22.33 miles.

2.2 Description of Proposed Action on BLM Property

Under the Proposed Action, BLM would grant a 0.51-mile-long, 125-foot-wide ROW across the BLM Property to allow construction of a new 230-kV transmission line, including installation of four pole structure sites, and construction of a temporary pulling and tensioning area and access road, as required. Pacific Power's preference is to obtain a perpetual easement or fee title (deed) for the new ROW. However, it is not possible to purchase fee title from BLM. Consequently, a long-term, 125-foot-wide ROW easement would be obtained from the BLM. No additional ROW easement would be needed for guys and anchors because the line at the BLM Property would not contain angle points. BLM would grant a 75 feet x 600 feet temporary easement, or equivalent, allowing Pacific Power to install a 200 feet x 600 feet line pulling and tensioning area during construction. Additionally, BLM would require a temporary easement, or equivalent, for use during construction of the existing access road between Highway 730 and the BPA ROW.

The location of the Proposed Action would be from transmission line MP 2.56 to MP 3.08 parallel to and about 250 feet from the existing BPA 500-kV transmission line. Figure 1-3 presents the location of the ROW, transmission line, and associated structures, along with the existing BPA transmission line. Table 2-1 shows the areas of disturbance on the BLM Property. The table assumes a temporary access road would be constructed approximately two-thirds the length of the Proposed Action (0.35 mile).

Table 2-1. Permanent and Temporary Disturbances of the Proposed Action at the BLM Property

	Disturbed Area (Acres)	
Project Feature	**Temporary [a]**	**Permanent [b]**
Construction Access Road	0.86	NA
Permanent Support Pole Structures (4)	0.92	0.18
Pulling and Tensioning Area[c]	2.75	NA
Total	**4.53**	**0.18**

[a] Assumes a temporary 20-foot-wide access road (new roads only), and 10,000 square feet (100 by 100 feet) temporary disturbance around each structure.

[b] Assumes 1,925 square feet of permanent disturbance around each structure related to leveling.

[c] Based on one pulling and tensioning area, 200 by 600 feet.

Note:

NA = Not applicable. Existing roads would be used for construction, operation, and maintenance of the proposed transmission line wherever possible. The temporary road, and pulling and tensioning area, would be revegetated after construction.

The transmission line would be designed and built according to *Suggested Practices for Avian Protection on Power Lines* (APLIC, 2006), providing a minimum 60-inch-horizontal and 40-inch-vertical separation between phase conductors and between phase conductors and grounded hardware. The ROW easement agreement may specify additional measures that would be implemented to minimize avian impacts. The *Pacific Power Avian Protection Plan* (Pacific Power, 2014) modeled on the APLIC 2006 guidance is included as Appendix A. The proposed transmission line received formal land use approval from Umatilla County on April 2, 2009 (File #LUD-083-08 and CUP-1137-08). However, the previously approved LUD and CUP expired December 8, 2014, and a new LUD and CUP application was submitted in August 2015.

2.2.1 Line Configuration

Figure 1-3 presents the anticipated spacing of the structures on the BLM Property. The Proposed Action would result in four structure sites on the BLM Property, with a total of nine poles installed. The minimum conductor clearances from the ground and other structures would meet the requirements of the National Electric Safety Code (NESC) and Pacific Power standards where the standards exceed the Code requirements.

The proposed transmission line on the BLM Property would be a single-circuit line with three wooden two-pole, H-frame structures, and one wooden three-pole dead-end structure. The three-pole dead-end structure would be located within the pulling and tensioning area at structure site 28 and consist of three phases of one conductor per phase that carries the electrical current making up the single-circuit configuration. The pole structures would support three transmission line conductors. The poles would be approximately 80 feet above ground and inserted approximately 10 feet below ground. See Figures 2-1 through 2-4 for typical configurations and dimensions of the two-pole and three-pole structures. The distance between pole structures would vary depending on topography, sensitive sites that would be crossed, land uses, and ground clearance requirements, and generally would be about 800 feet.

The conductors would use air for insulation; however, conductors would be attached to the structure using insulators to prevent the electricity in the conductors from moving to other conductors, the structure, and the ground.

Two smaller, overhead shield wires would be attached to the top of transmission structures, which are required to provide ground protection of the transmission line from lightning damage. One of the overhead shield wires would be a fiber-optic ground wire used to transmit transmission-system-protection and operating data to the Pacific Power control center where the line operation is controlled to maintain a safe and reliable operating system.

2.2.1.1 Construction

Construction of the transmission line involves layout of the route centerline, creation of access roads to the structure locations, augering of the pole holes, erection of the poles and pole hardware, installation of the conductor, and testing of the line before it is placed in service.

Activities Overview. The Proposed Action would involve the following activities:

- Land surveying the route centerline and 125-foot-wide ROW
- Operating equipment
- Improving existing access road, if needed
- Installing erosion and sediment control measures
- Clearing vegetation
- Developing temporary road where needed
- Developing temporary landing site at each structure
- Auguring the pole holes
- Erecting poles and pole hardware
- Installing guy wires and anchors
- Installing conductors
- Pulling and tensioning the lines
- Testing the line before it is placed in service

Typical Equipment. Typical construction equipment for this type of transmission line consists of the following:

- Pickup trucks
- Line trucks
- Graders
- Bulldozers
- Tractor-trailers
- Cranes
- Harrows
- Broadcast seeders

Vegetation Clearing. Initial construction involves vegetation clearing for access and line operation. Vegetation height within the ROW would be restricted to provide required NESC and North American Electric Reliability Corporation standards for ground clearances to maintain for safe and reliable line operation.

Structure Sites. Each structure site needs level areas (pads) to facilitate the safe operation of equipment such as cranes. The level area required for the location and safe operation of cranes is approximately 55 by 35 feet. The work area would be cleared of vegetation, to the extent necessary, and graded. After line construction, all pads would be restored to approximately original condition.

Trucks would deliver materials required to assemble the transmission structure (including poles, cross arms, insulators, miscellaneous hardware, and stringing sheaves) to each structure site. The structures would be assembled the on the ground, rigged with insulators and string sheaves at each conductor position, raised, and set in place; or individual poles would be placed first, then assembled.

Conductor Installation. A sock line (also known as conductor pilot line or pulling rope) would be installed with a helicopter or ground method to string the ground wire/conductor pulling line. If a helicopter were used for stringing, the sock line would be pulled (strung) from structure to structure by a helicopter and threaded through the stringing sheaves at each structure.

The ground method of stringing the conductors would consist of ropes being draped from the stringing sheaves at each structure. A pilot line would then be strung along the ground and attached to each rope at the structure location. The pilot line would be pulled up to the sheave and pulled through until all sheaves within a pull section have the pilot line installed through the sheaves. At that time, the pilot line would be attached to the pulling line, which would be pulled back through before being attached to the conductor for the final pull-through. The conductor would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end.

Temporary guard structures over obstacles during wire installation would not be required for public protection.

Pulling and Tensioning Area. Pulling and tensioning sites typically are placed within 16,000 feet of each other, unless an angle point on the line route is present. There would be one pulling and tensioning area on the BLM Property, located between MP 2.6 and 2.7. The level area required for the safe operation of pulling and tensioning equipment is approximately 200 feet by 600 feet. A three-pole dead-end structure would be co-located within the pulling and tensioning area. As with structure sites, the pulling and tensioning area would be cleared of vegetation only to the extent necessary. After line construction, the site would be regraded to blend with the natural ground contours, stabilized, and revegetated.

Staging Area. Offsite secure staging areas would be needed for materials and equipment storage. These sites would be identified by the construction contractor and would utilize existing yards with fencing, lighting, and security. No staging area is proposed on the BLM Property.

2.2.1.2 Operations and Maintenance

Specifics of ROW operations and maintenance (O&M) activities would be addressed in the easement agreement between Pacific Power and BLM. Generally, this would include routine, periodic inspection and maintenance, and emergency repairs on the transmission line structures and hardware (PacifiCorp, 2014; Appendix B). Maintenance and repair activities typically would include replacing poles, crossarms, and insulators; and managing vegetation.

During operation, Pacific Power would remove trees and shrubs from the ROW if they encroach on required line clearances, according to vegetation management policies and procedures (PacifiCorp, 2014; Appendix B). The Pacific Power procedures indicate that two zones within the ROW would need to be controlled: (1) the "wire" zone, which is a minimum of 20 feet wider than the distance between the two outside conductors, and (2) the "border" zone, which includes the remaining ROW width. In the wire zone, Pacific Power would remove trees and shrubs taller than approximately 5 feet. In the border zone, Pacific Power would allow low-growing shrubs that do not encroach on the required line clearances. Additionally, the vegetation management contractor would remove or trim "danger" trees (trees that are outside of the ROW but present a safety concern to the operation of the line), as required, to maintain a safe operating system. The vegetation management would meet these requirements over the life of the project as part of the ongoing maintenance of the line.

Existing access roads to structures would remain throughout the life of the proposed transmission line. They might be used for future routine and emergency maintenance. Temporary construction access roads would be reclaimed, but reinstalled if future equipment access is needed.

2.2.2 Estimated Land Disturbances

2.2.2.1 Construction Access Roads

Line construction requires at least unimproved, nongraveled access. Existing access roads would be used wherever possible, with spur roads constructed to the new structures as necessary. Most existing roads accessing the line route are sufficient for construction use and would not need improvement.

Temporary access roads would be at least 14 feet wide, with a 3-foot workspace on either side of the road (total width of 20 feet). Generally, new roads would be unimproved unless soil conditions require the use of gravel to provide sufficient load-bearing strength. Where appropriate, rolling dips and culverts would be installed within the roadbed to provide drainage. Fences, gates, cattle guards, and additional rock would be added where necessary. Pacific Power would decommission temporary access roads after construction. Permanent/existing roads would not be actively maintained.

2.2.2.2 Structures

The average pole structure would be 4 feet or less in diameter per pole. Each two-pole, H-frame structure occupies about 25 square feet, three-pole structures slightly more. In addition, ground at the base of each structure may require 1,925 square feet of permanent leveling. The total permanent disturbance resulting from pole structures and leveling around structures at the BLM Property would be about 0.18 acre.

2.2.2.3 Pulling and Tensioning Area

The conductor pulling and tensioning area would be approximately 2.75 acres in size. One pulling and tensioning area is proposed on the BLM Property, located between MP 2.6 and 2.7.

2.2.3 Reclamation

All temporarily disturbed areas would be restored as required by the easement agreement between Pacific Power and BLM. It is anticipated that reclamation of temporary accesses would require surface

scarification for seed establishment. All work sites would be graded as closely as possible to the original contours. Excess soil materials, rock, and other non-native materials would be disposed of at an approved off-site.

2.2.4 Fire Protection

Construction would adhere to all applicable laws, ordinances, rules, and regulations that pertain to fire prevention, presuppression, and suppression. Construction personnel would be advised of their responsibilities under the applicable fire laws and regulations, and would notify the local fire district if a construction-related fire occurs. The construction contractor would be responsible for any fire started by its employees or operations, whether in or out of the project area. The contractor also would be responsible for fire suppression and rehabilitation.

2.2.5 Project Schedule

The proposed project schedule, showing the major tasks and key milestones, is provided in Table 2-2. Construction of the entire transmission line would occur over approximately 6 to 12 months. Construction at the BLM Property would be completed in about 5 days. The actual schedule would depend on time of year, weather, and ground conditions.

Table 2-2. Project Schedule for the Wallula to McNary 230-kilovolt Transmission Line

Task/Milestone	Start	Finish
Obtain Necessary Permits	2008	January 2017
Route Survey	Completed in 2011	
Right-of-Way Acquisition	August 2015	August 2016
Engineering	2009	March 2015
Construction	February 2017	October 2017
Testing and Commissioning	October 2017	January 2018
Line Energization	January 2018	

2.2.6 Construction Workforce

The peak construction workforce would be about 45 people, working at various locations along the line. At the BLM Property, the peak workforce would be about 10 people.

2.2.7 Construction Traffic

Construction traffic would consist of the construction crews traveling to the construction site. Construction materials (e.g., poles, crossarms, hardware, conductors) would be delivered to the route by trucks and trailers. Line trucks, cranes, and other needed equipment also would travel to the site daily.

2.2.8 Environmental Protection Measures

Proposed roadwork and future O&M activities have been planned to minimize the damage to the environment and to comply with the Baker RMP (BLM, 1989), Southeastern Oregon Resource Management Plan (2001), 2004 BLM grant stipulations, and other regulations and guidelines. The Plan of Development (POD), which after approval would become part of the ROW grant, contains a detailed description of these measures, which are categorized as follows: approved work area and site access;

road maintenance standards; vegetation management; waters of the U.S.; sensitive plants; sensitive wildlife; cultural resources; aesthetic resources; and fire hazards.

2.3 No Action

Under the No Action Alternative, BLM would not grant Pacific Power's easement request. No transmission line construction would occur on the BLM Property. If the easement on the Property is not granted, Pacific Power would reroute or redesign the transmission line to avoid the need for a new easement on the Property, to enable the construction of the project.

2.4 Alternatives Dismissed from Further Evaluation

Two action alternatives for the overall transmission line routing were considered in the development of this EA, but subsequently were dismissed from further evaluation because they do not meet the purpose and need, or are considered to be unreasonable or impracticable. Sections 2.4.1 and 2.4.2 describe the alternatives.

2.4.1 Rerouting around the BLM Property—Parallel Single-Circuit Alignment

An alternative to BLM granting an easement for 0.51 mile across the BLM Property would be for Pacific Power to reroute the single-circuit transmission line to avoid the BLM Property and, consequently, the adjacent Wanaket Wildlife Management Area (Wanaket), held in trust for CTUIR by BIA. This alternative route would parallel an existing Pacific Power transmission line south of the BLM and Wanaket properties from a point east of these properties to the McNary substation.

This alternative route would be parallel to, and within 500 feet of, the existing Pacific Power lines for consistency with the Oregon Department of Energy's guidelines and definition statutes [(ORS) 469.300(11) and ORS 469.300(11)(a)(C)], and to minimize environmental and other public impacts. A rerouted line would be built much farther to the south before continuing eastward (Figure 1-2).

Compared to the Proposed Action, a single-circuit route along the existing Pacific Power lines would have the following disadvantages:

- Lengthens the transmission line distance, and increases the amount of land disturbance because the line would be longer. The shortest route taking advantage of existing Pacific Power lines would add about 8 miles of additional line length to avoid the BLM Property and the Wanaket Wildlife Management Area. A longer distance would increase the amount of short- and long-term impacts because the line would cover more ground, and have more poles and a greater footprint.
- Increases the line length through more intensively developed land uses. The shortest alternate route would involve about 1.5 to 2 miles within areas of high-value farm lands that have been developed for irrigation (fields or crop circles). In comparison, the Proposed Action route paralleling the BPA 500-kV line across the BLM Property would cross mostly open fields used primarily for grazing and undeveloped steppe with relatively few landowners; only 0.4 mile would cross irrigated fields or crop circles. The proposed route has been designed to avoid or minimize impacts to these areas. There may be opportunity to site pole structures to avoid impacting crop circles, but with shorter span lengths, this may not be achievable. Based on these considerations, the line's construction would become more costly to Pacific Power and ratepayers.
- Affects more landowners and requires more new easements. More new easements parallel to the existing Pacific Power lines would increase the difficulty of obtaining continuous new easements. It is unlikely that a 125-foot-wide continuous corridor paralleling the existing Pacific Power lines could be acquired without condemnation. Additionally, this alternate route would cross another BLM parcel (Umatilla County parcel ID 5N282200 2500).

- Increases the easement acquisition and construction costs because the longer line would require more easement area, more pole structures, and more ground disturbance. There would be greater cost for adjusting pole locations to avoid wetlands and crop circles and acquisition of easements across higher-value property.

Alternative routing was previously identified and considered by BPA for the *Wallula–McNary Transmission Line Project* (BPA, 2002). However, that alternative transmission line route development has not proceeded. Although the single-circuit option is technically feasible, its cumulative adverse effects, described above, make the option impracticable. Therefore, it was dismissed from further evaluation.

2.4.2 Rerouting around the BLM Property—Conversion to Double Circuit

As an alternative to routing the new transmission line along the existing Pacific Power 230-kV McNary-Walla Walla line by acquiring new easements, rerouting could be achieved by converting a segment of the 230-kV McNary-Walla Walla line from single- to double-circuit configuration and bypassing the BLM and Wanaket properties. A double-circuit configuration would require more pole structures (shorter spans) than for a new single-circuit line. Double-circuiting is technically feasible and would have the advantage of meeting the ORS 469.300(11)(a)(C) requirement to stay within 500 feet of an existing transmission line. Double-circuiting also would minimize the need for new easements. However, an expansion to the existing easement width may be needed under the double-circuiting alternative.

Compared to the Proposed Action, double-circuiting would have the following disadvantages:

- Lengthens the proposed transmission line; adds at least 8 miles in length to avoid the BLM Property and Wanaket.
- Increases the amount of temporary land disturbance because the line would be longer and the ROW wider.
- Increases the amount of permanent impacts because the line would have more poles and a greater footprint.
- Traverses more intensively developed land uses.
- Crosses more irrigated fields and crop circles.
- Increases impacts to irrigated agricultural lands caused by shorter spans and added structures.
- Crosses a larger number of landowners.
- Increases the construction cost because double-circuit poles are more expensive to purchase and install, and there would be more of them. While it may be possible to adjust pole structure locations to avoid impacting crop circles, construction would become even more costly.

Alternative routing was previously identified and considered by BPA for the *Wallula–McNary Transmission Line Project* (BPA, 2002). However, alternative transmission line route development has not proceeded. Although the double-circuit option is technically feasible, its cumulative adverse effects make the option impracticable. Therefore, it was dismissed from further evaluation.

Figure 2-1: Typical 230-kV Two-pole, Wood-pole, H-Frame Construction

FIGURE 2-1
Typical 230-kV, Two-pole, Wood-pole,
H-frame Construction
Wallula to McNary 230-kV Transmission Project

IS110310212910SAC Figure_2-1.ai 11.04.2010 tdaus

CH2MHILL

Figure 2-2: Typical Dimensions for a 230-kV, H-Frame Structure

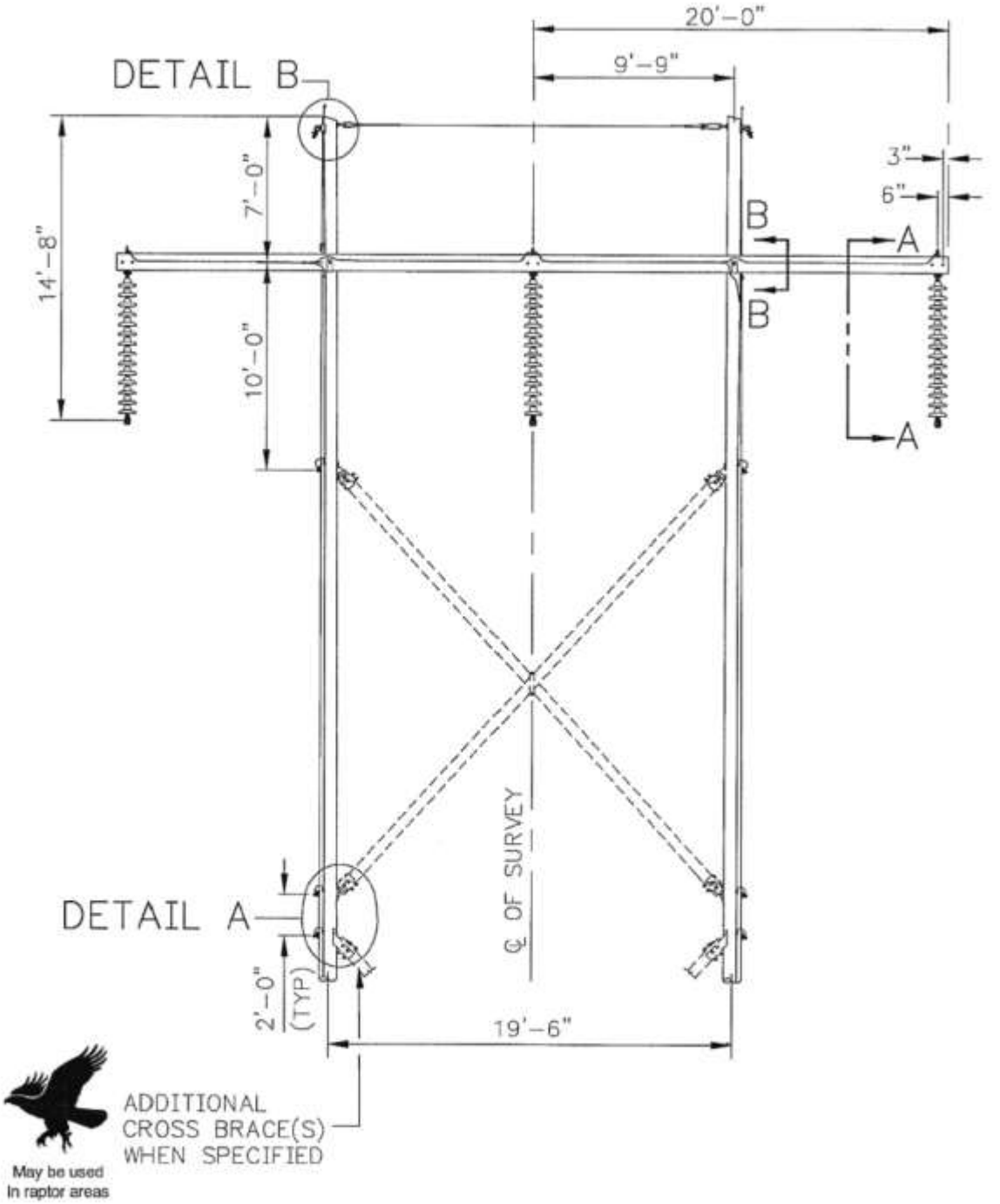

FIGURE 2-2
Typical Dimensions for a 230-kV, H-frame Structure
Wallula to McNary 230-kV Transmission Project

Source: PacifiCorp, May 27, 1997

iS110310212910SAC Figure_2-4.ai 11.04.2010 tdaus

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Figure 2-3: Typical Three-pole, Wood-pole, Construction

FIGURE 2-3
Typical Three-pole, Wood-pole Construction
(H-frame Construction and 500-kV Steel Tower in Background)
Wallula to McNary 230-kV Transmission Project

iS110310212910SAC Figure_2-2.ai 11.04.2010 ltlaus

CH2MHILL

Figure 2-4: Typical Dimensions for a 230-kV, Three-pole Structure

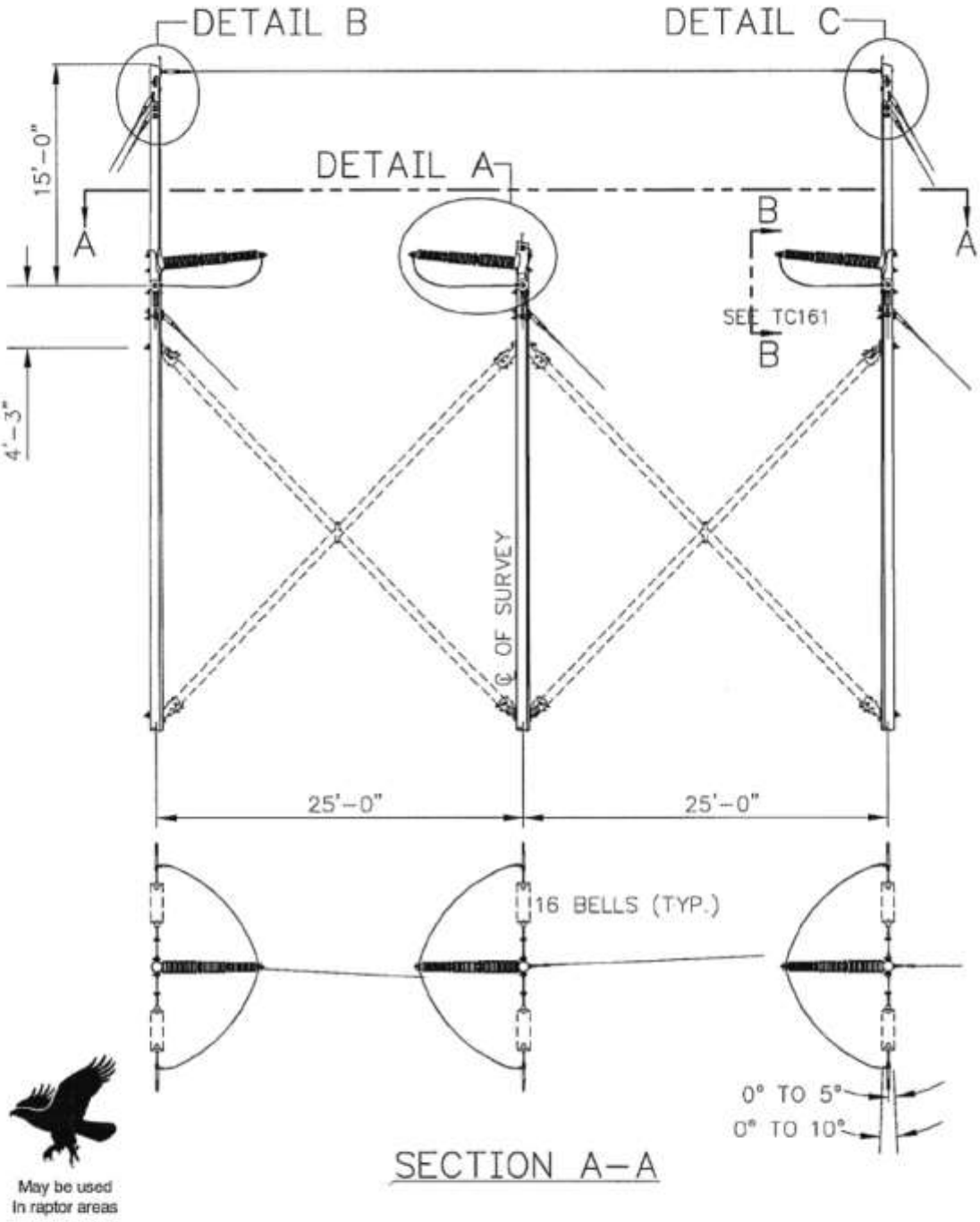

FIGURE 2-4
Typical Dimensions for a 230-kV, Three-pole Structure
Wallula to McNary 230-kV Transmission Project

Source: PacifiCorp, June 26, 2003

IS110310212910SAC Figure_2-5.ai 11.04.2010 ldaus

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Affected Environment and Environmental Consequences

This section identifies the supplemental authorities considered in this EA, explains the rationale for excluding select subjects from the EA analysis, and provides an analysis of the following subjects: global atmosphere/climate/greenhouse gases, vegetation, special-status plants, water resources and riparian/ wetland areas, wildlife/wildlife habitat and special-status species, recreation, visual resources, cultural resources, hazardous and solid wastes, fire, and land/realty.

In the context of this analysis, short-term (temporary) means the construction phase of the project and 4 years (total of 5 years); and long-term (permanent) means longer than 4 years after an action is completed.

For this analysis, the thresholds for judging the significance of environmental impacts are given in Table 3-1.

Table 3-1. Significance Thresholds Used in This Analysis

Section	Impact Category	Explanation of Significance Threshold
	Global Atmosphere/ Climate/Greenhouse Gases	A significant impact would occur if the project were to violate any ambient air quality standard (National Ambient Air Quality Standards or California Ambient Air Quality Standards), increase the number or frequency of violations, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations.
	Vegetation	A significant impact would occur if vegetation changes would be readily measurable, would have substantial consequences on a local or regional level, and would exceed regulatory standards. Mitigation measures to offset the adverse effects on vegetation would be required to reduce impacts though long-term vegetation changes would be expected.
	Water Resources	A significant impact would occur if the project would cause substantial flooding, erosion, or siltation, or would substantially degrade water quality, or would substantially degrade or deplete ground water, riparian, or wetland resources.
	Wildlife and Wildlife Habitat	A significant impact would occur if wildlife and wildlife habitat changes would be readily measurable, would have substantial consequences on a local or regional level, and would exceed regulatory standards. Mitigation measures to offset the adverse effects on wildlife and wildlife habitat would be required to alleviate impacts though long-term changes to wildlife and wildlife habitat would be expected.
	Recreation	A significant impact would occur if the project would: (a) conflict with established recreational, educational, or religious uses; (b) conflict with adopted recreation plans and goals; (c) create additional demand for public service facilities.
	Visual Resources	The project would have a significant effect on the environment if it would have a substantial effect on a scenic vista, substantially degrade or obstruct publicly accessible views; substantially degrade the existing visual character or the quality of the area, or result in a substantial, demonstrable negative aesthetic effect; or generate obtrusive light or glare that would adversely affect views or substantially affect other properties.

Table 3-1. Significance Thresholds Used in This Analysis

Section	Impact Category	Explanation of Significance Threshold
	Cultural Resources	A significant impact would occur if there were to be unmitigatable impacts to Indian trust resources or sacred sites, as determined through the National Historic Preservation Act Section 106 consultation process. Mitigation of potential adverse impacts may include cultural resource inventories, evaluation of cultural resources located during inventory, avoidance, data recovery (including excavation), or other protective measures. A project is normally found to have a significant impact on the environment if the project would have a substantial adverse change to an historic resource – either an archaeological site, an historic architectural structure, or an historic district. A "historic resource" is defined as a resource that is listed in or determined eligible for listing in the Oregon Register of Historic Resources; listed in or determined eligible for listing in the National Register of Historic Places; one that is included as significant in a locally adopted register; or one determined by the lead agency to be historically significant. A resource that is deemed significant due to its identification in a historic resource survey would be presumed an historic resource unless a preponderance of evidence demonstrates otherwise. A "substantial adverse change" is defined as demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired (a major change to the elements of historic character).
	Hazardous and Solid Wastes	A significant impact would occur if the project would create a potential public health hazard involving the use, production, or disposal of materials that pose a hazard to people or animal or plant populations in the area affected. (Quantitative hazardous waste criteria exist for specific materials and constituents.)
	Fire	A significant impact would occur if the project would pose a fire hazard, placing life or property, including long-term productivity of natural resources, at substantial risk.
	Land and Realty	A significant impact would occur if the project would substantially disrupt or divide the physical arrangement of an established land use or community; or have a substantial adverse impact upon the existing character of the vicinity.

3.1 Supplemental Authorities to be Considered

Table 3-2 presents the supplemental authorities considered as part of this EA. In addition, each element was evaluated in context with the Proposed Action to determine if the element would be included or excluded from further analysis.

Table 3-2. Supplemental Authorities to Be Considered

Element	Relevant Authority and Associated Regulations	BLM Manual[a]	Alternatives Affect Element?	Section of the EA
Air Quality	The Clean Air Act as amended (42 USC 7401 et seq.)	MS 7300	Yes	3.3
Areas of Critical Environmental Concern	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.)	MS 1617	Yes	3.12
Cultural Resources	National Historic Preservation Act as amended (16 USC 470)	MS 8100	Yes	3.9
Farmlands (prime or unique)	Surface Mining Control and Reclamation Act of 1977 (30 USC 1201 et seq.)		No	NA
Floodplains	EO 11988, as amended, Floodplain Management, 5/24/77	MS 7260	No	NA

Table 3-2. Supplemental Authorities to Be Considered

Element	Relevant Authority and Associated Regulations	BLM Manual[a]	Alternatives Affect Element?	Section of the EA
Native American Religious Concerns	American Indian Religious Freedom Act of 1978 (42 USC 1996)	MS 8100	No	NA
Threatened and Endangered Species	Endangered Species Act of 1973 as amended (16 USC 1531)	MS 6840	Yes	3.4 3.6
Wastes, Hazardous or Solid	Resource Conservation and Recovery Act of 1976 (42 USC 6901 et seq.)	MS 9180	Yes	3.10
	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended (42 USC 9615)	MS 9183		
Water Quality, Drinking/ Ground	Safe Drinking Water Act as amended (42 USC 300f et seq.)	MS 7240	Yes	3.5
	Clean Water Act of 1977 (33 USC 1251 et seq.)	MS 9184		
Wetlands/Riparian Zones	EO 11990, Protection of Wetlands, of May 24, 1977	MS 6740	Yes	3.5
Wild and Scenic Rivers	Wild and Scenic Rivers Act as amended (16 USC 1271)	MS 8014	No	NA
Wilderness and Wilderness Study Areas	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.)	MS 8500	No	NA
	Wilderness Act of 1964 (16 USC 1131 et seq.)			
Environmental Justice	EO 12898 of February 11, 1994		No	NA

[a]Refers to *BLM National Environmental Policy Act Handbook* H-1790-1 (BLM, 2008a).

Four resources or uses (recreation, visual resources, fire, and land/realty) occur within the Proposed Action area but are not subject to Supplemental Authorities as defined in *National Environmental Policy Act Handbook* H-1790-1 (BLM, 2008a) and therefore do not appear in this table.

Notes:

EA = Environmental Assessment
EO = Executive Order
NA = Not applicable
USC = U.S. Code

3.2 Issues Considered but Excluded from the Analysis

BLM considered the following issues but did not analyze them in detail because none of the following resources are present within the analysis area (the BLM Property), and none would be impacted by the Proposed Action:

- Farmlands (prime or unique)
- Floodplains
- Fish and Aquatic Habitat/Special-Status Aquatic Species
- Wild and Scenic Rivers
- Wilderness and Wilderness Study Areas

3.3 Global Atmosphere, Climate, and Greenhouse Gases

3.3.1 Affected Environment

The U.S. Environmental Protection Agency has developed air quality standards for six common air pollutants under the 1970 Clean Air Act: ozone, carbon monoxide, lead, nitrogen dioxide, particulates, and sulfur dioxide. The intent of these standards is to protect human health and public welfare. The air quality within Umatilla County achieves national air quality standards, based on information from air monitoring stations (DEQ, 2011). However, given the general lack of industrialization of Umatilla County, sulfur dioxide, nitrogen oxide, and ozone are not monitored.

Climate is the average weather pattern over the long term. Global warming signifies an increase in the average temperatures over time. The Intergovernmental Panel on Climate Change (IPCC) determined that warming of the Earth's climate is unequivocal (IPCC, 2007). The IPCC hypothesizes that global warming is occurring as a result of anthropogenic greenhouse gas production and clearing of large tracts of vegetation from Earth's surface (IPCC, 2007). In general, removal of vegetation increases the buildup of greenhouse gases in Earth's atmosphere by decreasing the removal rate of carbon dioxide from the atmosphere by photosynthesis and by increasing greenhouse gas production from the decomposition of organic plant matter. The U.S. Geological Survey, in a May 14, 2008, memorandum to the USFWS, summarized the latest science on greenhouse gas emissions and concluded that it is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration and designate it as the cause of specific climate impacts at a specific location.

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Under the Proposed Action, BLM would grant a ROW to allow for construction of a transmission line across the BLM Property. During construction activities, potential impacts from the Proposed Action would include temporary, negligible air quality impairment through the temporary production of dust and heavy-duty-vehicle emissions. The greenhouse gas (GHG) emissions would include nitrogen oxides, carbon monoxide, and particulate matter less than 10 micrometers in aerodynamic diameter (PM_{10}; dust). It is estimated that a total of four trucks would be used during construction on this parcel. The total duration of construction on the parcel would be approximately 5 days. Assuming that each truck would make one trip into the project area, and one trip out of the project area, a total of forty trips would be generated as a result of the Proposed Action. The nearest highway (McNary Highway; Highway 730) has an average daily trip count of 10,100 (ODOT, 2010). The resulting emissions from construction of the proposed action would be negligible to the emissions generated from the nearest highway. The small number of vehicles that would be used and the relatively short duration of the construction period would limit such emissions, which would result in minimal and temporary increase in GHGs within the project area.

The potential impacts from project-related dust generation would increase during construction because the construction contractor would use dirt roads and would auger soil for placement of transmission line poles. This potential for dust generation would be greatest during dry, windy weather. However, dust generation would be very localized, and not noticeable outside of the Proposed Action area. The Proposed Action is located on a property that has very infrequent human activity, and as such, the localized dust emissions would not have an effect on the population of Umatilla County. In addition, the Proposed Action includes numerous best management practices that would minimize the generation of dust emissions, including:

- Construction and operations vehicles and equipment would comply with applicable state and federal emissions standards.
- Vehicles and equipment used during construction would be properly maintained to minimize exhaust emissions.
- Operational measures such as limiting engine idling time and shutting down equipment when not in use would be implemented.
- Carpooling among construction workers would be encouraged to minimize construction-related traffic and associated emissions.

Because the construction equipment and vehicles would be dispersed across a large, sparsely populated area, no impacts to surrounding residences are anticipated. The construction would take place for a limited duration (6 to 12 months for the overall line, and about 5 days for construction at the BLM Property). Therefore, total construction emissions would be negligible.

Over the long-term while the project is operational, O&M activities would occur within the ROW. The O&M vehicles would utilize existing established roads approximately once a year (a total of two truck trips), and would result in a negligible increase in emission within the project area, and would not impact air quality. As such, impacts to the global atmosphere and climate would be negligible.

Projections of the Earth's warming climate would not affect the project in the short or long term.

3.3.2.2 No Action

Under No Action, BLM would not grant a ROW to cross the BLM Property, the transmission line would not be constructed across the BLM Property, and there would be no effect on global atmosphere, climate, or greenhouse gases.

3.4 Vegetation

3.4.1 Affected Environment

A 300-foot-wide study-analysis corridor on the BLM Property was surveyed for existing vegetation (CH2M, 2009; Appendix C).

3.4.1.1 Listed, Special-Status, and Other Species of Concern

No federally listed or candidate species, BLM special-status species, or other species of concern are known to occur within the proposed project area or were encountered during field surveys. Additionally, no plants listed under the Oregon Endangered Species Act as threatened or endangered were observed within the survey corridor, including the threatened Laurence's milk-vetch (*Astragalus collinus* var. *laurentii*), for which suitable habitat—grassland slopes with loess deposits, or sandy or rocky substrates—is present (CH2M, 2009; BPA, 2002). Appendix D contains BLM's special-status species list for Oregon and Washington.

3.4.1.2 Invasive Plant Species

Umatilla County classifies noxious weeds as Class A or Class B (Umatilla County, 2003). Class "A" weed infestations are subject to intensive control when and where found. Class "B" weeds are invasive plants targeted for additional enforcement.

Class "A" designated weeds known to occur or potentially occurring at the BLM Property include purple loosestrife (*Lythrum salicaria*) and rush skeletonweed (*Chondrilla juncea*) (BPA, 2002). Class "B" designated weeds known to occur or potentially occurring at the BLM Property include perennial pepperweed (*Lepidium latifolium*); austrian peaweed (*Sphaerophysa salsula*); Canada thistle (*Circium*

arvense); bull thistle (*Cirsium vulgare*); cereal rye (*Secale cereale*); diffuse knapweed (*Cuscuta pentagona*); kochia (*Kochia scoparia*); Russian knapweed (*Acroptilion repens*); and yellow starthistle (*Centaurea solstitialis*) (BPA, 2002).

Non-natives not on Umatilla County's weed lists but considered by some as weeds include oxeye daisy (*Chrysanthemum leucanthemum*); hoary white top (*Cardaria draba*); poison hemlock (*Conium maculatum*); spikeweed (*Hemizonia pungens*); reed canarygrass (*Phalaris arundinacea*); and common mullein (*Verbascum thapsus*) (BPA, 2002).

3.4.1.3 General

The vegetation communities found within the BLM Property are:

Upland Non-Native Grassland. Previously disturbed, non-native grasslands occur on the BLM Property. Cheatgrass (*Bromus tectorum*) is the dominant herbaceous species in the grasslands. In some places, non-native cheatgrass is the only species. In other places, non-native grasses are intermixed with native grasses, or are the only herbaceous species beneath a shrub-steppe or deciduous tree overstory. Non-native fiddleneck tarweed (*Amsinckia lycopsoides*), tumble mustard (*Sisymbrium* spp.), and medusahead (*Taeniatherum caput-medusae*) also are present.

Upland Shrub-Steppe. Shrub-steppe consists of disturbed areas with limited, scattered coverage by young shrubs. The understory is a mix of non-native and native grasses, with non-native grasses dominant. A few live sagebrush less than 12 inches tall are present. One large stretch of upland shrub-steppe had burned within 2 years of observation, and was dominated by cheatgrass, with scattered dead sagebrush shrubs.

Palustrine Emergent. Aquatic and emergent vegetation is present at a small surface water pond and wetland located toward the eastern side of the BLM Property. The palustrine emergent (PEM) wetland, characterized by erect, rooted, nonwoody plants, covers approximately 0.4 acre. Open water is present at the center, surrounded by softstem bulrush (*Scirpus tabernaemontanii*), bulrush (*Scirpus* sp.), willow (*Salix* sp.), cat-tail *(Typha latifolia*), and poplar (*Populus* sp.).

Upland Deciduous Woodland. A very small area of upland Russian olive (*Elaeagnus angustifolia*) trees with cheatgrass understory occurs next to the emergent wetland.

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

Under the Proposed Action, BLM would grant a ROW to allow construction of a second transmission line across the BLM Property, resulting in the clearing of vegetation for a temporary access road, pads for erecting four pole structures, and a pulling and tensioning area.

Threatened, Endangered, and Candidate Species. The proposed action would not affect species listed as threatened, endangered, or candidate under the Endangered Species Act because none are known to occur at the BLM Property.

BLM Special-Status Species (SSS). Based on the lack of known occurrences at the BLM Property, the Proposed Action would not affect special-status BLM species. The Wallula DEIS reached the same conclusion (BPA, 2002).

Plant Species of Local Importance. Suitable habitat for Laurence's milk-vetch exists at the BLM Property. The proposed transmission line route would be surveyed during the appropriate season to verify the presence or absence of Laurence's milk-vetch.

If Laurence's milk-vetch is found, collecting data would be obtained, including location, number, phenology, and habitat of the occurrence. All mapped areas containing Laurence's milk-vetch would be

avoided and undisturbed during construction. The pole placement would be redesigned to avoid impacts to the plants.

Invasive Plant Species. Equipment and supplies necessary for the construction of roads and transmission line potentially spread noxious weeds. Pacific Power would control the spread of noxious weeds within the Proposed Action area during the construction and reclamation phases of transmission line development (PacifiCorp, 2014). Under the Proposed Action, the following measures would be implemented to reduce the potential spread of noxious weeds:

- During construction, construction equipment, materials, sanitary facilities, and vehicles would be stored at offsite staging areas or within designated locations at the BLM Property where construction would occur.
- Following construction, disturbed areas would be reseeded as soon as possible during the optimal seeding period. Certified weed-free seed and mulch would be used on all seeding areas.
- Over the long term, O&M vehicles would utilize previously established roads in the ROW approximately once a year (i.e., two truck trips per year), which would minimize the potential spread of invasive species.

Based on the proposed weed control practices, the proposed Action would result in a negligible impact on the spread of invasive plant species.

General. Impacts to vegetation would be minimized by confining work to designated construction sites and corridors. No wetland vegetation would be cleared, and no trees would be cleared or trimmed to comply with transmission line safety or maintenance standards. A few shrubs in the wire zone that exceed 5 feet in height would be removed. A very small amount of upland vegetation (about 0.07 acre) would be displaced over the long term by permanent pole structures. Within the temporary access road and construction pads, about 1.2 acres of mostly mixed non-native upland grassland would be disturbed in the short term, but would be restored by seeding. Local native grasses and forbs, along with sagebrush, would be used to revegetate the disturbed habitats. Seed mixes would be approved by BLM or the Oregon Department of Fish and Wildlife (ODFW), and would generally match the preconstruction plant species composition of the area. Successful revegetation would require weed control and proper seeding, germination, and establishment conditions (i.e., appropriate over-winter moisture following seeding). Revegetation, including seeding and weed control, would be coordinated with BLM to improve the chances of success. Herbicide application, if applied, would be approved by BLM. Based on these practices, short-term adverse effects on vegetation would be minimal.

Long-term maintenance activities that involve ground disturbance, such as road grading or pole replacement, would be followed by habitat rehabilitation and weed prevention measures. Therefore, long-term impacts to botanical resources are expected to be minimal.

3.4.2.2 No Action

Under No Action, BLM would not grant a ROW to cross the BLM Property, no new facilities or structures would be built, and no vegetation resources would be affected in the analysis area.

3.5 Water Resources

3.5.1 Affected Environment

3.5.1.1 Hydrology

The BLM Property is situated in a semiarid region in the eastern portion of Oregon in Umatilla County, and in the Columbia River Plateau physiographic province. Annual precipitation in the region averages approximately 17.4 inches of rain and 17.3 inches of snow, as recorded at the National Oceanic and

Atmospheric Administration (NOAA) Pendleton Station (NOAA, 2010). Other hydrologic inputs in the area include central-pivot irrigation on agricultural land adjacent to the BLM Property and flooding of the Wanaket Wildlife Management Area to provide wetland habitat. These hydrologic inputs far outweigh the contribution from precipitation in this semiarid region. Wind-blown sediments (loess deposits) at the BLM Property are sensitive to moisture and could collapse or erode if exposed to water, even at low velocities. Existing vegetation helps to stabilize soil and resist erosion.

The groundwater system in the Columbia River Plateau is complex because of the variation in the geology of the overburden, multiple basalt flows, and interbedded sedimentary units. Three main units make up the Columbia River Plateau Aquifer system. The overburden, or alluvium aquifer, is the youngest unit. Below is a minor amount of sediment interlayered with basalt; groundwater quality in this basalt aquifer is generally good and suitable for irrigation or municipal purposes. The deeper Columbia River Basalt Group (CRBG) is the largest unit and the major water-bearing zone. The CRBG is subdivided into three separate aquifer units: the Saddle Mountain, the Wanapum, and the Grande Ronde. Groundwater in the CRBG occurs in joints, vesicles, fractures, and in intergranulated pores of the sedimentary interbeds. The basalt transmits water most readily through these interflow zones, which represent about 5 to 10 percent of the total thickness of a typical basalt flow (Hansen, Vaccaro, and Bauer, 1994). Deeper basalt aquifers are generally confined. Localized anomalies to this pattern are caused primarily by geologic structures of both known and uncertain nature and secondarily by groundwater pumping and irrigation (Bauer and Hansen, 2000). There are no known groundwater wells or water rights within the study corridor.

3.5.1.2 Wetlands

CH2M conducted a delineation of wetlands and waters of the U.S. and State of Oregon in April, May, and June 2008 (CH2M, 2008a). No waters, including ditches or drainage channels, are in or adjacent to the study corridor on the BLM Property.

One 0.4-acre PEM wetland is present in the 300-foot-wide study corridor on the BLM Property (Figures 3-1 and 3-2; Cowardin et al., 1979). Its hydrogeomorphic classification is Depressional (Brinson et al., 1995). The northern boundary of wetland within the BLM Property is characterized by a gradual to abrupt rocky topographical shift, the edge of inundated or saturated soil, and a change in vegetation from wetland-obligates, softstem bulrush and willow, to cheatgrass and Russian olive. Open water is present at the center of the wetland, with wetland obligates, cattail and bulrush, and poplar vegetation growing along the wetland's fringe. The hydric wetland soil shows signs of prolonged waterlogging. The wetland is subject to federal and state wetland protection regulations. The southern half of this wetland extends outside the study corridor. Other wetlands occur nearby on non-BLM property to the east. Generally, wetlands have limited occurrence in the surrounding landscape.

3.5.2 Environmental Consequences

Under the Proposed Action, BLM would grant a ROW to allow construction of a second transmission line across the BLM Property, resulting in minor grading, confined areas of soil compaction, and vegetation at work areas.

3.5.2.1 Proposed Action

Hydrology. The construction contractor would neither withdraw groundwater nor discharge to groundwater during project construction. Construction of the project may involve water use for dust control. During construction, water from a source with an existing water right would be delivered to the work area using water trucks, if needed to control fugitive dust.

Disturbed, unstable soil surfaces would have increased susceptibility to erosion in the short term. The construction contractor would construct roadways so that natural surface drainage is maintained;

however, clearing vegetation for construction would expose the soil to a higher risk of erosion during rainfall.

Stormwater discharges during construction would be controlled by installing temporary erosion prevention and sediment controls prior to soil disturbances and until permanent soil stabilization is achieved (DEQ, 2005). Pacific Power or their contractor would obtain a NPDES 1200-C permit, which specifies conditions for maintaining water quality and minimizing impacts to soil or wetland (DEQ, 2013). The following erosion and sediment control measures would be implemented, as applicable, to minimize erosion:

1. Vegetative buffer strips between the areas affected by construction activities and wetlands
2. Sediment fence and check dams in steep terrain; the sediment controls would remain in place until the soil is stable and the risk of erosion has been eliminated
3. Seeding and straw mulch at exposed soil, except directly around each transmission structure
4. Washing of construction vehicles prior to leaving the construction site to prevent tracking of soil onto paved areas, and to avoid mobilizing the soil into waterbodies
5. Measures to prevent waste materials from entering the ground or surface water

Through erosion and sediment control measures and avoidance of groundwater, it is unlikely that the Proposed Action would affect water resources.

Wetlands. The layout of the temporary access road and permanent structures is designed to avoid any disturbances to the PEM wetland in the proposed ROW. A 100-foot No Work Area would be installed around the wetland to ensure that it would be avoided by vehicles and equipment. Therefore, through delineation and avoidance, the Proposed Action would not affect wetlands.

3.5.2.2 No Action

Under No Action, BLM would not grant a ROW to cross the BLM Property and there would not direct effects on wetlands because they would remain undisturbed.

3.6 Wildlife and Wildlife Habitat

3.6.1 Affected Environment

A 300-foot-wide study-analysis corridor on the BLM Property was surveyed for wildlife and wildlife habitat, except that a 2,000-foot-wide corridor was surveyed at potential Washington ground squirrel habitat (CH2M, 2009; Appendix C). Wildlife survey methods followed *Survey Methodologies for Sensitive, Threatened, and Endangered Species of Oregon* (ODFW, 1994).

3.6.1.1 Listed, Special-Status, and Other Species of Concern

The only federally listed or candidate species with the potential to occur on the BLM Property is the gray wolf (*Canis lupus*). However, this species has not been observed or reported onsite, and no rendezvous or denning sites are located within the project area.

Only four species of BLM-Sensitive wildlife were encountered on the BLM Property: grasshopper sparrow (*Ammodramus savannarum*), American white pelican (*Pelecanus erythrorhynchos*), long-billed curlew (*Numenius americanus*) (two occurrences), and tricolored blackbird (*Agelaius tricolor*) (two occurrences) (CH2M, 2009). Long-billed curlews use non-native grasslands for nesting; however, no curlew nesting was observed on the BLM Property. While potential habitat exists, no Washington ground squirrels (*Spermophilus washingtoni*) were observed, despite species-specific survey protocol.

Two raptor species were observed flying over the BLM Property—Swainson's hawk (four occurrences) and osprey (one occurrence); none was nesting (CH2M, 2009). Within about 0.5 mile of the proposed ROW, three raptor species were sighted—sharp-shinned hawk (one occurrence), American kestrel (one occurrence), and red-tailed hawk (two occurrences) (CH2M, 2009). Red-tailed hawk was observed nesting about 2/3 mile southeast of the BLM Property (CH2M, 2009). No bald or golden eagle nests are present within 0.5 mile of the study corridor.

Two Oregon priority bird species were observed at the BLM Property—Wilson's pharlarope (*Phalaropus tricolor*) and black-necked stilt (*Himantopus mexicanus*) (CH2M, 2009).

Indigenous mammals present in limited numbers include American badger (*Taxidea taxus*), mule deer (*Odocoileus hemionus*), striped skunk (*Mephitis mephitis*), cottontail (*Sylvilagus nuttalli*), and white-tailed jackrabbit (*Lepus townsendii*) (CH2M, 2009).

3.6.1.2 Migratory/Neotropical Landbirds

A wide variety of bird species occupy the study corridor in the Great Basin, including the BLM Property (Bird Studies Canada and NABCI, 2014; Partners in Flight Science Committee, 2012; CH2M, 2009). Based on observations at the BLM Property and at similar habitats in the vicinity, western meadowlarks (*Sturnella neglecta*), horned larks (*Eremophila alpestris*), and western kingbirds (*Tyrannus verticalus*) are abundant in both native and non-native grassland and shrub-steppe. Shorebirds, including killdeer (*Charadrius vociferus*), Wilson's phalarope (*Phalaropus tricolor*), soras (*Porzana carolina*), American avocets (*Recurvirostra americana*), black-necked stilts (*Himantopus mexicanus*), common snipes (*Gallinago gallinago*), and black-crowned night herons (*Nycticorax nycticorax*) use wetland areas with standing or open water. A long-eared owl nesting with downy young in a Russian olive tree was observed in the Wanaket area. Also, American robins (*Turdus migratorius*), American goldfinches (*Carduelis tristis*), black-billed magpies (*Pica hudsonia*), western tanagers (*Piranga ludoviciana*), and western wood pewees (*Contopus sordidulus*) frequent the Russian olives. Song sparrows (*Melospiza melodia*), spotted towhees (*Pipilo maculatus*), and Bullock's orioles (*Icterus bullockii)* are relatively common in riparian vegetation types. The most common waterfowl in ponds and near water are Canada geese (*Branta canadensis*), mallards (*Anas platyrhynchos*), gadwalls (*Anas strepera*), and cinnamon teal (*Anas cyanoptera*). Upland game birds use a variety of habitats, including mourning doves (*Zenaida macroura*), California quail (*Callipepla californica*), and ring-necked pheasants (*Phasianus colchicus*). Woodpeckers and cavity-nesting species generally are uncommon because most trees are relatively small, non-native Russian olives.

3.6.1.3 General

Several types of wildlife habitats exist at the BLM Property. Previously disturbed, non-native upland grasslands and upland shrub-steppe provide important habitat for a variety of wildlife species. A surface water pond/wetland provides irreplaceable, essential, and limited wildlife habitat potentially supporting tricolored blackbird, Swainson's hawk, and others. The very small area of upland deciduous (Russian olive) trees provides important and essential habitat for migratory birds and raptors, including nesting, roosting, and perching habitats; associated species include Swainson's hawk and long-eared owl (*Asio otus*), as well as many migratory birds. Townsend's big-eared bat, small-footed myotis, long-legged myotis, Yuma myotis, and pallid bat potentially occur at the BLM Property, but no suitable bat natal colonies occur (CH2M, 2009).

3.6.2 Environmental Consequences

3.6.2.1 Proposed Action

Under the Proposed Action, BLM would grant a ROW to allow for construction of a second transmission line across the BLM Property resulting in the disturbance of wildlife and wildlife habitat for an access road and construction of pole structures.

Threatened, Endangered, and Candidate Species. No federal ESA-listed or candidate wildlife species are known to occur in the analysis area; therefore, threatened, endangered, and candidate species would not be affected by the Proposed Action.

BLM Special-Status Species. Four species of BLM-Sensitive wildlife are known to use the BLM Property. All are birds—grasshopper sparrow, American white pelican, long-billed curlew, and tricolored blackbird. Vegetation clearing for work pads and access road may temporarily reduce non-native grassland habitat for these species in the short term; however, wetland, open water, and riparian habitats would be avoided. The amount of short-term habitat disturbance would be minor compared to the grassland habitat available in the vicinity. Based on the relatively small area of grassland disturbance, construction timing outside of the nesting season—April 1 through August 15, and planned vegetation restoration efforts following construction, the effects of construction on these Sensitive species would be negligible.

Over the long term, power lines are a potentially serious hazard to birds, posed by potential collisions with the conductor or ground wires (Faanes, 1987). See the section below, under *Migratory/Neotropical Landbird*s, for a detailed discussion of the potential effects of power lines on flying birds. Overall, the impacts of the lines on these Sensitive species of birds would be unlikely to be important because research has suggested that flyover collisions are not significant (Faanes, 1987), and the structures would be designed to reduce avian collisions (Pacific Power, 2010; APLIC, 1994). Furthermore, Pacific Power's USFWS Special Purpose Permit allows transmission line operation and potential incidental take of migratory birds.

There is a small possibility that other Sensitive wildlife species inhabit the project area. However, given the short duration of the Proposed Action and the small area of disturbance, any wildlife in the area are highly unlikely to be impacted by the proposed work. Areas that are disturbed by construction activities would be reseeded by the following fall.

Wildlife Species of Local Importance. Power lines probably are not a serious hazard to diurnal raptors, such as red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), or ferruginous hawk (*Buteo regalis*), or to owls (Faanes, 1987). Raptors are frequently seen hunting beneath power lines or perched on towers. The proposed line's phase-to-phase and phase-to-ground wire clearances would pose a low risk of electrocution to birds perching on the supporting poles, based on proposed structures designed for avian protection (Pacific Power, 2010; APLIC, 1996; Harness and Wilson, 2001). No bald or golden eagle nests are present within 0.5 mile of the study corridor; therefore, the effect of the Proposed Action on eagles would not be adverse.

Migratory birds, such as Wilson's pharlarope and black-necked stilt, are unlikely to have important effects in the short or long term, based on the discussion below, under *Migratory/Neotropical Landbird*s.

Indigenous mammals are unlikely to be affected by the project in the short term because construction activity would be completed in a week or less, they have ability to disburse, vegetation clearing would be limited to designated accesses and work sites, and vegetation would be restored after construction. They would not be affected by the Proposed Action in the long term.

Migratory/Neotropical Landbirds. Construction disturbances such as vegetation clearing would take place outside of the migratory bird breeding season—April 1 through August 15—to avoid take of migratory birds in the short term.

In the long term, some birds would collide with the conductor or ground wires each year or operation. Although this is a concern along the entire transmission line corridor, the adjacent Wanaket Wildlife Management Area (directly east of the BLM Property) has the highest density of migratory birds in the vicinity, and, thus, a relatively high probability of collisions (CH2M, 2009). It is possible that some birds, including waterfowl, are attracted to wetland habitat at Wanaket, but many are flying to or from the Columbia River.

In one avian study, about two-thirds of passing birds did not respond to the presence of transmission lines, but the rest attempted to evade the conductors and ground wires by flaring and climbing, or other behaviors (Faanes, 1987). About one percent of flights may result in collision, usually with the ground wire, even after evasive maneuver, which was estimated as 200 fatalities/mile/year (Faanes, 1987). This estimate translates to about 100 dead birds per year at the BLM Property. The problem of birds flying into conductors is worse during foggy weather and in low light conditions when birds are often flying. Highest mortality rates are often observed in the fall when young waterfowl are making their first migration flights. Migratory birds must reacclimate to the transmission line each year. However, Faanes (1987) found that avian mortality from collisions with transmission lines is not biologically significant, with the caveat that the cumulative effect of mortality sustained from collisions with power lines may be important to populations of rare or endangered birds.

Birds that flare to avoid the proposed transmission line also would cross the existing BPA line. The combined effects of two adjacent transmission lines—the proposed Pacific Power and existing BPA lines—on rates of bird collisions are not well known. Some observations suggest that two adjacent sets of similar-height transmission lines may be easier for birds to see because of the larger number of conductors (APLIC, 1994). Under normal visibility, clustering lines of similar heights may improve the ability of birds to see the multiple lines (APLIC, 1994). However, the clustered-line configuration would not reduce bird strikes in foggy weather, during high winds, or when flocking birds are flying together in dim light (APLIC, 1994).

The BPA conductors are higher above the ground than the proposed transmission line conductors. Placement of the line adjacent to the existing BPA transmission line, with conductors at a different height, would increase the number of possible obstacles to safe flights, so any potential benefit of clustered lines may be small or nil. However, the lighted development associated with the City of McNary stretches between the BLM Property and the Columbia River, and may reduce fly-overs and alert birds to the possibility of transmission line obstacles.

To an unknown extent, resident birds have acclimated to the presence of the BPA line so the impact of the new line may be lower than if the new line were constructed farther from the BPA line.

The transmission line would protect eagles, hawks, and other migratory birds from electrocution and collision mortality on overhead power lines by incorporating design features from the *Pacific Power Avian Protection Plan* (Pacific Power, 2014; Appendix A). Small shield wires located above the conductors are apparently difficult for flying birds to see and avoid because these are the wires that are hit most often by birds in flight (APLIC, 1994). The shield wires would be fitted with bird flight diverters (BFDs) to make them more visible. This action would increase the visibility of new line shield wires and would reduce avian collisions. The BFDs would be effective for many species, including those with low wing loading, such as swans and ducks (Frost, 2008). BFDs can reduce bird mortality from collisions by 60 percent or more (Janss and Ferrer, 1998; Yee, 2008).

The *Pacific Power Avian Protection Plan* includes a USFWS Special Purpose Permit allowing transmission line operation related to eagles, hawks, and migratory birds.

Based on known effects of power lines on birds, and avian protection elements incorporated into the design to reduce mortality, the Proposed Action would have less than significant impacts to migratory and neotropical landbirds, which is similar to the conclusion reached in the Wallula DEIS (BPA, 2002).

General. Ground disturbances would clear about 1.2 acres of vegetation—mostly mixed habitats with an understory of non-native grasses. The effect of vegetation clearing would last until reclamation efforts successfully reestablish replacement plant cover. Also, equipment operation would generate noise and dust during a period of up to 1 week. The combined construction effects would temporarily reduce the quality of wildlife habitat and wildlife use of the affected areas in the short term. Over the long term, about 0.07 acre of wildlife habitat would be permanently displaced. Overall, the effect of the Proposed Action on wildlife habitat would not be important because the work areas were previously disturbed, are covered mostly with non-native vegetation, have low structure and complexity, and are laid out to avoid (Russian olive) tree removal. Reclamation, including native seeding and weed control, may benefit habitat quality.

3.6.2.2 No Action

Under No Action, BLM would not grant a ROW to cross the BLM Property and there would be no effects on wildlife or wildlife habitat.

3.7 Recreation

3.7.1 Affected Environment

The BLM Property provides recreational opportunities, such as waterfowl and upland bird hunting, because it is public land with nearby road access. Highway 730 is to the north of the BLM Property, but there is no formal road access via pull over, driveway, or parking lot. There is no evidence of other recreational use of the Property, and the extent of hunting on the Property is unknown. Seasonal hunting occurs on the adjacent Wanaket Wildlife Management Area. There are no known plans to develop recreational opportunities on the BLM Property, or on private lands around the Property.

3.7.2 Environmental Consequences

3.7.2.1 Proposed Action

Under the Proposed Action, BLM would grant a ROW to allow for construction of a transmission line across the BLM Property. Increased noise and traffic control during construction could temporarily affect recreational hunting, depending on the time of year and location. The project would temporarily displace recreational waterfowl and upland bird hunting on the BLM Property for up to 1 week during a single season. However, there would not be hunting restrictions following construction.

There is no evidence that construction of a new transmission line would affect the abundance of birds using the BLM Property. (See additional discussion of transmission line effects on birds under Wildlife and Wildlife Habitat, above.)

Public access to the property would be unaffected by the project because the road system would be unchanged, and users would not be excluded under the ROW agreement.

Given the short duration of the impact and the relative infrequency of the hunting activities, these potential impacts would be temporary and minimal. The Proposed Action would not impact recreation in the long term.

3.7.2.2 No Action

Under No Action, BLM would not grant a ROW to cross the BLM Property and there would be no effects on recreation at the BLM Property.

3.8 Visual Resources

3.8.1 Affected Environment

The proposed route across the BLM Property is in Umatilla County, where land use planning and development are guided by the UCCP (Umatilla County, 1987). The UCCP does not designate any scenic corridors or sensitive protected viewpoints in view of the Proposed Action (Mabbot, 2008).

Transmission line siting at the BLM Property is subject to the visual guidance of the Baker RMP (BLM, 1989). The Baker RMP outlines the Visual Resource Management (VRM) classifications that define management objectives on BLM-managed land, based on the land's scenic quality, visual sensitivity, and viewing distance. The Baker RMP classifies the BLM Property as VRM Class IV for generic scenic landscapes (BLM, 1989). Projects that have visual impacts or that would become the focal point of the landscape conform to the VRM Class IV designation.

For context, VRM Classes I through III apply to land with higher scenic quality. VRM Class I applies to lands with special designations, such as Wilderness Study Areas or Areas of Critical Environmental Concern. VRM Class II applies to areas of high scenic quality and areas visually sensitive to casual visitors from any travel route. VRM Class III applies to areas that are important aesthetically, but not outstanding scenically. On Class III lands, projects must be visually subordinate. VRM Class V applies to lower scenic quality areas requiring reclamation (for example, mine sites and production forests).

The greatest numbers of viewers of the proposed transmission line would be on Highway 730, at the north side of the BLM Property. The proposed transmission line would be visible from Highway 730 as a result of its proximity within ¼ of the proposed ROW. The Columbia River shoreline is more than 1 mile north of the BLM Property. The immediate area of the proposed ROW is sparsely populated. The nearest residences are in McNary, Oregon, more than 1/3 mile northwest of the proposed route.

Previously, visual resources along the proposed Pacific Power transmission line ROW were assessed by BPA in the Wallula DEIS (BPA, 2002) using BLM's VRM method (BLM, 2012a; BLM, 2012b). In contrast to the Baker RMP, which found the BLM Property to have a Class IV VRM rating, this assessment classified the BLM Property as VRM Class III (a more sensitive visual resource classification). This assessment was performed on the foreground/middle ground zones, which have the same effects as the distance zone (BPA, 2002). BPA's Visual Assessment Area 5 (Highway 730) includes the BLM Property (Figure 3-3) (BPA, 2002). The key viewpoint in Visual Assessment Area 5 is the Highway 730 Roadside Southwest Viewpoint (Figures 3-4a and 3-4b). Area 5 extends through rolling terrain and basalt foothills. The transmission line corridor is level with Highway 730. The dominant visual structure across the generic scenic landscape at the BLM Property is BPA's existing 500-kV Lower Monumental-McNary transmission line. This facility consists of five steel lattice structures, averaging 145 feet above the ground. The predominant vegetation is non-native grassland with low-profile sagebrush, influenced by historical grazing and occasional wildfires. Existing access roads for transmission line maintenance are undeveloped two-wheel tracks that are somewhat inconspicuous. The plateau above the Columbia River has a low viewer sensitivity rating because the area is primarily used by a small number of people, such as maintenance workers, agricultural workers, and local residents.

Table 3-3 summarizes the visual features of Visual Assessment Area 5 and key viewpoints along the proposed transmission line ROW as described in the Wallula DEIS (BPA, 2002).

3.8.2 Environmental Consequences

3.8.2.1 Proposed Action

Under the Baker RMP (BLM, 1989), the BLM Property is VRM Class IV for generic scenic landscapes. Projects that have visual impacts or that would become the focal point of the landscape conform to the

VRM Class IV classification. However, the proposed transmission line structures would be only 80 feet tall—subordinate to the existing, 145 foot-tall steel lattice BPA transmission line. In addition, only four wooden structures are proposed, as opposed to the five existing steel lattice structures. While the transmission line would be visible to motorists on Highway 730 and local workers, it would not introduce visual change that would be the focal point in the landscape. Therefore, the visual impact of the Proposed Action would be less than significant and would conform to the Baker RMP.

Mitigation Measures. The Proposed Action includes measures to mitigate visual impacts and to minimize potential light and glare. The impacts of the proposed transmission line construction, operation, and maintenance are assessed with the assumption that the following measures are implemented:

- Conductors would be nonspecular.
- To the extent practicable, new structures would be sited near existing structures.
- New structures would be two- or three-pole wooden structures, less visible than BPA's steel lattice towers.
- Ground-disturbing activities would be minimized.
- Visibility of access roads would be minimized through proper placement and alignment.
- Construction vehicles would be washed to control noxious weed infestations.
- The existing access road would be utilized to minimize new temporary road construction.
- Temporary access road surfaces would be reclaimed.

Using the BPA visual evaluation from the Wallula DEIS, which generally followed BLM methods, the BLM Property is VRM Class III (Table 3-3; BPA, 2002). In Class III areas, project activities may attract attention but should not dominate the view of the casual observer. The key steps in BPA's visual evaluation process included describing the proposed transmission line in the Visual Assessment Area 5, selecting a key view within the area and preparing a photosimulation, conducting the visual contrast rating, and comparing the contrast rating for consistency with the visual class management objectives (BPA, 2002).

The potential visual impacts of the BPA transmission line included temporary visual changes introduced by construction of the project and permanent visual changes resulting from the ongoing presence (O&M) of the transmission line.

Construction. During construction, visual impacts would result from construction of access roads, clearing of vegetation, construction of wooden pole towers, and stringing of conductors. Visual impacts during construction would include:

- Views of construction equipment in the ROW
- Views of road grading in some areas prior to restoration
- Views of the wire pulling and tensioning area
- Views of cranes and/or helicopters during structure assembly
- Dust plumes from construction vehicles

Construction impacts would be temporary and short term. Impacts would be most apparent for people traveling on sections of nearby roads, specifically Highway 730. Visual impacts related to construction would be negligible because public use is low, duration of the view is short, and impacts are temporary.

Operations and Maintenance. Visual impacts would predominantly result from adding additional structures and transmission lines to views of the existing BPA transmission line, which would be parallel to and within 250 feet of the proposed transmission line.

Visual Assessment Area 5 was found to have a medium impact level when BPA proposed their existing transmission line (Table 3-3; BPA, 2002). In comparison, two factors reduce the visual impacts of the proposed transmission line: (1) the average viewer would be in a vehicle, moving at highway speeds, and the duration of the view would be relatively short; and (2) the contrast in relation to the existing BPA transmission line would be lower from Highway 730 because the project would parallel the existing 145-foot-tall BPA transmission line towers. Consequently, the Proposed Action and resulting transmission line would have a low or low-medium visual impact.

Unlike the BPA line, the transmission line associated with the Proposed Action: (1) would parallel the already existing transmission line with subordinate structures, (2) would not represent an entirely new element in the viewscape, (3) would be over twice as far from Highway 730 as BPA assumed in their analysis, and (4) would present a less obvious focal point than Highway 730, owing to the proposed transmission structures' smaller size and scale (Figure 3-4b). While the contrast would be apparent in the landscape and would not be overlooked by the average observer, the average observers are primarily agricultural and maintenance workers who pass through the area regularly and who are not expected to be highly sensitive to visual change.

Overall, the wooden structures would be less visible than the larger, taller steel lattice BPA structures. The BPA analysis found the visual impacts of the now existing steel lattice structures to be acceptable to the designated visual class of lands within Visual Assessment Area 5 (including the BLM Property). Accordingly, the smaller subordinate structures of the proposed transmission line would also have an acceptable visual impact, even taken in combination with the existing BPA line.

There are no additional mitigation measures required for potential impacts to the visual Proposed Action. The Proposed Action would not have substantial effects on any known or identified scenic resources where it crosses the BLM Property. Similar to the conclusions reached in the Wallula DEIS (BPA, 2002), the Proposed Action would result in visual impacts that are acceptable to the designated visual class of the BLM Property, and there would be no unavoidable adverse impacts to visual resources within the Proposed Action area.

3.8.2.2 No Action

Under No Action, BLM would not grant a ROW to cross the BLM Property and there would be no effects on visual resources. There would be no visual, or light and glare, impacts associated with the proposed project, and viewsheds would remain in their current condition.

Table 3-3. Description of Key Viewpoint and Summary of Impacts for the Proposed Action (Visual Assessment Area 5: U.S. Highway 730) (BPA, 2002)

Existing Conditions				Impacts		
Viewpoint and Figure Number	**Scenic Quality Rating**	**Sensitivity Level[a]**	**Visual Resource Management Class[b]**	**Contrast Rating[c]**	**Impact Level[d]**	**Summary of Impacts**
Figure 3-4b (Highway 730 Roadside View) represents a simulated view looking south from Highway 730 and includes views of the roadway, the existing BPA 500-kV line, and a second power line (with steel lattice towers).	Rating C (fairly common to the physiographic region). While the coloration and vegetative textures could be of moderate interest, this view is common to Highway 730 travelers in the area.	Medium to High Most viewers are Highway 730 travelers (workers, recreationists, residents). The duration of views is about 8 minutes but is repeated for return trips of local travelers. The area has a clearly visible existing BPA transmission line located through undeveloped fields.	Class III (common scenic qualities and high viewer sensitivity). Management objective: Partially retain existing character of the landscape. Level of change to the characteristic landscape should be moderate. Project activities may attract attention but should not dominate the view of the casual observer.	Moderate on Highway 730. Strong in corridor.	Medium. Contrast rating is consistent with Class III visual resources (contrasts may attract attention from viewers on Highway 730 but should not dominate their views).	Proposed structures would present obvious contrast from existing structures to viewers on Highway 730 because of transmission structure size and scale. From Highway 730, proposed transmission line would be noticeable but contrast in relation to existing transmission line would be low to moderate because project would be parallel to existing transmission line. Within the corridor, contrast would be dominant and not overlooked by the average observer (hunters and maintenance workers are the casual observers and may not be highly sensitive).

Notes: The view was identified within the foreground/middleground zone. The distance zone is not included in the discussion above. The foreground/middleground distance zone includes areas seen from highways, rivers, or other viewing locations to a distance of 3 to 5 miles.

[a] Sensitivity level takes into consideration the frequency of use of an area and the user's perceived degree of concern about proposed changes in scenic quality. Each area is rated as having high, medium, or low sensitivity based on use volume and perceived user's attitudes. Sensitivity level analysis is used as an estimate of public concern for scenic quality. Six factors are used to evaluate sensitivity: types of users, amount of use, public interest, adjacent land uses, special land use areas, and other factors (e.g., research or studies indicating visual sensitivity). Each factor is assigned a rating of high (H), medium (M) or low (L); then, an overall rating (H, M, L) is given based on the ratings for the six factors.

[b] Visual Resource Classes are as follows:

Class I: A special classification assigned to congressionally designated superb features such as national wilderness areas or wild sections of national wild and scenic rivers. The management objective is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II: An area of outstanding scenic quality, high visitor sensitivity, and viewed as foreground or middleground. The level of change to the characteristic landscape should be low.

Class III: An area with outstanding and common scenic qualities, and moderate viewer sensitivity. The level of change to the landscape characteristic should be moderate.

Table 3-3. Description of Key Viewpoint and Summary of Impacts for the Proposed Action (Visual Assessment Area 5: U.S. Highway 730) (BPA, 2002)

	Existing Conditions				Impacts	
Viewpoint and Figure Number	**Scenic Quality Rating**	**Sensitivity Level[a]**	**Visual Resource Management Class[b]**	**Contrast Rating[c]**	**Impact Level[d]**	**Summary of Impacts**

Class IV: An area with features more common to the physiographic area that has either low viewer sensitivity or is viewed only as background or is seldom seen. The level of change to the characteristic landscape can be high.

[c] Contrast ratings were assigned by considering distance, angle of observation, length of time project is in view, relativity to size or scale, season of use, light conditions, recovery time, spatial relationships, and atmospheric conditions. Contrast that would be created by the proposed transmission line was rated as follows:

Strong: The contrast demands attention, would not be overlooked by the average observer, and is dominant in the landscape.

Moderate: The contrast begins to attract attention and begins to dominate the characteristic landscape.

Weak: The contrast can be seen but does not attract attention.

None: The contrast is not visible or not perceived.

The projected level of contrast was compared to acceptable levels of contrast for the visual resource class of the view as described under existing conditions. The four levels of contrast (none, weak, moderate, and strong) roughly correspond to Classes I, II, III, and IV, respectively. This means that a “strong” contrast rating may be acceptable in a Class IV area but probably would not be acceptable in a Class III area. Acceptable degrees of contrast for each visual resource class are based on BLM definitions:

Class I: Acceptable contrasts are primarily natural ecological changes.

Class II: Contrasts may be seen but should not attract the attention of the casual observer.

Class III: Contrasts may attract attention but should not dominate the view of the casual observer.

Class IV: Contrast may dominate the view and be the major focus of viewer attention.

[d] Impacts are classified as high, moderate, or low based on the degree of contrast of the project compared to the acceptable level of contrast for that Visual Resource Management class. The following impact levels are used:

High: Contrast from the project is substantially greater than acceptable.

Medium: Contrast is somewhat greater than acceptable for the visual resource class.

Low: Contrast is acceptable for the visual resource class.

No Impact: Visual contrast is not perceptible.

3.9 Cultural Resources

3.9.1 Affected Environment

The field-investigation study area was 0.5 mile on each side of the Proposed Action centerline. The Area of Potential Effect for this cultural study was 300 feet on each side of the centerline.

The project corridor, including the Proposed Action area, is within ceded lands of the CTUIR. The CTUIR is made up of the Cayuse, Umatilla, and Walla Walla tribes. All rights, title, and claim to the CTUIR's aboriginal territory (6,400,000 acres), excepting the reservation lands, were ceded. The Treaty recognized and expressly reserved for the tribes the exclusive right of taking fish in the streams running through and bordering the reservation and at all other usual and accustomed fishing stations in common with citizens of the United States (BPA, 2002). They were also guaranteed the right to erect suitable buildings for curing fish and to hunt, gather roots and berries, and pasture their stock on unclaimed lands in common with other United States citizens.

The public, including tribal members, has access to the BLM Property, which is a potentially important food, medicine, and resource-gathering location for the CTUIR. Treaty rights include access to First Food resources.

The CTUIR participated in the cultural resources evaluation of the 29.06-mile-long project corridor and provided input on specific areas or locations that might be of cultural concern to the tribes. The CTUIR's Traditional Use Investigation of the project corridor sought to document traditional plants that may occur in uncultivated areas and to document through limited elder interviews how lands within the project corridor were and are part of the CTUIR's former and ongoing cultural and economic life. In addition, CTUIR members participated in the archaeological survey that took place July 16-20 and August 7, 2008.

A cultural resources file and literature search for the proposed project was conducted at the Oregon State Historic Preservation Office and the Washington State Department of Archaeology and Historic Preservation. The completed records search determined the number and nature of "previously documented" archaeological sites and historic properties within 1 mile of the 29.06-mile-long project corridor. These sites are discussed in detail in the *McNary–Walla Walla 230-kV Transmission Line Cultural Resources Investigation* (CH2M, 2008b; confidential and not for public distribution).

No archaeological sites were found on the BLM Property during the cultural resources file and literature search, and field studies.

3.9.2 Environmental Consequences

3.9.2.1 Proposed Action

Under the Proposed Action, BLM would grant a ROW to allow for construction of a transmission line across the BLM Property. The literature search and field studies did not identify any cultural or archaeological resources on the Property; therefore, no impacts to cultural or archeological resources would occur as a result of the Proposed Action.

The project vicinity is a significant heritage resource of concern for the CTUIR. Pacific Power is consulting with the CTUIR regarding potential impacts to Traditional Cultural Properties (TCPs) and other tribal cultural resources along the length of the proposed project, including the ROW on the BLM Property. Pacific Power would continue to consult with the CTUIR during transmission line construction regarding identified TCPs, and monitor subsurface construction activities, to avoid potential unforeseen impacts to area resources. In compliance with regulatory requirements, the Proposed Action includes the project-

specific *Avoidance, Monitoring, Protection, and Discovery Plan for Treating Identified Cultural Resources and Unanticipated Discoveries* (CH2M, 2010; Appendix E).

Similar to the conclusions reached in the Wallula DEIS (BPA, 2002), no substantial unavoidable impacts to known cultural resources would result from construction, operation, and maintenance of the Proposed Action.

3.9.2.2 No Action

Under No Action, BLM would not grant a ROW, the transmission line would not be constructed across the BLM Property, and there would be no adverse impacts to cultural resources.

3.10 Hazardous and Solid Wastes

3.10.1 Affected Environment

The transport and handling of hazardous materials in Oregon are subject to numerous federal and state laws and regulations. There are no known hazardous or solid wastes on or generated within the BLM Property.

During construction, solid waste consisting of construction debris and removed vegetation would be generated. Hazardous waste materials used during construction and operation would consist primarily of small amounts of lubricants and cleaning solutions.

3.10.2 Environmental Consequences

3.10.2.1 Proposed Action

Under the Proposed Action, BLM would grant a ROW to allow for construction of a transmission line across the BLM Property. Pacific Power would specify measures for construction and maintenance crews to prevent waste materials from spilling on the ground or entering surface waters. The contractor also would remove waste materials from the project area upon completion of construction and maintenance activities. Vegetation debris would be discarded at an approved landfill to prevent dissemination of weeds or creation of a fire hazard.

The following measures would be utilized to minimize the release of waste materials into ground or surface waters:

- During construction, vehicle servicing and refueling would occur offsite at a temporary staging area equipped for fuel or oil spills.
- Onsite vehicles would be monitored for petroleum leaks. Spills would be cleaned up immediately upon recovery and reported to the appropriate agency.
- Few hazardous materials would be used during construction of the project.
- Any hazardous waste material generated by project construction would be disposed of in a manner specified by federal, state, and local regulations, and in accordance with the specific manufacturer's recommendations.
- Cleanup materials would be kept readily available onsite, either at the equipment storage area or on the construction contractor's trucks.

Based on the limited quantities of hazardous materials to be used, and spill prevention, containment, and countermeasures, adverse effects from hazardous materials would be negligible.

3.10.2.2 No Action

Under No Action, BLM would not grant a ROW to cross the BLM Property. No waste would be generated because the transmission line would not be constructed.

3.11 Fire

3.11.1 Affected Environment

Wildfires are often ignited by natural sources such as lightning, but may be ignited by humans, downed transmission lines, or idling equipment. Eastern Oregon is prone to wildfires during the dry summer months. The BLM Property contains native and non-native grasses and small shrubs, which provide fuel for wildfires that burn rapidly, with flame heights of 3 to 5 feet. Potential wildfire hazards are low throughout most of the year, but could be high or extreme during the summer and early fall months. Although records of fire frequency are unavailable, observations show that historical ground fires have occurred at the BLM Property.

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action

Under the Proposed Action, BLM would grant a ROW to allow for construction of a transmission line across the BLM Property. Ignition of a fire could result from construction-related activities or from transmission line operation. The increase in human activity during construction could increase the potential for the ignition of a wildfire. During operation, a fire could be started by a downed transmission line or lightning strike; however, the existing BPA transmission line would be the tallest structure within the vicinity.

Pacific Power would require the construction contractor to implement the following fire prevention measures:

- Adhere to all federal, state, and county laws, ordinances, rules, and regulations that pertain to fire prevention, presuppression, and suppression.
- Advise all construction personnel of their responsibilities under the applicable fire laws and regulations. The construction contractor would notify the local fire district if a construction-related fire occurs.
- Take responsibility for any fire started by its employees or operations, and administer fire suppression and rehabilitation.

In addition, Pacific Power would implement the following safety measures during transmission line construction to prevent fires and to ensure quick response and suppression in the event a fire occurs:

- Vehicles would stay on designated roads or park in areas free of vegetation, to the extent practicable.
- Vehicles, gas-powered equipment, and any fuel handling, dispensing, or storage equipment would be equipped with spark arrestors.
- The construction contractor would provide (and store in a place easily accessed) five shovels, two backpack pumps with water, and one 5-pound ABC dry powder carbon monoxide fire extinguisher during all construction activities.
- Vehicles would be equipped with at least one fire extinguisher.

Burned areas would be safe to enter within an hour after a wildfire, and vegetation would reestablish quickly after the fire.

Based on the fire prevention, presuppression, and suppression measures that would be implemented during construction, the Proposed Action would not result in an increased fire hazard at the BLM Property in the short term. In the long term, the potential for adverse wildfires would increase slightly due to the increased potential for a downed line, although the possibility would be remote for a well-maintained line. The risk of lightning strikes probably would be about the same because the existing BPA transmission line would remain tallest.

3.11.2.2 No Action

Under No Action, BLM would not grant a ROW to cross the BLM Property. There would not be an increased fire hazard at the BLM Property because the transmission line would not be constructed.

3.12 Land and Realty

3.12.1 Affected Environment

The BLM Property encompasses approximately 105 acres. The BLM Property is undeveloped except for the BPA's existing 500-kV Lower Monumental-McNary transmission line, which generally crosses the parcel from west to east. The Property contains five steel lattice structures that are part of the BPA transmission line. In addition to power transmission, the BLM Property is used for grazing allotments.

The Property is managed by BLM under the Baker RMP (BLM, 1989) (see Section 1.3, Conformance Statement). There is evidence from the title that this property has been under federal management since the 1920s. Its use is regulated by Oregon land use law and the Umatilla County land use plan—the UCCP and UCDC. The Property is within the North/South Agriculture UCCP designation and EFU zoning district.

Transmission lines on EFU-zoned land are "utility facilities necessary for public use" as provided for under ORS 215.283(1)(c). The Oregon Supreme Court has held that transmission lines on EFU-zoned land are considered uses as of right under ORS 215.283(1)(c) and are not subject to conditional use requirements. However, while transmission lines on EFU-zoned lands do not require a CUP, a LUD is required.

3.12.2 Environmental Consequences

3.12.2.1 Proposed Action

Under the Proposed Action, BLM would grant a ROW to allow for construction of a transmission line across the BLM Property. The Umatilla County Planning Commission reviewed and approved approximately 22 miles of Pacific Power's proposed transmission line route, including the short segment on the BLM Property. However, the previously approved LUD/CUP expired December 8, 2014, and a new LUD and CUP application was submitted in August 2015. Once the LUD is approved, the Proposed Action would be a permitted use where proposed on EFU-zoned land, such as the BLM Property, consistent with the UCCP and UCDC.

Following construction, the proposed transmission line ROW could continue to be used for a variety of complementary purposes (e.g., grazing) as long as the specific uses do not conflict with the safe operation of the line and meet the NESC and Pacific Power standards for clearances and use. Allowed uses typically include grazing, agriculture, hunting, and limited development such as parking lots or roads. Uses that are not allowed include buildings or any use that degrades the required ground-to-line

clearances. Allowable uses would be articulated in the ROW agreement. Similar to the conclusions reached in the Wallula DEIS (BPA, 2002), unavoidable adverse impacts to land uses by construction, operation, and maintenance of the transmission line through the Proposed Action would be minimal and mitigatable.

3.12.2.2 No Action

Under No Action, BLM would not grant a ROW to cross the BLM Property and the transmission line would not be constructed.

Figure 3-1: NWI Wetlands of the Proposed Action

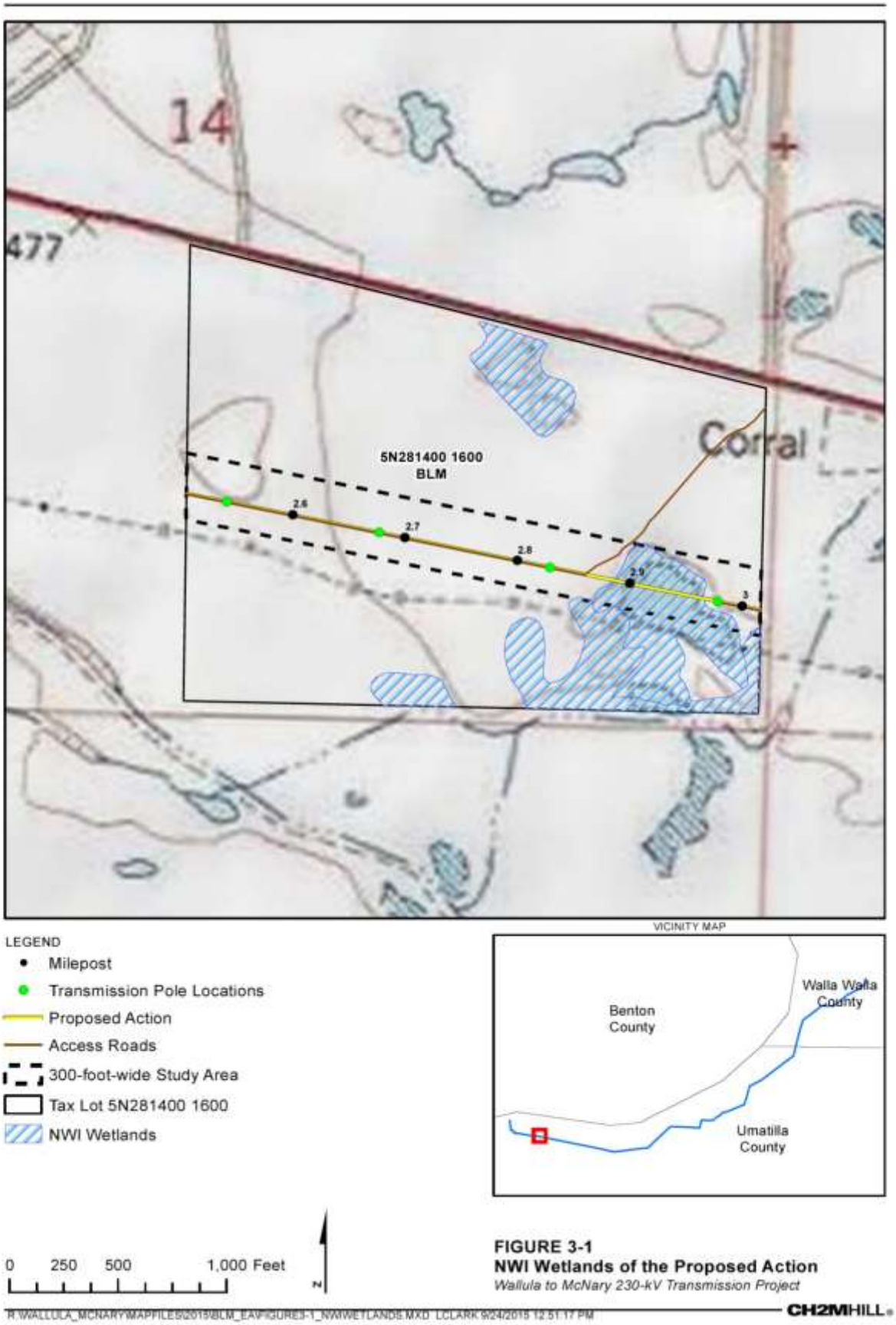
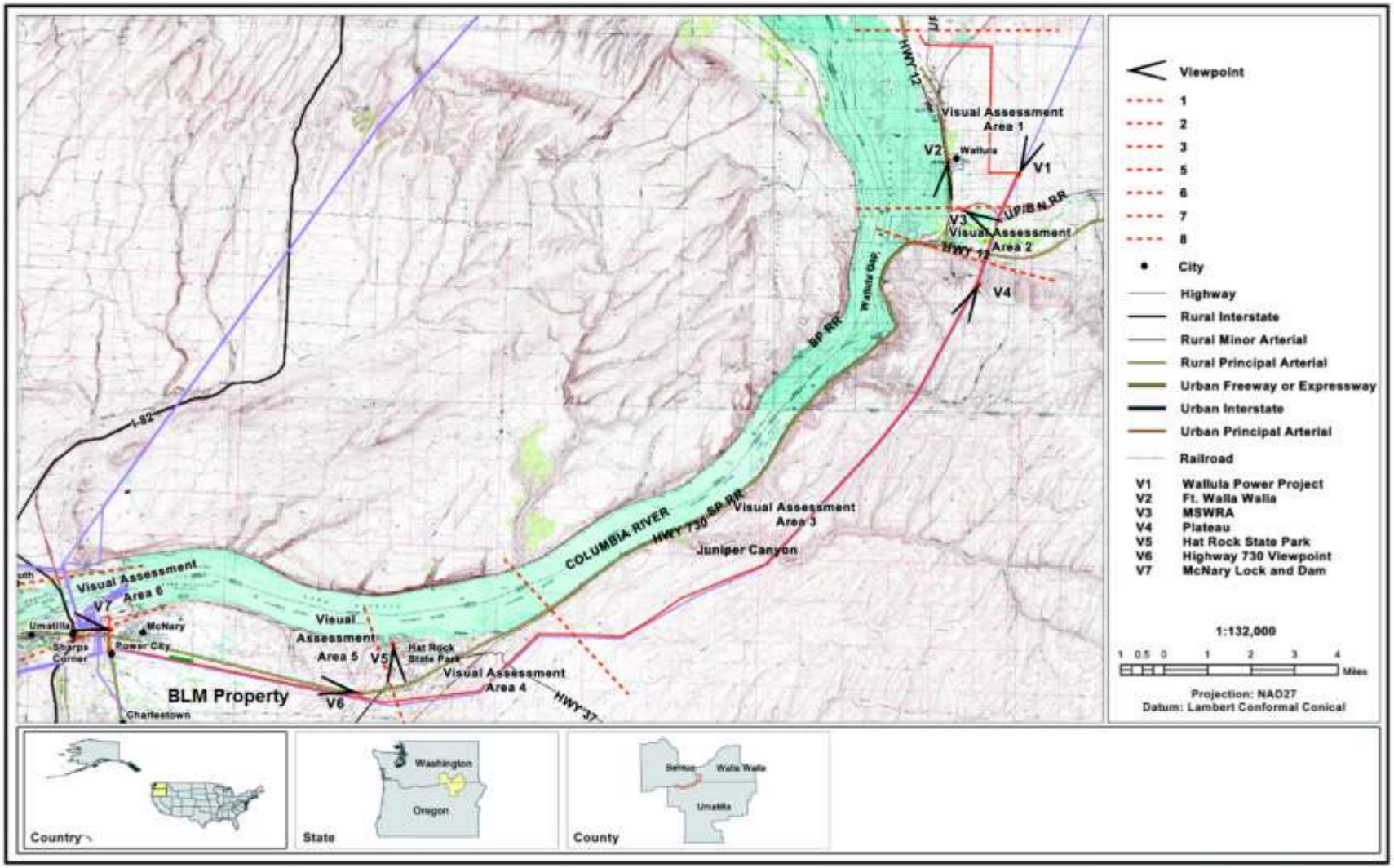


Figure 3-2: Photograph of Wetland W1UM-01

FIGURE 3-2
Photograph of Wetland W1UM-01
Wallula to McNary 230-kV Transmission Project

Figure 3-3: Visual Assessment Areas and Viewpoints



Source: Entrix

Figure 3-3

Visual Assessment Areas and Viewpoints for Transmission Line

Wallula to McNary 230-kV Transmission Project

Figure 3-4a. & Figure 3-4b: Existing and Simulated Views

Figure 3-4a. Existing View: Highway 730 Roadside Southwest Viewpoint

Figure 3-4b. Highway 730 Roadside Southwest Viewpoint with a Simulated Transmission Line View

Note: In this simulation, the second transmission line is shown as supported by steel lattice to

Figure 3.11-17. Existing View: McNary Lock and Dam View

Source: Photos provided by Huitt-Zollars

Cumulative Effects

The analysis of cumulative environmental effects resulting from the Proposed Action considers past actions that have affected resources, present actions that affect resources, and reasonably foreseeable actions that might affect resources.

Past actions within the Proposed Action area primarily consist of traditional tribal practices; the production of livestock; irrigation practices to provide water for livestock and to flood uplands to provide and maintain increased forage productivity; and the construction of the existing BPA transmission line. Decades of grazing and ranching have altered plant communities, introduced non-native vegetation, and shifted habitat quality, as well as caused the construction of unimproved roads that introduced occasional vehicle traffic, noise, and dust.

Presently, the Proposed Action area is characterized by federal land management under BLM. Grazing and agriculture are excluded from the property, and recreation and public access are limited. Irrigation is not applied. Traditional tribal uses such as hunting, gathering, and grazing are ongoing. Also ongoing is the operation of the existing BPA transmission line.

Reasonably foreseeable future actions include continued federal land management, continued operation of the existing BPA transmission line, and construction of an additional transmission line (the Proposed Action).

4.1 Global Atmosphere, Climate, and Greenhouse Gases

Air quality and climate are influenced globally by incremental emissions of GHG, vehicle exhaust, agriculture, wildfires, and other factors. Air quality at the BLM Property is affected by exhaust from vehicles traveling through the area on Highway 730 and from vehicles of the BLM management staff, and occasional wildfires. If the regional population were to grow, additional vehicle emissions and dust generation would be expected, especially during the drier summer months. The Proposed Action would result in additional vehicle exhaust and fugitive dust emissions during construction of the project only. On a short-term and temporary basis, these emissions would contribute incrementally and cumulatively to local air quality. However, the emissions would not be noticeable in populated areas of Umatilla County. Temporary exhaust and dust emissions would result in negligible cumulative effects. No long-term adverse cumulative effects on air quality or climate by transmission line development are expected because the emissions generated from O&M vehicles (two truck trips a year) would be negligible, when compared to the 10,100 daily trips on nearby Highway 730, consistent with the conclusion reached in the Wallula DEIS (BPA, 2002).

4.2 Vegetation

Past grazing, agricultural, and other human activities have shifted plant communities and increased invasive and noxious weed species in the Proposed Action area. Existing activities at the BLM Property include limited recreation and public access, hunting, and transmission line operation. These activities have mostly perpetuated the existing non-native vegetation. Past impacts to vegetation occurred from BPA's transmission line development within the BLM Property (BPA, 2002). Temporary removal of vegetation for construction of the proposed transmission line would contribute to short-term additional impacts to vegetation communities within the BLM Property. Limited long-term vegetation management would occur during transmission line operation to comply with transmission line safety and maintenance standards within the ROW. Other reasonably foreseeable actions under BLM management include restoring habitat and limiting recreation and public access. Because the Proposed Action would have a negligible impact on vegetation, reasonably foreseeable actions include vegetation enhancement

in the project area, and no federally or BLM-Sensitive plant species were identified on the BLM Property during field surveys, cumulative effects on vegetation and special-status plant species would not be anticipated or would be less than significant.

4.3 Water Resources

Impacts on water resources probably resulted from the conversion of native vegetation communities by grazing. Management activities have disturbed and accelerated the sediment transport of surface soil that may promote water quality impairment. The Proposed Action would include minor, temporary land-disturbing activities, and measures to reduce erosion and prevent offsite sediment mobilization, thereby minimizing the potential for cumulative effects on the wetland and other water resources. As construction mitigation measures associated with the Proposed Action make the potential impacts to water resources negligible, no adverse cumulative effects on water resources are anticipated. This conclusion is consistent with the Wallula DEIS (BPA, 2002).

One wetland and associated riparian area are present within the BLM Property. Past construction projects have avoided most impacts to the wetland. The construction of the proposed transmission line would have no direct or indirect effects on the wetland and riparian area; hence, there would be no cumulative effects on wetland or riparian areas. This conclusion is consistent with the Wallula DEIS (BPA, 2002).

4.4 Wildlife and Wildlife Habitat

Past impacts to wildlife habitat in the Proposed Action area have occurred through the degradation of native vegetation and habitat resulting from human activities that include grazing practices. The construction of the proposed transmission line could cause cumulative impacts through the removal of vegetation to create and maintain transmission line ROWs, which could further alter the composition of vegetation in the area. Furthermore, maintenance activities such as vegetation management and the clearing of hazard trees would maintain only low-growing vegetation.

Maintaining ROWs increases public access, and could result in incremental habitat fragmentation and reduced habitat effectiveness and integrity for some species (BPA, 2002). Habitat in the area is already highly fragmented. However, reasonably foreseeable actions include the continuation of current federal land management to sustain ecosystem values along with transmission line operation.

Because the area of temporary (4.53 acres) and permanent (0.18 acre) habitat impacts from the Proposed Action would be negligible relative to the hundreds of acres of similar habitat at the BLM Property and in the vicinity, the Proposed Action would have a negligible cumulative effect on wildlife habitat. This conclusion is consistent with the Wallula DEIS (BPA, 2002).

The existing transmission line has contributed to avian mortality at the BLM Property. The project would potentially increase migratory bird mortality compared to current conditions. The Proposed Action is anticipated to incrementally and cumulatively affect avian mortality when considered in combination with other area transmission line projects.

The Proposed Action would not result in cumulative impacts to special-status species because no federal-listed wildlife species have been identified within the analysis area, and direct effects on BLM-Sensitive species are expected to be negligible or not important in the short and long terms. This conclusion is consistent with the Wallula DEIS (BPA, 2002).

4.5 Recreation

Impacts on recreation from past projects may have adversely affected bird hunting in this area, the only documented recreational use of the BLM Property. The Proposed Action would not restrict hunting,

except temporarily during construction; therefore, potential cumulative recreation effects would be minimal.

4.6 Visual Resources

Impacts on visual resources from past projects have been adverse because past and present uses have modified the visual setting. Recent industrial development north of the property has further reduced visual quality. Reasonably foreseeable future actions include the continuation of current uses.

The present viewshed, as perceived from nearby travel routes, is generic landscape traversed by existing power and distribution lines. The direct visual and scenic quality impacts of the Proposed Action would be adverse because landform, color, and linear landscape alterations would persist over the long term in the Proposed Action area. However, the Proposed Action would parallel the existing BPA transmission line, which uses larger and taller structures, which would remain the largest and most visible structures on the BLM Property. Overall, the Proposed Action conforms to VRM classifications; therefore, the Proposed Action would not cause further cumulative adverse visual effects, or at worst, cumulative adverse effects would be minimal and limited.

4.7 Cultural Resources

The proposed transmission line could cause direct or indirect cultural resources impacts at the BLM Property, and could indirectly affect cultural resources along the entire proposed transmission line corridor, if and where cultural resources are present. Potential cumulative effects on historic properties of religious and cultural significance to the tribes would be determined through the National Historic Preservation Act Section 106 process, in consultation with CTUIR. However, risk of an impact on cultural resources at the BLM Property is low because the area has been thoroughly studied (CH2M, 2008b; BPA, 2002). The Proposed Action would not adversely impact cultural or historic resources on the BLM Property because previous cultural investigations were negative and documentation of resources is lacking. The *Avoidance, Monitoring, Protection, and Discovery Plan for Treating Identified Cultural Resources and Unanticipated Discoveries* has been prepared to address the potential discovery of an unknown archaeological site during construction, and to avoid or minimize impacts from such a discovery (CH2M, 2008b; Appendix E). When considered with reasonably foreseeable actions, including continued federal land management and transmission line operation, the Proposed Action would have a low risk of impact on cultural resources, and a low likelihood of cumulative cultural resources effects.

4.8 Hazardous and Solid Waste

No direct or indirect hazardous or solid waste impacts are anticipated with the Proposed Action. Reasonably foreseeable future actions include the continuation of current uses; therefore, no cumulative effects related to hazardous and solid waste are anticipated.

4.9 Fire

Impacts of fire from past projects have been adverse. The existing BPA transmission line presents a possible source of ignition from lightning strikes or downed electrical lines on the BLM Property. Cumulative fire impacts could result from the Proposed Action, which could further increase the potential for fire from downed electrical lines or lightning strikes. However, the fuel load would decrease slightly under ROW management, any fire would likely burn rapidly, and vegetation would reestablish rapidly. The Proposed Action also includes mitigation measures to reduce the threat of fire during construction of the transmission line. Therefore, the cumulative fire impacts would be less than significant after accounting for the direct and indirect incremental increase in the potential for fire.

4.10 Land and Realty

Transmission line ROWs potentially affect land uses by the structural components of the transmission line or by limiting activities within the ROW to maintain safety per the National Electric Safety Code. For example, aboveground industrial, commercial, and residential structures are not allowed within ROW. Further, placement of transmission line structures may affect specific land uses by precluding or displacing them. The existing BPA 500-kV Lower Monumental-McNary transmission line across the BLM Property limits land uses within the ROW where existing structures are located. The Proposed Action would require additional ROW and placement of new transmission line structures, which could cause cumulative impacts to land use. However, the proposed transmission line would be adjacent to the existing BPA 500-kV Lower Monumental-McNary transmission line, limiting land use impacts to a defined corridor rather than spreading them across a broader area. In addition, co-locating the proposed transmission line with the existing line minimizes the area of land impacted by a new transmission line and would conform to the Baker RMP (BLM, 1989).

The BLM ROW permit would prevent changes in land use caused by the proposed ROW easement across the BLM Property, and the proposed line would be compatible with the Baker RMP as a condition of the ROW permit. Additionally, the proposed line received Umatilla County Land Use Approval, and currently is undergoing review for updated approval. Therefore, the Proposed Action would not cause cumulative land and realty impacts through creation of additional ROW easement and placement of new structures.

Public Involvement and Outreach

Table 5-1 outlines the public involvement and outreach steps conducted for the project. Appendix F provides a list of the tribes, individuals, organizations, and agencies consulted since project inception.

Table 5-1. Public Involvement and Outreach

Activity	Date	Audience
Stakeholder assessment	Dates conducted: February 22 to March 14, 2008	Representative members of the general public
Project Web site	Date established: March 2008, Updated January 2015	General public
Project phone line	Date established: March 2008, restarted January 2015	General public
Stakeholder and landowner letter	Date mailed: February 2015	General public
Project fact sheet #1	Date issued: February 2, 2015	General public
Frequently asked questions #1	Date mailed: February 2015	General public and Community Open House meeting participants
Outreach to tribes	Date: Ongoing	Confederated Tribes of the Umatilla Indian Reservation
Stakeholder and landowner letter	Date mailed: September 2015	General public
Community open houses	To be determined	General public
Additional Activities Before 2015		
Project fact sheet #1	Date issued: March 7, 2008	General public
Project newsletter #1	Date mailed: February 29, 2008	General public
PowerPoint presentations for open houses	Dates used: March 10-12, 2008	Community Open House meeting participants
Community open houses	Walla Walla – March 10, 2008 Umatilla – March 11, 2008 Touchet – March 12, 2008	General public
Stakeholder follow-up letters	Date mailed: March 28, 2008	Landowners within 1,000 feet of the proposed route
Landowner follow-up letters	Date mailed: March 31, 2008	Landowners directly impacted by the proposed route
Right-of-entry request letters	Dates mailed: April-May 2008	Affected landowners
Landowner meetings	Dates: March-July 2008	Affected landowners with particular concerns
Community informational exhibits	Installation date: May 6, 2008	General public in and around Walla Walla, Umatilla, and Touchet
Permission for permitting letters to Umatilla County landowners	Date: Late June – early July 2008	Oregon landowners

Table 5-1. Public Involvement and Outreach

Activity	Date	Audience
Community group meetings	Meeting Dates: July-August 2008	Umatilla Chamber of Commerce, Port of Umatilla, Walla Walla Rotary, Walla Walla Board of Commissioners, Port of Walla Walla Economic Development Advisory Committee
Outreach to tribes	Date: Ongoing	Confederated Tribes of the Umatilla Indian Reservation
Public meeting notification flyer	Date mailed: August 14, 2008	General public
Public meeting notifications in local media	Date: August 14, 2008	General public
Project newsletter #2	Date mailed: September 2, 2008	General public
Landowner update letter	Date mailed: September 2, 2008	Landowners
PowerPoint presentations for open houses	Dates used: September 16-17, 2008	Community Open House meeting participants
Community Open Houses	Walla Walla – September 16, 2008 Umatilla – September 17, 2008	General public
Bill Clemens on local radio station KUJ to discuss the project	Date aired: September 26, 2008	General public
Landowner update letter	Date mailed: October 27, 2008	Landowners
Project fact sheet #2	Date issued: October 27, 2008	General public
Frequently asked questions #2	Date issued: October 28, 2008	General public
Landowner acknowledgement letter	Date mailed: November 10, 2008	Affected landowners
Community information PowerPoint	Date used: January 2009	Rotary Club
Bill Clemens on local radio station to discuss the project	Date aired: February 12, 2009	General public
PowerPoint presentation delivered at Umatilla County permit hearing	Date used: February 26, 2009	Umatilla County commissioners and general public
PowerPoint presentation delivered at Walla Walla County permit hearing	Date used: March 16, 2009	Walla Walla County commissioners and general public
Project newsletter #3	Date mailed: April 16, 2009	Landowners and general public
Landowner update letter	Date mailed: April 16, 2009	Landowners
PowerPoint Presentation delivered to Umatilla Tribal Resources Committees (Economic Development Committee and Cultural Resources Committee)	Date: May 12, 2009	Umatilla Tribal Resources Committee
Landowner update letter	Date mailed: January 5, 2010	Landowners
Project fact sheet #3	Date issued: January 6, 2010	General public
Landowner update letter	Date mailed: January and February 2011	Landowners and stakeholders
Landowner letters regarding high-value farmland consultation	Date mailed: May 6 and May 20, 2011	Affected landowners and agencies/officials
Landowner update letter	Date mailed: December 20, 2011	Landowners and stakeholders

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Appendix A
Avian Protection Plan

Pacific Power
Avian Protection Plan

October 2014

Revision 7

Pacific Power Avian Protection Plan

Date: October 1, 2014 **Original Document: November 15, 2004**
Current Revision: Revision 7

Executive Summary

This Avian Protection Plan (APP) details the efforts conducted by Pacific Power in the states of Oregon, Washington, and California to protect eagles, hawks, and other migratory birds from electrocution and collision mortality on Pacific Power's overhead power lines. Since the 1980s, PacifiCorp has had a Bird Management Program in place to address bird issues in Pacific Power and Rocky Mountain Power. This Program was used as a template for the national Avian Protection Plan Guidelines (Avian Power Line Interaction Committee [APLIC] and U.S. Fish and Wildlife Service [USFWS] 2005) and includes the 12 principles identified in the Guidelines. This Pacific Power APP document includes PacifiCorp's existing Bird Management Program policies and procedures, identifies program updates, and details Pacific Power's proactive risk assessment and retrofitting efforts. The USFWS has contributed to the development of PacifiCorp's Bird Management Program over the years and is anticipated to continue to provide guidance in the implementation of this APP.

Purpose

Pacific Power's service area is in a region that supports a diversity of migratory birds, including eagles, raptors, and waterfowl. The purpose of this APP is to reduce mortalities of migratory birds while enhancing power reliability. This APP is intended to be a living document that will be updated as appropriate.

Background

In 2004, PacifiCorp and USFWS signed an "Avian Protection Plan for the Klamath Basin". The plan detailed efforts to be conducted by PacifiCorp in the Klamath Basin of Oregon and California to protect eagles, hawks, and other migratory birds from electrocution mortality on PacifiCorp's overhead power lines. This multi-year plan was developed in cooperation with USFWS and incorporated existing components of PacifiCorp's Bird Management Program with additional proactive efforts to identify and minimize avian electrocution risk within the Klamath Basin. In 2009, PacifiCorp developed APPs for its facilities in Wyoming, Idaho, and Utah. These plans contain comprehensive details of PacifiCorp's bird protection effects, addressing all 12 APP components, as well as long-term schedules for proactive retrofitting. This Pacific Power APP updates the original Klamath Falls APP to include current information consistent with the other recent PacifiCorp APPs and identifies current avian mortality risk areas throughout Pacific Power.

Pacific Power Avian Protection Plan
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I. BIRD PROTECTION POLICIES

PacifiCorp has two policies that address birds within both Pacific Power and Rocky Mountain Power:

1. Bird Management Program/Avian Protection Plan Policy
2. Bird Protection Policy for Substations

PacifiCorp's Bird Management Program Policy was updated in early 2009 to include installation of bird protection on equipment poles in all areas, not just outside city limits, and to include five distribution poles in each direction of eagle mortality poles for retrofitting. PacifiCorp's Policy and Standards for Bird Protection in Substations were also finalized in 2009.

Figure 1. PacifiCorp Bird Management Program/Avian Protection Plan Policy.

ROCKY MOUNTAIN POWER

PACIFIC POWER

PacifiCorp Bird Management Program/ Avian Protection Plan Policy

Bird interactions with power lines may cause bird mortalities, which, in turn, may result in outages, violations of bird protection laws, or raise concerns by employees, resource agencies and the public.

This policy is intended to ensure compliance with legal requirements, while improving distribution system reliability. Transmission and Distribution Operation's management and employees are responsible for managing bird interactions with power lines and are committed to reducing the detrimental effects of these interactions.

To fulfill this commitment, PacifiCorp will:

- Implement and comply with its comprehensive Bird Management Program (also referred to Avian Protection Plan).
- Ensure its actions comply with applicable laws, regulations, permits, and Bird Management Program/Avian Protection Plan procedures.
- Provide information, resources, and training to improve its employees' knowledge and awareness of the Bird Management Program/Avian Protection Plan.
- Document bird mortalities and problem nests (including nests that are removed or relocated).
- Construct all new or rebuilt lines in rural areas (outside city limits or beyond residential/commercial developments) and appropriate urban areas to comply with PacifiCorp avian-safe standards.
- Construct all new or rebuilt equipment poles in all areas (within and outside city limits) to comply with PacifiCorp avian-safe standards. This is intended to ensure that bushings, cutouts, arresters, and jumpers are appropriately covered.
- Retrofit or modify facilities where protected birds have been killed or caused an outage. Modifications will be in accordance with Bird Management Program/Avian Protection Plan procedures.
- Retrofit five distribution poles, as needed, in each direction of eagle mortality poles.
- Participate with public and private organizations in programs and research to reduce detrimental effects of bird interactions with power lines.

PacifiCorp's customer service and regulatory compliance will be enhanced, and risk to migratory birds will be reduced through the proactive and innovative resolutions of bird power line interactions guided by this commitment.

Rich Walje, President
Rocky Mountain Power

Pat Reiten, President
Pacific Power

Paul Radakovich, VP, Operations
Rocky Mountain Power

Bill Eaquinto, VP, Operations
Pacific Power

April 2, 2009

Figure 2. PacifiCorp Bird Protection Policy for Substations.

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PacifiCorp Bird Protection Policy for Substations

Bird interactions with substations may cause bird mortalities, which, in turn, may result in outages, violations of bird protection laws, or raise concerns by employees, resource agencies and the public.

This policy is intended to ensure compliance with legal requirements, while improving system reliability. Substation Operation's management and employees are responsible for managing bird interactions with substations and are committed to reducing the detrimental effects of these interactions.

To fulfill this commitment, PacifiCorp will:

- Implement and comply with its comprehensive Bird Management Program.
- Ensure its actions comply with applicable laws, regulations, permits, and Bird Management Program procedures.
- Document bird mortalities and problem nests in substations.
- Provide information, resources, and training to improve its employees' knowledge and awareness of the Bird Management Program.
- New substations will comply with PacifiCorp avian-safe substation design standards.
- Retrofit or modify (whenever feasible) substations that pose a high risk due to bird or animal caused outages or protected bird mortalities. Modifications will be in accordance with Bird Management Program procedures and Company avian-safe substation design standards.

PacifiCorp's customer service and regulatory compliance will be enhanced, and risk to migratory birds will be reduced through the resolution of bird/animal substation interactions guided by this commitment.

Pat Reiten, President
Pacific Power

Rich Walje, President
Rocky Mountain Power

Bill Eaquinto, VP, Operations
Pacific Power

Paul Radakovich, VP, Operations
Rocky Mountain Power

Steve Henderson, Director
Substation Operations
Pacific Power

Kevin Freestone, Director
Substation Operations
Rocky Mountain Power

April 2, 2009

II. TRAINING

Bird Management Program/Avian Protection Plan training and/or training resources are provided as needed for various personnel within Pacific Power. Training may be delivered via bulletins, online information, or instructor/hands-on. Employees that may not be present during instructor-led training are required to review the online training with their manager.

Figure 3. Bird Management Program training schedules.

Department/Job Titles	Training Type	Frequency
T&D Field Operations and T&D Substation Operations (foremen, journeymen, troublemen, etc.)	Instructor led, Online, and/or Information Bulletins	As needed
New Managers	Instructor led	As needed
Estimators	Instructor led	As needed
Service Coordinators	Instructor led and Online	As needed
Vegetation Management (training for employees and contractors regarding nest protection)	Instructor led and Online	Annual or as needed
Contract line construction crews and Inspectors	Instructor led	As needed
Dispatch	Instructor led and Online	As needed

Instructor-led training presentations are modified as needed to include current policies, practices, standards, and materials. Online resources are available as training aids. Interactive online training programs may be developed as needed for particular job titles, e.g. service coordinators or dispatchers. The following is a list of training materials that are available online or through Environmental Services (items marked with an * are included in the following pages):

- Bird Management Program Guidelines
- Protected bird mortality/problem nest flowchart for T&D Field Operations (*Figure 4)
- Protected bird mortality/problem nest flowchart for T&D Substation Operations (*Figure 5)
- PacifiCorp's Guide to Birds on Power Facilities
- Protected species/bird-related outage cause codes handout (*Figure 6)
- Documentation flowchart for service coordinators (*Figure 7)
- SAP and BMTS instructions for service coordinators
- Procedures for retrofitting eagle mortality poles and adjacent structures (*Figure 8)

Figure 4. Protected bird mortality/problem nest flowchart for T&D Field Operations (page 1 of 2).

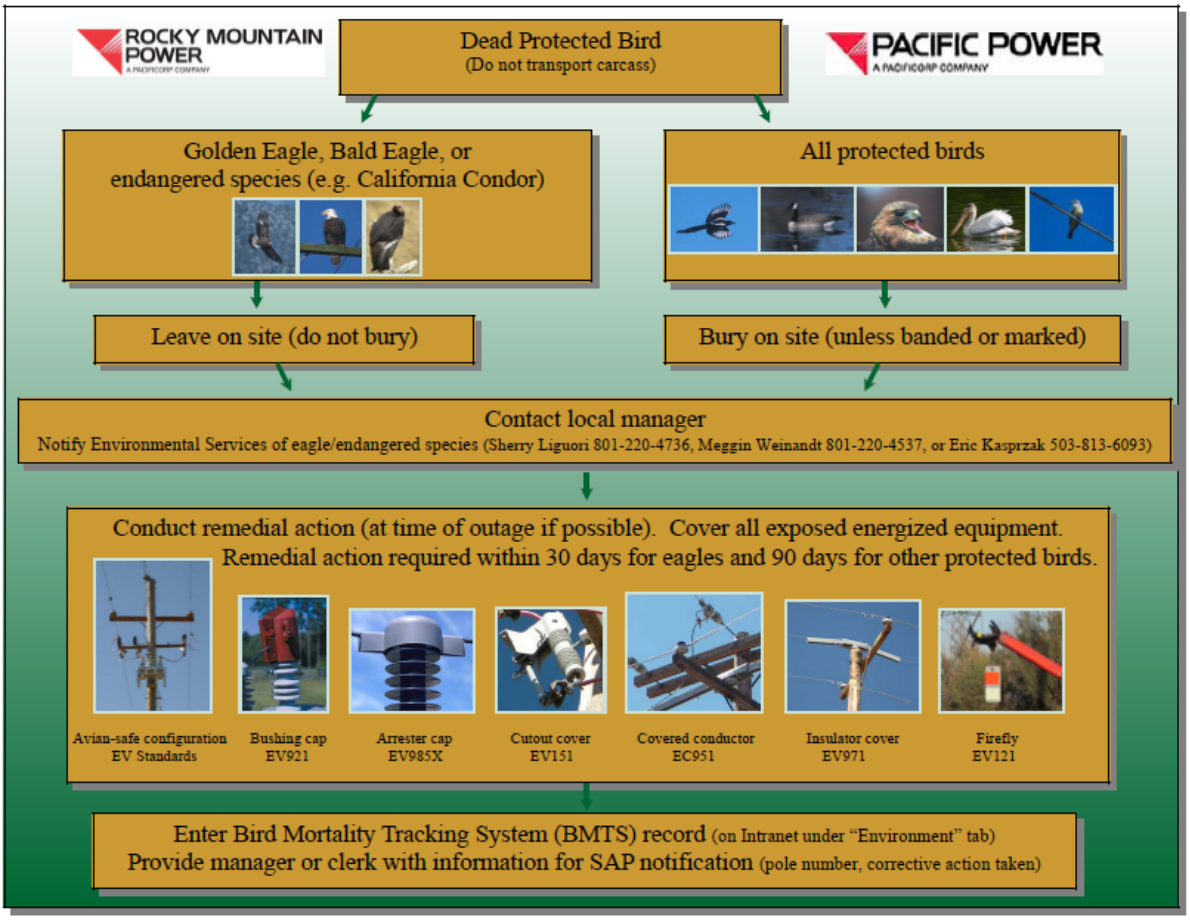

Figure 4 (con't). Protected bird mortality/problem nest flowchart for T&D Field Operations (page 2 of 2).

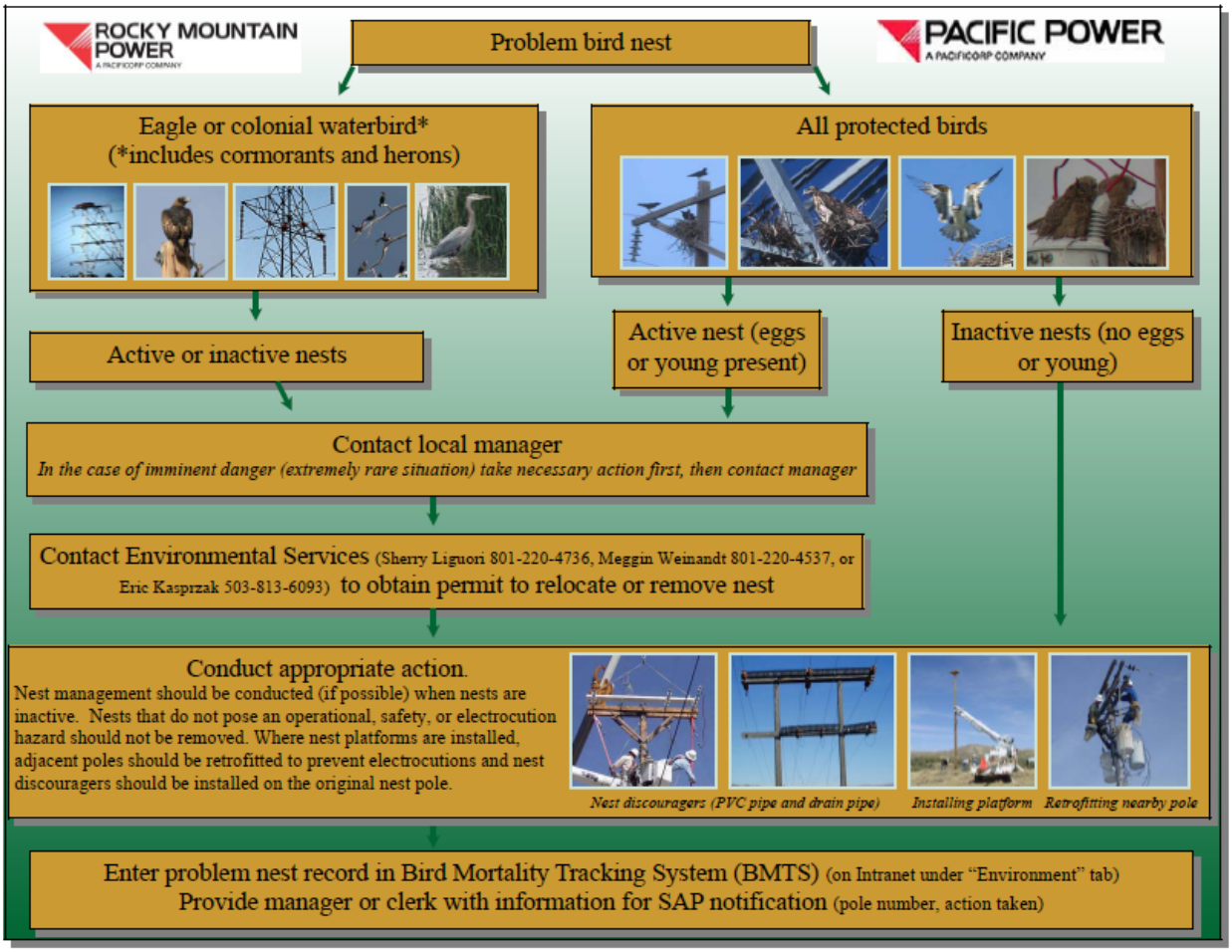

Figure 5. Protected bird mortality/problem nest flowchart for T&D Substation Operations (page 1 of 2).

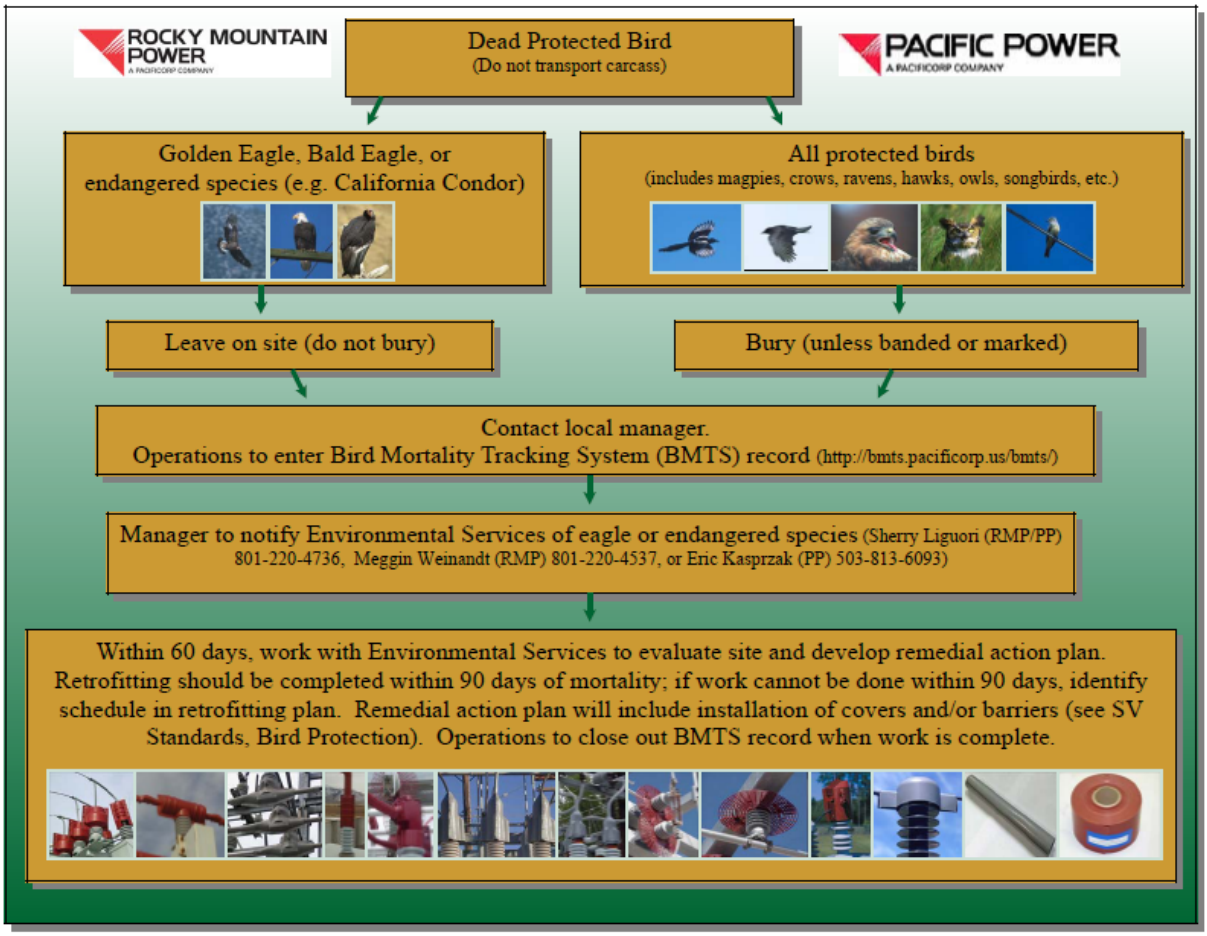

Figure 5 (con't). Protected bird mortality/problem nest flowchart for T&D Substation Operations (page 2 of 2).

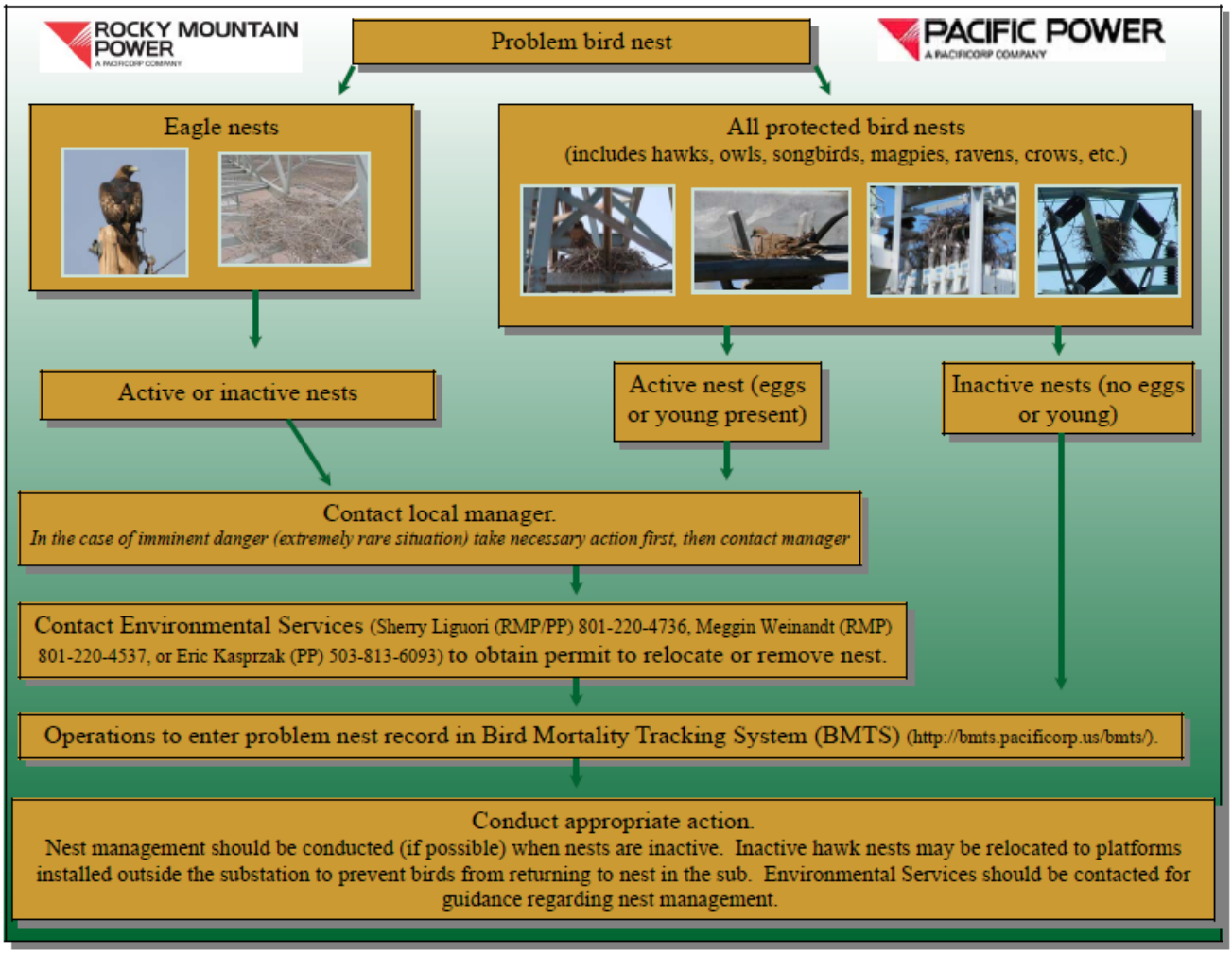

Figure 6. Protected species/bird-related outage cause codes handout (page 1 of 2).

Figure 6 (con't). Protected species/bird-related outage cause codes handout (page 2 of 2).

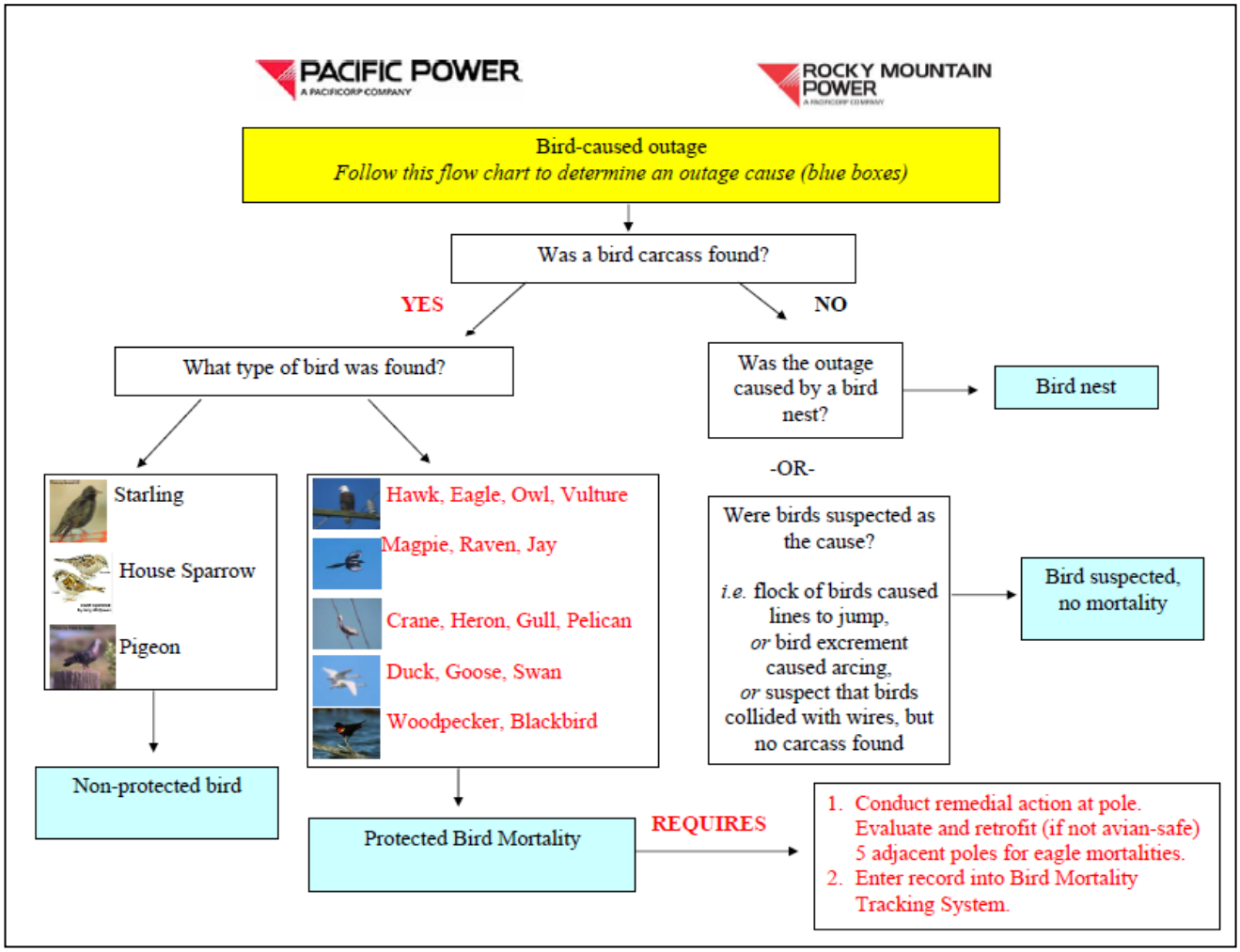

Figure 7. Documentation flowchart for service coordinators (page 1 of 2).

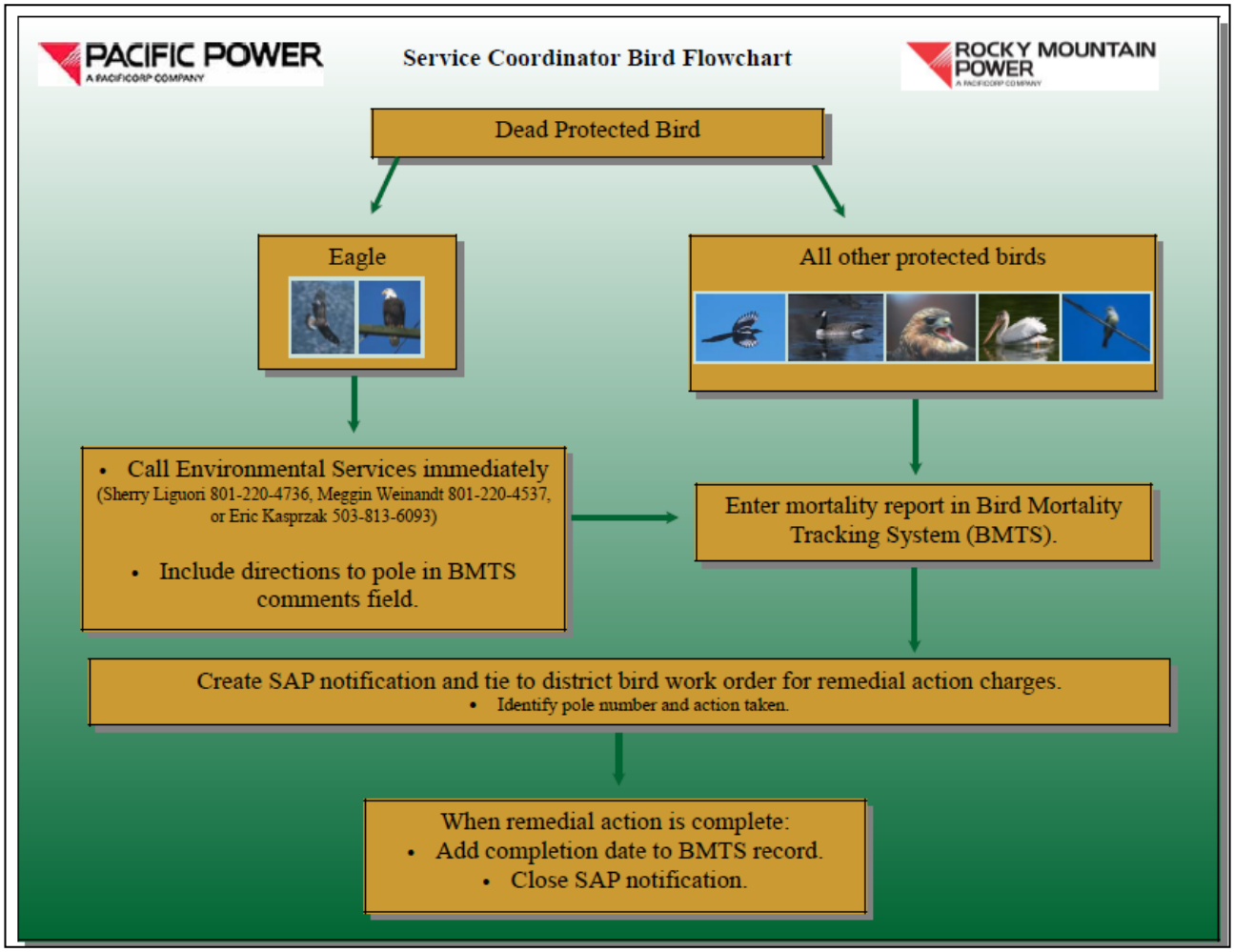

Figure 7 (con't). Documentation flowchart for service coordinators (page 2 of 2).

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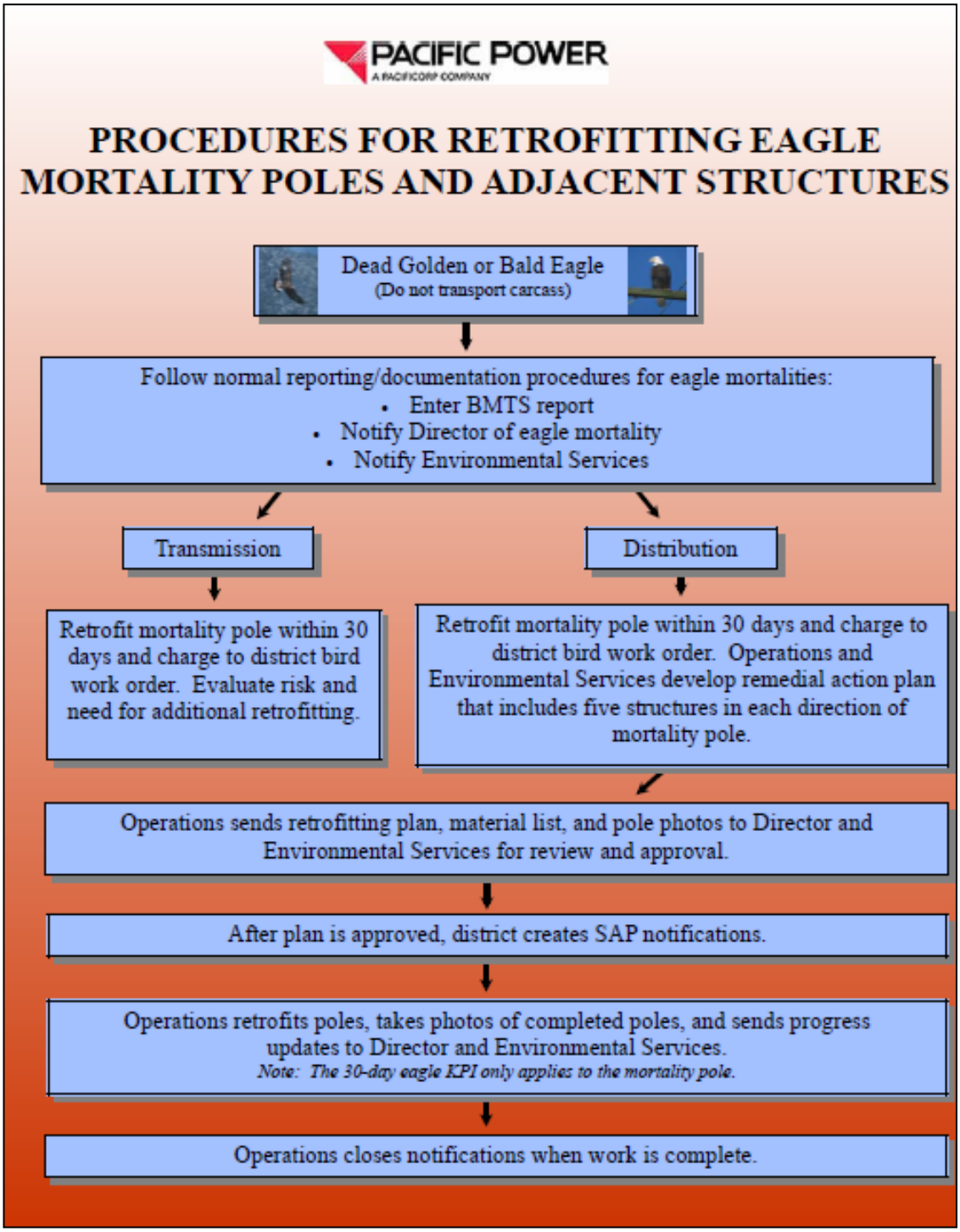
Service Coordinator Bird Monthly Checklist

To ensure complete documentation of bird-related records, please review this checklist monthly:

- Are all protected bird mortalities entered into the Bird Mortality Tracking System?
- Do BMTS records contain a completion date if work is completed?
- Are all problem nests entered into the Bird Mortality Tracking System? This includes any nest that caused an outage, was removed, or relocated.
- Are SAP notifications created and tied to your district bird work order for all charges to that order within the month?
- Do SAP notifications identify which facilities were worked on and what remedial actions were taken?
- Are SAP notifications closed if work is completed?

Questions? Contact Environmental Services:
Sherry Liguori 801-220-4736
Meggin Weinandt 801-220-4537
Eric Kasprzak 503-813-6093

Figure 8. Procedures for retrofitting eagle mortality poles and adjacent structures.



III. PERMITS

PacifiCorp has a Special Purpose Permit issued by the U.S. Fish and Wildlife Service that authorizes temporary possession for disposal of migratory birds and management of migratory bird and eagle nests in Pacific Power (see Figure 12).

As a condition of this permit, an annual report is submitted to USFWS and each state wildlife resource agency detailing the number of protected bird mortalities, active and inactive nests removed or relocated, number of poles and substations retrofitted, dollars spent, nest platforms installed, and other items of significance (Figures 10 and 11). Data from the Bird Mortality Tracking System and SAP are used to generate the information submitted in this report.

Figure 9. Permit action items.

Action Items:	Responsible Department:	Milestone (Due Date)	Status
Submit annual permit report and renew permit as needed for USFWS Special Purpose Permit.	Environmental Services	January 31 of each year	Completed through 2013

Figure 10. Annual Washington permit report data submitted to agencies.

Year	Number mortalities	Number poles with remedial action	Number nest platforms installed	Number substations retrofitted	Cost (O&M and Capital)
2004	6	2	1	0	$5,902
2005	20	35	4	0	$55,197
2006	13	57	1	0	$71,951
2007	23	17	6	1	$54,088
2008	18	20	0	3	$37,851
2009	31	31	1	0	$120,624
2010	18	46	3	2	$84,638
2011	42	13	3	5	$417,946
2012	25	1,016	8	1	$1,299,799
2013	22	267	6	9	$711,704

Figure 11. Annual Oregon/northern California permit report data submitted to agencies.

Year	Number mortalities	Number poles with remedial action	Number nest platforms installed	Number substations retrofitted	Cost (O&M and Capital)
2004	127	50	3	0	$117,194
2005	230	1,047	5	0	$498,403
2006	125	2,829	10	3	$1,775,373
2007	217	773	13	5	$613,811
2008	248	1,344	22	19	$900,923
2009	301	4,791	22	3	$3,690,267
2010	331	2,151	33	12	$1,871,595
2011	185	3,639	13	13	$3,391,523
2012	194	670	15	5	$1,015,951
2013	118	1,068	10	7	$1,371,700

Figure 12. U.S. Fish and Wildlife Service Special Purpose Permit for PacifiCorp.

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

FEDERAL FISH AND WILDLIFE PERMIT

2. AUTHORITY-STATUTES
16 USC 703-712

REGULATIONS
50 CFR Part 13
50 CFR 21.27

1. PERMITTEE

PACIFICORP ENERGY
dba PACIFIC POWER & ROCKY MOUNTAIN POWER
ATTN: TRAVIS BROWN
1407 W NORTH TEMPLE, #330
SALT LAKE CITY, UT 84116
U.S.A.

3. NUMBER
MB737207-1 AMENDMENT

4. RENEWABLE
☒ YES
☐ NO

5. MAY COPY
☒ YES
☐ NO

6. EFFECTIVE
11/18/2013

7. EXPIRES
03/31/2016

8. NAME AND TITLE OF PRINCIPAL OFFICER *(If it is a business)*
SHERRY LIGUORI
ENVIRONMENTAL ANALYST

9. TYPE OF PERMIT
MIGRATORY BIRD SPECIAL PURPOSE UTILITY SALVAGE PERMIT - ELECTRIC

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
Records Kept: Address in Block 1 Above
Activities Conducted: Service territories and/or facilities in
OREGON IDAHO WASHINGTON CALIFORNIA

11. CONDITIONS AND AUTHORIZATIONS:

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL, TRIBAL, OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

11C (Continued)

The following subpermittees are authorized: PacifiCorp, Rocky Mountain Power personnel, designated a subpermittee by you in writing, may exercise the authority of this permit. Submit a list of subpermittees with annual report.

D. **Possession and transport.**

(1) You and subpermittees are authorized to collect, transport and temporarily possess carcasses and partial remains of migratory birds, **except Bald Eagles and Golden Eagles (Eagles)** and species listed as **Threatened or Endangered** under the U.S Endangered Species Act (see 50 CFR § 17.11), found at the location/property specified in Block 10 for migratory bird mortality monitoring purposes per agreed upon protocol between you and the U.S. Fish and Wildlife Service (Service), or for human health and safety purposes. For **Eagles and federally listed Threatened or Endangered Species** you must call a Service, Office of Law Enforcement (OLE) special agent for instructions and approval BEFORE collecting or moving the carcass(es) or parts. It may be necessary to preserve the carcass (es) or parts onsite until an agent or other Service or State representative arrives to collect. Your OLE contact phone number is CA (916) 569-8444, ID (208) 442-9551, OR (503) 682-6131, WA (425) 883-8122

For all other migratory birds, complete data collection report per Condition 11F below PRIOR to collecting or moving the carcass or its parts.

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS
ANNUAL REPORT DUE: 01/31
Annual Report Form: www.fws.gov/forms/3-202-17.pdf
Additional Reporting Requirements in Condition I (Reporting).

ISSUED BY

TITLE
CHIEF, MIGRATORY BIRD PERMIT OFFICE - REGION 1

DATE
11/18/2013

IV. AVIAN-SAFE CONSTRUCTION DESIGN STANDARDS

PacifiCorp applies avian-safe construction design standards and bird protection products for distribution, transmission, and substation facilities. PacifiCorp's avian-safe construction standards meet or exceed current Avian Power Line Interaction Committee (APLIC) recommendations (*Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*, or current version). Avian-safe designs for transmission and distribution structures are achieved by framing poles with 60-inch horizontal and 40-inch vertical phase-to-phase and phase-to-ground separation, or by using covers to achieve these distances. These separations are based on the dimensions of eagles as recommended by APLIC (2006) for utilities located in areas where eagle electrocutions may occur. Because eagle electrocutions in substations are unlikely and have never been documented in PacifiCorp's system, our avian-safe substation standards apply separations based on the dimensions of the largest birds that may be electrocuted in our substations (e.g., red-tailed hawk, great horned owl, common raven). Consequently, PacifiCorp's avian-safe substation designs apply covers or barriers where phase-to-phase or phase-to-ground separation is less than 46 inches horizontal or 30 inches vertical.

The EV section of the T&D Standards includes avian-safe construction requirements and descriptions, installation instructions, and stock item numbers for bird protection products (see Appendix A). Although perch discouragers had been used in the past to reduce electrocutions by managing where birds perch, PacifiCorp has removed perch discouragers from its electrocution-prevention standards because perch discouragers can result in unintended electrocutions, aid in the accumulation of nest material, and are not as effective as insulator covers in preventing electrocutions. Installing covers or reframing crossarms are the preferred methods for avian protection.

Bird protection standards for substations are included in the SV section of the substation standards. Covers and/or barriers may be used for avian protection in distribution (34.5kV or less) substations.

All bird protection standards and products are reviewed periodically and may be updated to ensure that the best available products and methods are being used. Avian-safe designs are designated throughout the T&D and Substation Standards with the following symbol:

May be used
In raptor areas

The following tables provide quick reference guides for bird protection materials contained in the EV section of the T&D Standards and the SV section of the Substation Standards. Examples of common avian-safe design standards are shown in Appendix A.

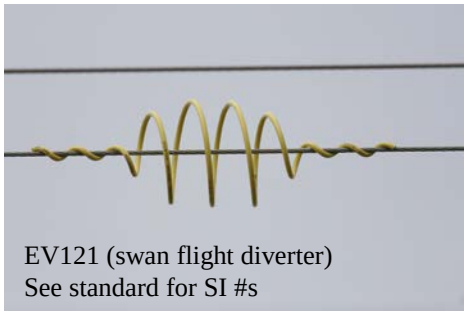
Figure 13. Summary of transmission and distribution bird protection products.

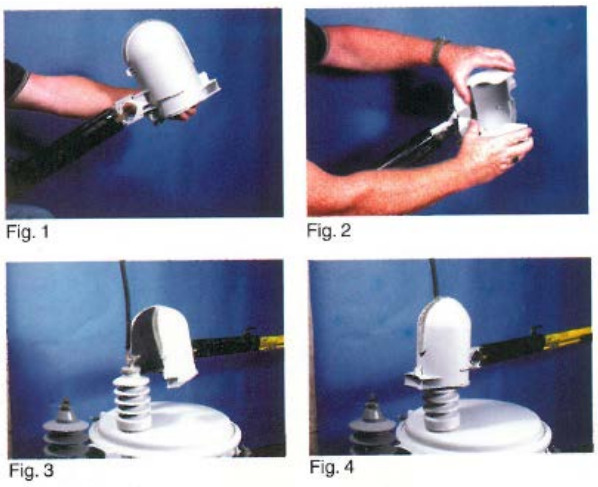
Standard	Product	Stock Item Number
EV001	N/A (contains general information on bird protection)	N/A
EV011	N/A (contains information on non-avian-safe designs)	N/A
EV021	N/A (contains information on avian-safe designs)	N/A
EV101	Perch (for use with nest platforms)	1650120 (constructed locally; not available for purchase)
EV121	Line marking devices: • Bird flight diverters (BFD) • Swan flight diverters (SFD) • Fireflies (fixed) • Bird mark diverters (Swivel)	Conductor diameter 0.175-0.249 in. • BFD = 1010208 • SFD = 7999149 Conductor diameter 0.25-0.349 in. • BFD = 1010209 • SFD = 7999150 Conductor diameter 0.35-0.449 in. • BFD = 1010210 • SFD = 7999151 Conductor diameter 0.45-0.599 in. • BFD = 1010211 • SFD = 7999152 Firefly (fixed): 7991245 Bird mark diverter (swivel): 8001251
EV131	Nest platform	7991280 (constructed locally; not available for purchase)
EV141	Pole top extension	Fiberglass: 7991281 Wood: 7991282 Adapter for wood: 7991283
EV151	Cutout covers	Porcelain 110-125 BIL: 7992182 Porcelain 150 BIL: 7992181 Polymer 150 BIL: 7992738 Power Fuse SMD-20: 7999498
EV901	Jumper covers/hose	Silicone split hose 0.5 in.: 7991284 Silicone Non-spilt hose 0.5 in: 7999413 Silicone split hose 0.75 in.: 7889508 Silicone spilt hose 1.0 in: 7885024 Silicone split hose 1.25 in.: 7991311
EV911	Cap, Pole Top, Perch Deterrent	8-3/8” : 8000362 10-1/4”: 8000364 11-3/4”: 8000365
EV921	Bushing cover	Spring loaded 3”-4.75”: 7999796 Regulator bushing 2.5”-6.8”: 7999573 Recloser bushing: 7999544 Voltage transformer bushing: 3091183 Current transformer bushing: 3091184
EV935	Animal Barrier	Barrier 24”: 8000316
EV951	Covered conductor	#6 solid: 4121000 #4 7-strand: 7992803 #2 7-strand: 8000301
EV971	Insulator cover	Snap-fit pin: • 3-piece, #6 to 795: 7999268 • 3-piece, #6 to 795, fits 56-2 and 56-3: 7999312 • 3-piece, Post-insulator: 8000306

Standard	Product	Stock Item Number
		• 3-piece, Lindsey clamp: 8001203 • 3-piece, Vise-top: 8002161 • double pin, #6 to 795: 7999269 • double pin, #6 to 795, fits 56-2- 56-3: 8002955 • double pin, Vise top: 8002958 • 3-piece, small angle: 8002960 • 3-piece, large angle: 8002971 • 3-piece, small double angle: 8002956 • 3 piece, large double angle: 8002943 • dead-end, #6 to 556:8000307
EV983	Arrester bracket cover	Arrester bolt: 7992055
EV985	Arrester cover	Surge arrester: 7992710 Regulator series arrester: 7999500 Underbuilt arrester: 7889165
EF301	Hendrix-clamp-top Insulator	7999665

Figure 14. Photos of common transmission and distribution bird protection products.

EV121 (bird flight diverter)
See standard for SI #s





EV151
SI# 7999796

Figure 14 (con't). Photos of common transmission and distribution bird protection products.

EV971 SI#8002161

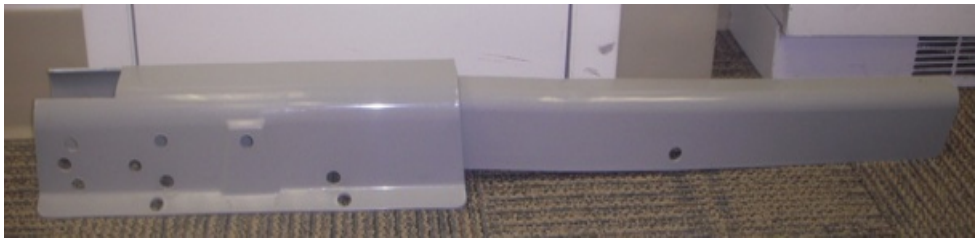
EV971 SI#8000306

EV971
SI# 7999268

EV971
SI# 7999312

EF301
SI# 7999665

EV971 SI#8002960

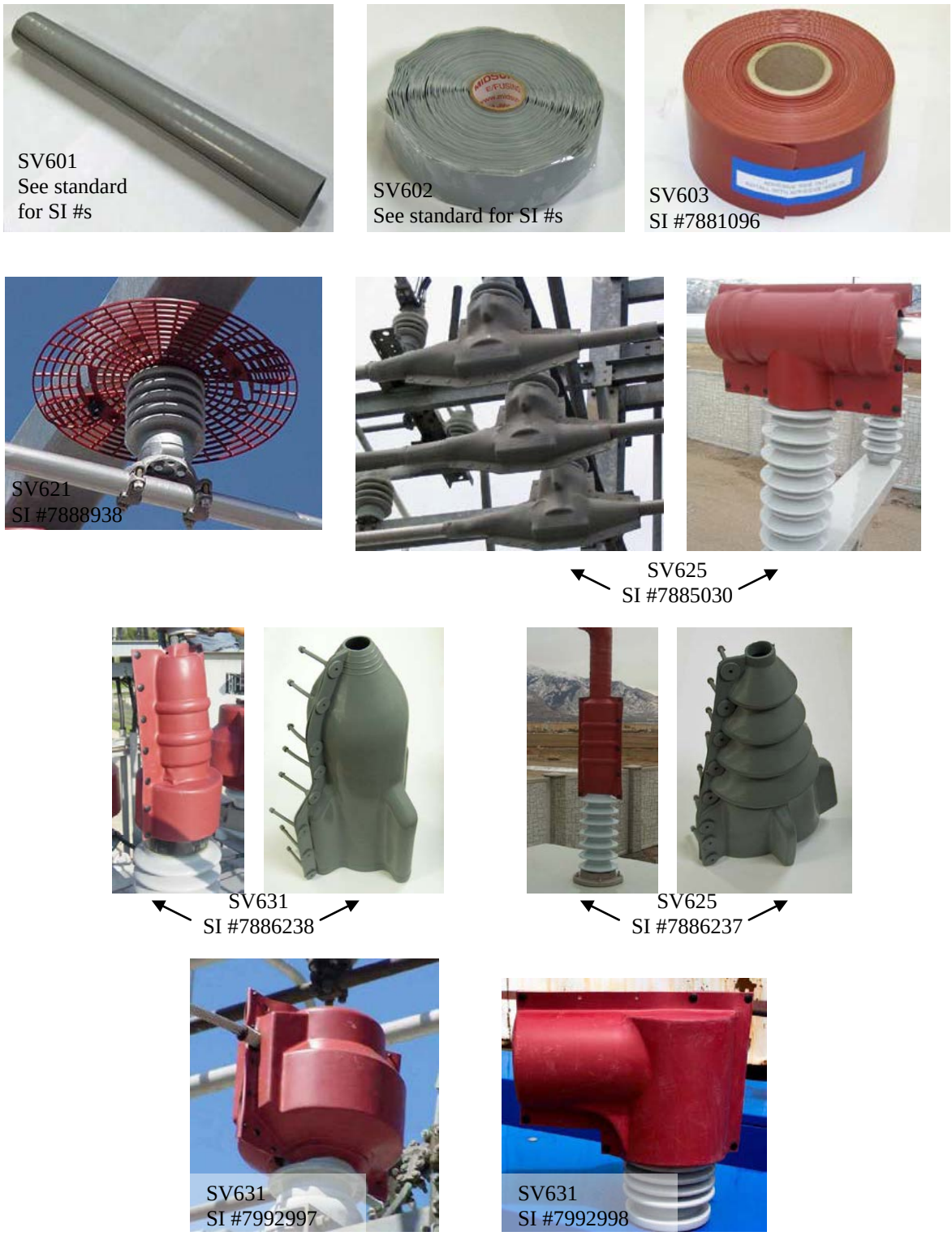


EV971 SI# 8002457

Figure 15. Summary of substation bird protection products.

Standard	Product	Stock Item Number
SV601	Hose (split), 0.5 in.	7885023
SV601	Hose (split), 0.75 in.	7889508
SV601	Hose (split), 1 in.	7885024
SV601	Hose (split), 1.25 in.	7991311
SV601	Hose (split), 1.75 in.	7885025
SV601	Hose (split), 2.5 in.	7885026
SV601	Hose (split), 3.5 in.	7885027
SV602	Fusion Tape	7999756
SV603	Heat-shrink tape-2 in.	1005004
SV611	Covered conductor, #6 7-strand	7999036
SV611	Covered conductor, #4 7-strand	7992803
SV611	Covered conductor, #2 7-strand	8000301
SV621	Shield, 24 in.	8000316
SV625	Bus support cover	8000322
SV 625	Bushing cover, large arrester	7992997
SV631	Bushing cover, medium, sight glass	7889141
SV631	Bushing cover, large, sight glass	7889164
SV631	Bushing cover, large, tall	7999545
SV631	Bushing cover, medium, tall	7999570
SV631	Bushing cover, right angle, large	7992998
SV631	Bushing cover, right angle, medium	7999544
SV631	Bushing cover 6”	7999573
SV631	Bushing cover 8”	7999574
SV631	Bushing cover, large, Mid sun	7886238
SV631	Bushing cover, medium, Mid sun	7886237
SV631	Bushing cover, small, Mid sun	7886236
SV631	Arrester cover, 5” diameter	7992710
SV631	Arrester cover, 3.75” diameter	8001235
SV631	Bushing/Arrester cover 4”	7999572
SV631	Bushing/Arrester cover 5”	7889165
SV631	Spring loaded bushing cap	7999796
SV631	Box-shaped cover 24”x11”x12”	7999753
SV631	Box-shaped cover 12”x12”x5”	7999751
SV631	Box-shaped cover 14”x19”x6”	7999752
SV631	Box-shaped cover 4”x12”x4”	7999754
SV631	Box-shaped cover 4”x16”x4”	7999755
SV631	Box-shaped cover 7”x12”x7”	7999571
SV631	Termination/riser covers	7999750
SV641	Insulator barrier cover	7999596
SV631	Silicone Sheet 2’x10’	7888611

Figure 16. Photos of common substation bird protection products.



V. NEST MANAGEMENT

Some birds, including hawk species and ravens, use distribution poles, transmission structures, and substations as substrates for nests. Bird nests on utility facilities can cause bird electrocutions, fires, outages, and other operational problems. Active nests (those with eggs or young) are protected by the Migratory Bird Treaty Act (MBTA) and cannot be removed without a permit. In the case of 'imminent danger' (circumstance where a bird nest poses impending danger of fire, safety risk to crew, avian electrocution, or threat to human life or property that requires immediate action), Pacific Power crews may take immediate appropriate action (nest material trimmed, conductors moved, or nest removal) prior to receiving a permit. However, Environmental Services must be contacted immediately to report 'imminent danger' action taken. Practices to ensure the welfare of nestlings, such as contacting an avian rehabilitator or relocating a nest to a platform, must be followed. If an active nest is to be relocated to a platform, Environmental Services must be contacted to obtain authorization from the U.S. Fish and Wildlife Service. Likewise, if a bird is taken to a licensed wildlife rehabilitator, Environmental Services must be contacted. The U.S. Fish and Wildlife Service allows the public to transport birds to wildlife rehabilitation facilities without specific authorization as long as the bird is directly transported to the rehabilitation center. Inactive problem nests of species other than eagles, herons, or endangered/threatened species can be removed without a permit. Any nest management activities must be documented in the Bird Mortality Tracking System (see Section VI., Reporting).

Eagle or Endangered Species Nests

All eagle (bald and golden), endangered/threatened species, and colonial waterbird (i.e herons, cormorants) nests are protected by federal laws, regardless of whether they are active or inactive. Although eagle nests are uncommon on power equipment, they occasionally occur and can require management action. Contact Environmental Services for confirmation if a problem nest is suspected to be that of an eagle, heron, or endangered species. In the exceptional case of imminent danger, nest material may be trimmed, conductors moved or covered, nest removed, or other appropriate action taken immediately. Practices to ensure the welfare of nestlings, such as contacting an avian rehabilitator or relocating a nest to a platform, must be followed. Any action taken on an active nest prior to Environmental Services notification is highly unusual, and extreme caution is recommended to protect eggs or young and avoid violating federal laws.

Problem Nest Management Options

Many birds build nests on Pacific Power's facilities. Some nests do not pose safety, reliability, outage, or bird electrocution risks. These nests should be left alone. However, other nests may present safety, reliability, outage, or bird electrocution risks. These nests are referred to as "problem nests." Managing problem nests involves several components:

- Discouraging birds from nesting in problem areas
- Providing an alternative nest site
- Ensuring that surrounding utility facilities are avian-safe

Bird nest management procedures are summarized for T&D Field Operations in Figure 4 and for T&D Substation Operations in Figure 5. Nest removal or relocation is intended for problem nests or circumstances where there is an electrocution risk to nesting birds. Nests not interfering

with power operations should be left in place. If a problem with a specific nest is anticipated in the future, permit requirements may be minimized by taking the appropriate action during the non-breeding season before the nest is active. The period when nests are active for most species falls between February 1 and August 31. If there are questions whether a problem nest is active or inactive, contact Environmental Services.

Because birds exhibit strong fidelity to nest sites, removing an inactive nest or nest material alone is often ineffective in preventing nesting. Drain pipe or PVC pipe split in half lengthwise and banded to the crossarms can be used to deter nesting on poles (see Figure 17). Likewise, double wooden crossarms may be changed out with a single fiberglass arm to discourage nesting (see Figure 17). Discouraging nesting in substations can be more difficult and would typically involve site-specific measures. Triangles or spikes should ***not*** be used to deter nesting as they can actually aid in the accumulation of nest material. Where possible, constructing a nest platform on an alternate non-energized pole set off the line or outside the substation is preferred over installing a nest platform on an existing pole with energized facilities. Artificial nesting substrates in a variety of designs are accepted by nesting raptors, especially ospreys. A new nest platform pole should be as tall as or taller than the existing pole.

In some cases a new pole cannot be installed, therefore a nest platform can be mounted above the crossarm. Mounting a nest platform above energized equipment is not encouraged since fallen nest debris could cause a fire or outage. Nest platforms constructed by volunteers are available from Environmental Services. In addition, Standard EV 131 contains a diagram for constructing nest platforms.

Raptors and other birds can be sensitive to human activity near their nest sites. Prolonged human activity (such as line or substation construction) and noise near nest sites can result in nest abandonment or exposure of chicks and/or eggs to the elements (and potential mortality). Prolonged construction activities within buffer distances of active raptor nests (as identified in U.S. Fish and Wildlife Service Raptor Guidelines; typically within 1 mile for eagles and ¼ or ½ mile for other raptors) should be avoided until young have fledged or unless directed otherwise by Environmental Services and the U.S. Fish and Wildlife Service. Active or inactive nests should not be removed to facilitate construction schedules. When relocating active problem nests or performing maintenance near active nests, efforts should be made to minimize the amount of time adult birds are off the nest while maintaining proper safety practices. Environmental Services should be contacted if there are questions or if assistance is needed in nest relocation efforts.

Figure 17. Examples of problem nests and nest management practices.

Potential problem nest

Problem nest in substation

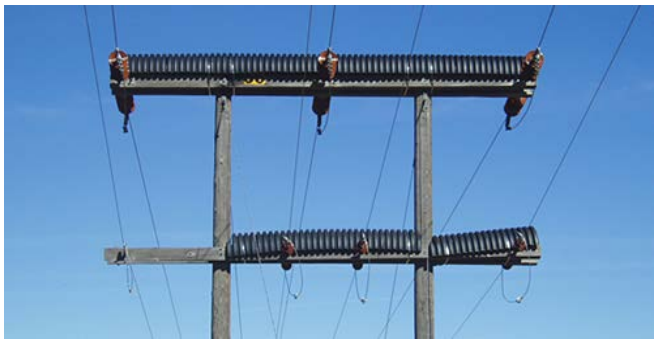
Ineffective nest discouragers

Problem nest relocated from above insulator string to nest platform

Separate pole with nest platform

Fiberglass deadend arm

Split PVC pipe nest discourager



Split drain pipe nest discourager

VI. REPORTING

Bird Mortality Tracking System

Reporting protected bird mortalities and nest management activities are required components of Pacific Power's Bird Management Program and agency permits. The Bird Mortality Tracking System (BMTS) is used to track both bird mortalities and nests on utility facilities. Data from BMTS is used to generate weekly, monthly, and annual internal reports as well as external agency reports. BMTS records also contain identification numbers of outages and SAP notifications, used to ensure that outages caused by protected bird mortalities or nests are documented, and that remedial actions and associated costs are tracked. Several key programs are used to identify and track bird incidents: BMTS, SAP, Prosper, GIS, and risk assessment survey data and photos. BMTS is modified as needed to fix program bugs and to ensure that necessary information is being tracked. Environmental Services is working with the GIS Department to evaluate the feasibility of including a BMTS data layer in Power Map.

Figure 18. Reporting action items.

Action Items:	Responsible Department:	Milestone (Due Date)	Status
Submit bird mortality and retrofitting information in weekly reports.	Environmental Services	Weekly	Ongoing
Submit bird mortality and outage information in monthly bar charts.	Environmental Services	Monthly	Ongoing
Submit information on retrofitting of protected bird and eagle mortality poles for monthly reports.	Environmental Services	Monthly	Ongoing

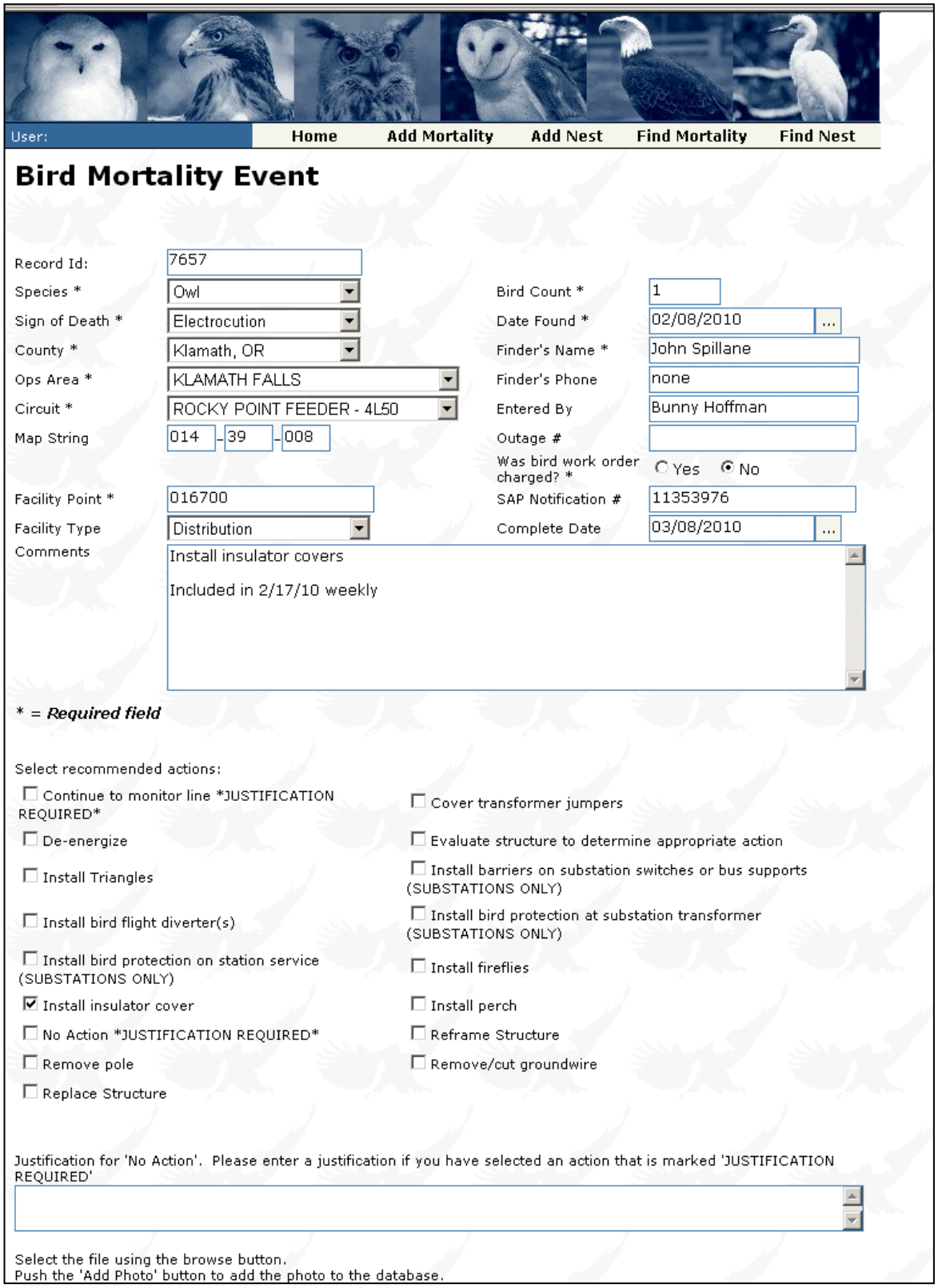
Data Entry

T&D Field and Substation Operations are responsible for entering protected bird mortalities and problem nests that they discover or that are reported to them (e.g., by customers or agencies). All protected bird nests that are removed or relocated (either active or inactive), or that cause an outage, must be reported in BMTS. Field forms are available from Environmental Services or online for crews to keep in their vehicles and complete when birds are found. Any company employee can access BMTS online at the Environmental webpage (see Figure 20 for BMTS screen-shot). Often, records are entered by service coordinators, managers, foremen, troublemen, or line crews. BMTS records should include complete data on the incident with a clear description of remedial action taken, photos if available, and directions to the site for eagle mortalities (so that U.S. Fish and Wildlife Service can recover the bird). In the case of eagle mortalities, Environmental Services should be contacted immediately, as the U.S. Fish and Wildlife Service requires reporting of eagle mortalities per SPUT permit timeline. BMTS records should not be "closed out" (e.g., date of completion added) until the work has been done. When work is complete, the completion date should be updated in BMTS and the SAP notification should be closed. A SAP notification is required for all charges to district bird work orders (see Figure 19). SAP training for bird work orders is available online, with screen-by-screen instructions. If there are questions or problems with BMTS or SAP entry related to birds, contact Environmental Services.

Figure 19. Pacific Power bird work orders.

State	District	Capital Work Order	O&M Work Order
California	Alturas	10036577	ALTRAPTOR
	Crescent City	10036576	CRERAPTOR
	Klamath Falls CA	10036575	KLARAPTOR
	Mt Shasta	10036574	MTSRAPTOR
	Yreka	10036573	YRERAPTOR
Oregon	Albany	10036598	ALBRAPTOR
	Astoria	10036597	ASTRAPTOR
	Bend	10036596	BENRAPTOR
	Coos Bay	10036595	COORAPTOR
	Cottage Grove	10036594	COTRAPTOR
	Dallas	10036593	DALRAPTOR
	Enterprise	10036592	ENTRAPTOR
	Grants Pass	10036591	GRARAPTOR
	Hermiston	10036590	HERRAPTOR
	Hood River	10036589	HOORAPTOR
	Klamath Falls OR	10036588	KLARAPTOR
	Lakeview	10036586	LKVRAPTOR
	Lincoln City	10036587	LINRAPTOR
	Madras	10036585	MADRAPTOR
	Medford	10036584	MEDRAPTOR
	Pendleton	10036583	PENRAPTOR
	Portland	10036582	PORRAPTOR
	Prineville	10036581	PRNRAPTOR
	Roseburg	10036580	ROSRAPTOR
	Stayton	10036579	STARAPTOR
	Walla Walla OR	10036578	WALRAPTOR
Washington	Sunnyside	10036601	SUNRAPTOR
	Walla Walla WA	10036600	WALRAPTOR
	Yakima	10036599	YAKRAPTOR

Figure 20. BMTS screen shot.



User: Home | Add Mortality | Add Nest | Find Mortality | Find Nest

Bird Mortality Event

Record Id:	7657		
Species *	Owl	Bird Count *	1
Sign of Death *	Electrocution	Date Found *	02/08/2010 ...
County *	Klamath, OR	Finder's Name *	John Spillane
Ops Area *	KLAMATH FALLS	Finder's Phone	none
Circuit *	ROCKY POINT FEEDER - 4L50	Entered By	Bunny Hoffman
Map String	014 - 39 - 008	Outage #	
		Was bird work order charged? *	○ Yes ◉ No
Facility Point *	016700	SAP Notification #	11353976
Facility Type	Distribution	Complete Date	03/08/2010 ...

Comments

Install insulator covers

Included in 2/17/10 weekly

* = ***Required field***

Select recommended actions:

- ☐ Continue to monitor line *JUSTIFICATION REQUIRED*
- ☐ De-energize
- ☐ Install Triangles
- ☐ Install bird flight diverter(s)
- ☐ Install bird protection on station service (SUBSTATIONS ONLY)
- ☑ Install insulator cover
- ☐ No Action *JUSTIFICATION REQUIRED*
- ☐ Remove pole
- ☐ Replace Structure
- ☐ Cover transformer jumpers
- ☐ Evaluate structure to determine appropriate action
- ☐ Install barriers on substation switches or bus supports (SUBSTATIONS ONLY)
- ☐ Install bird protection at substation transformer (SUBSTATIONS ONLY)
- ☐ Install fireflies
- ☐ Install perch
- ☐ Reframe Structure
- ☐ Remove/cut groundwire

Justification for 'No Action'. Please enter a justification if you have selected an action that is marked 'JUSTIFICATION REQUIRED'

Select the file using the browse button.
Push the 'Add Photo' button to add the photo to the database.

VII. RISK ASSESSMENTS

In 2001, PacifiCorp began conducting risk assessment surveys to identify locations with increased bird mortality risk and target proactive retrofitting efforts. Pilot surveys were conducted in Cedar City and Tooele, Utah in 2001. The survey methodology was developed by PacifiCorp, U.S. Fish and Wildlife Service (Ecological Services and Law Enforcement), Utah Division of Wildlife Resources, and HawkWatch International. This methodology combines field data with existing GIS data to geographically identify and rank electrocution and collision risks (see Risk Assessment Survey Methodology, below). In 2002, surveys were conducted in all of rural Utah and southwestern Wyoming (Evanston and Pinedale districts). In 2004, surveys were conducted in the Butte Valley of northern California as part of our Klamath Falls Avian Protection Plan. Over the years, the survey methodology and process for developing remedial action plans has been refined with major changes (electronic data collection, photos taken of each pole surveyed) implemented after 2004.

Prioritization of Circuits for Risk Assessment Surveys

This Pacific Power APP prioritizes circuits throughout Pacific Power based on avian mortality history. Figure 21 identifies priority areas for risk assessments and proactive retrofitting from the original Klamath Falls APP, which had included all circuits within the Klamath Basin regardless of electrocution history or risk. To more effectively address high risk areas in a timely manner, lower risk circuits within the Klamath Basin may be scheduled further out so that higher risk circuits outside the Klamath Basin can be addressed more quickly. Therefore, throughout all of Pacific Power, circuits have been prioritized for risk assessment surveys based on the total number of protected bird mortalities (electrocutions and collisions) and the number of eagle mortalities on each circuit. The numbers of protected bird and eagle mortalities per circuit were plotted on histograms to identify mortality frequencies. These histograms were then used to identify the following five mortality risk categories:

Circuit Prioritization Category	**Criteria** ***(number is total protected bird mortalities and/or eagle mortalities)***
1 (highest priority)	Total number protected bird mortalities: 21+ Number eagle mortalities: 7+
2	Total number protected bird mortalities: 16-20 Number eagle mortalities: 5-6
3	Total number protected bird mortalities: 11-15 Number eagle mortalities: 3-4
4	Total number protected bird mortalities: 6-10 Number eagle mortalities: 2
5	Total number protected bird mortalities: 1-5 Number eagle mortalities: 1
6 (lowest priority)	No eagle or other protected bird mortalities documented

Maps of circuit priorities for Pacific Power distribution locations are shown in Figure 22. Likewise, historic bird mortalities in Pacific Power substations are shown in Figure 23. Because avian protection devices are installed (or the presence of existing avian protection devices is verified) at all substations (34.5 kV and below) during routine maintenance, avian electrocution

risk at substations will likely be greatly reduced through this proactive measure. However, if a need for additional retrofitting at high electrocution risk substations is identified, these substations would be included in this APP and added to the retrofitting schedule shown in Figure 24.

Survey and retrofit locations for the next five years for all of Pacific Power (including Klamath Falls) are shown in Figure 24. Although this a long-term, ongoing plan, schedules will be forecasted for five-year periods so that they reflect current data. Each year, the APP will be evaluated and the information for the subsequent five-year period will be updated. This will allow for prioritizations to be updated as additional information is obtained or new risk areas emerge based on changes in bird populations, land use, or other factors.

Figure 22. Bird mortality risk areas on Pacific Power distribution lines.

Bird Mortality Risk Areas, Pacific Power Distribution Lines

Mortality data from 1/1/2001 to 9/20/2014

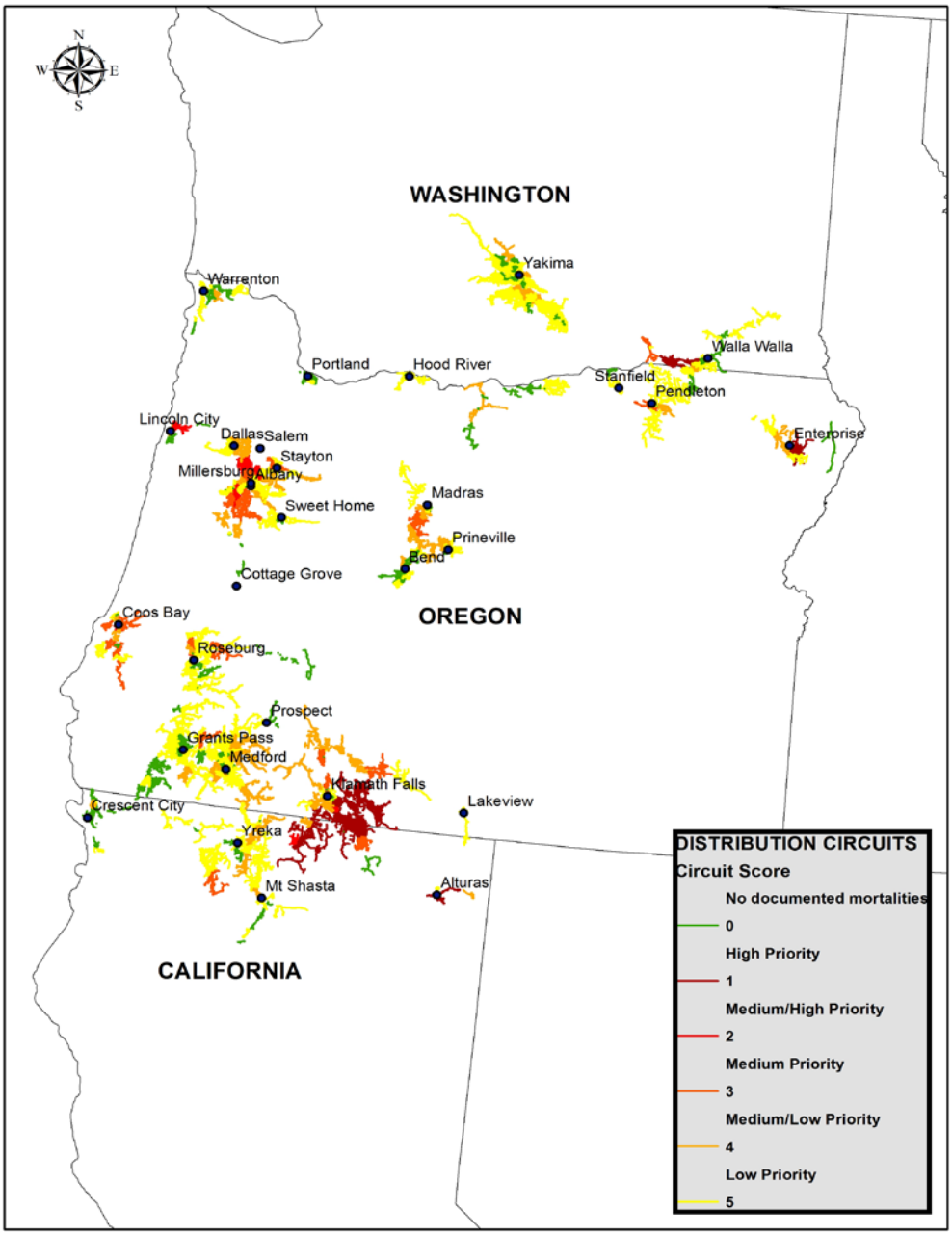


Figure 23. Historic bird mortalities at Pacific Power substations.

Protected Bird Mortalities in Pacific Power Substations

Mortality data from 1/1/2001 to 9/20/2014

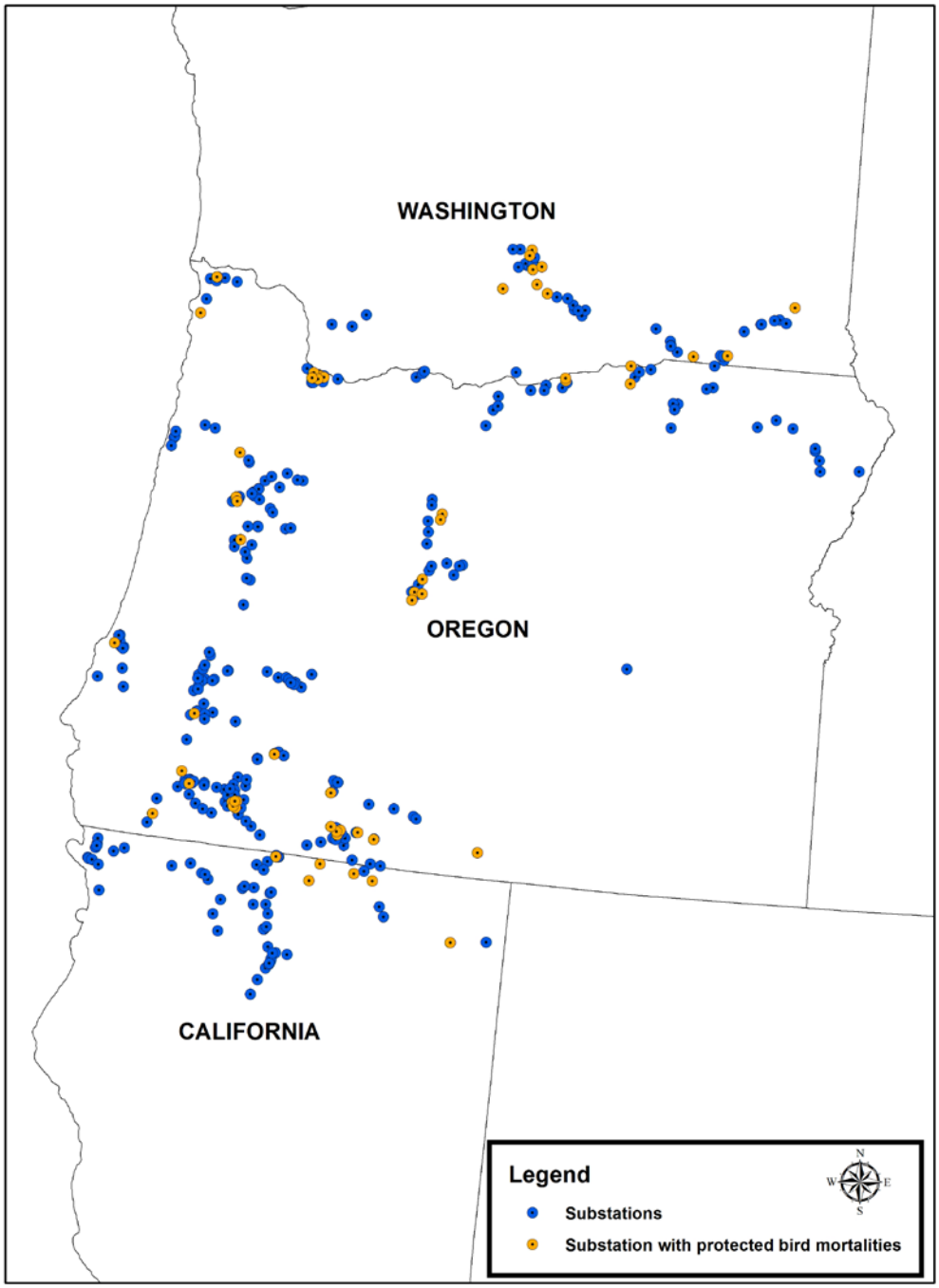


Figure 24. Predicted survey/retrofitting effort and cost for Pacific Power distribution circuits.

Available on request.

Risk Assessment Survey Methodology

Data Collection/Field Surveys

Surveys are conducted in areas of suitable habitat for open-country raptors including sagebrush, grasslands, meadows, pasture, cropland, pinyon/juniper, and similar habitats. Surveys are conducted in rural and remote areas, however locations with heavy development (e.g. urban or suburban areas) are not surveyed.

Field surveys are conducted by trained biologists equipped with GPS units with maps of survey areas depicting the locations of poles. Observers walk power lines, visually inspecting the ground as well as poles and lines for evidence of bird use and carcasses. They search an area encompassing 4.5m (15ft.) on each side of the central line and a 7.6m (25ft.) radius around each pole for carcasses, prey remains, pellets, molted feathers, and whitewash.

At each pole, data is recorded on the habitat type, pole configuration, avian mortalities, live species observed, evidence of raptor use, and presence of bird nests. Pole configuration data includes: configuration type, number of energized phases, number of transformers, presence of exposed equipment, material of crossarm and brace, location of ground wire, and presence of bird protection devices (insulator covers, bushing caps, arrester caps, cutout covers, hose, covered conductor, line markers, perch discouragers, perches, etc.). In addition, the surveyor assesses whether or not the structure is avian-safe. If an avian mortality is discovered, the species, number of individuals, distance to nearest pole, and cause of death (if known) and supporting evidence are recorded. Remains of all birds excluding eagles and threatened and endangered species are buried on site. In the event of an eagle or threatened/endangered species mortality, the U.S. Fish and Wildlife Service is notified and salvages the bird. For observations of live raptors, corvids, waterfowl, wading birds, cranes, and sage-grouse, the species, number of individuals, and behavior(s) are recorded. Evidence of prey populations and raptor use, including presence of pellets, whitewash, molted feathers, or prey remains, are documented. If a nest is observed, the species (if known) and status of nest (active/inactive) are recorded.

GIS Data Analysis

The existing pole layer of PacifiCorp's GIS data is used as a base map to which survey data is linked. The field data is then analyzed spatially with other existing datasets such as bird-caused outages, historic bird mortalities, nest locations, etc.

To assess the risk of electrocution, each non-raptor-safe structure is assigned a score based on abundance (>50% total area) of suitable raptor habitat within a 1-km radius, evidence of raptor use, presence of raptor nests within 1km, and presence of avian mortalities. Structures are assigned one point each for presence of suitable habitat, raptor nests, or evidence of raptor use. Structures at which non-eagle avian mortalities were documented are assigned four points. Structures with eagle mortalities are assigned five points. All scores of five or greater are lumped together in a "critical" category.

Using the above scoring method, non-raptor-safe poles are assigned the following risk assessment scores:

Score	Risk Assessment
0	NO CURRENT RISK
1	LOW RISK
2	LOW/MODERATE RISK
3	MODERATE RISK
4	HIGH RISK
5+	CRITICAL

Structures that receive scores of 3 or greater are included for remedial action. A subsequent analysis of the data is conducted to include structures that meet the following criteria:

- Poles adjacent to mortality poles (5 spans on each side)
- Poles near mortality poles with a similar configuration
- Circuits, lines, or taps where multiple mortalities have occurred
- Deadend equipment poles in remote or rural areas
- Configurations that have been documented to have a heightened risk in a district
- Non-raptor-safe poles in otherwise raptor-safe lines
- Non-raptor-safe poles adjacent to poles with perch discouragers
- Incomplete or improper installation of existing avian protection devices
- Portions of circuits or lines with a history of bird-caused or unknown-cause outages
- Poles that pose other safety or reliability risks
- Poles with covers or other bird protection that is degraded, needs replacement, or does not meet current avian-safe standards

Once all poles are identified, a comprehensive remedial action plan is developed with the appropriate service district that identifies a course of action, timeline, and resources required. A spreadsheet is prepared by Environmental Services and T&D Field Operations that includes a list of bird protection materials to be installed at each facility point. Line crews conducting the retrofitting are given the job packet, spreadsheet, and photos of each pole.

One year after retrofitting, follow-up surveys are conducted at 25% of the poles originally surveyed to evaluate the effectiveness of remedial actions and risk assessments. This percentage of poles provides a large enough sample size for data analysis. Poles selected for follow-up surveys include those that were retrofitted, poles with previous mortalities, and those that were not previously identified as a high risk. Based on the results of follow-up surveys, additional remedial actions may be conducted or risk assessment methodology and retrofitting materials may be modified. Additional follow-up surveys may also be conducted as needed to evaluate long-term effectiveness.

In addition to the immediate application of using the risk assessment data to implement remedial actions at high risk poles, the data can also be used to enhance our understanding of electrocution and collision causes and solutions. For example, the data can be analyzed to identify factors that influence avian electrocution and collision risks; evaluate the effectiveness of bird protection devices; identify the overall percentage of poles that cause electrocutions and compare this

spatially within the company's service territory; identify species or habitat-related differences in risk; and quantify the conservation benefit provided by proactively retrofitting poles.

Results from Risk Assessment Surveys

Risk assessment survey data from each survey area is compiled, analyzed, summarized, and compared to the results from other survey areas. A standardized summary report is generated after surveys are conducted in each area and contains information on percent of poles where mortalities were found, percent of poles that are avian-safe, presence of existing bird protection devices, evidence of bird use, and species and causes of mortalities. A report template is shown in Figure 25. This report template is the same as what has been used in the Klamath Falls Avian Protection Plan since 2005.

Poles with eagle mortalities that are documented during risk assessment surveys will be retrofitted within 30 days. In addition, five poles in each direction of the mortality pole, if not already avian-safe, will be retrofitted as soon as possible. Poles with other protected bird mortalities will be included in the APP retrofit schedule, and addressed during the circuit retrofitting job (typically the year following surveys). However, if there is an immediate concern regarding protected species (e.g., multiple mortalities in close proximity, high avian use, high risk nests, or other circumstances that pose a high immediate risk), Environmental Services and the local Field Operations district will evaluate and determine an appropriate action.

Figure 25. Risk assessment survey results report template.

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[DISTRICT] Draft Risk Assessment Survey Summary Report

Overall Survey Summary (YEAR)
Survey dates:
Total number of poles surveyed:
Number (percentage) of poles surveyed that are avian-safe:
Number of poles proposed for remedial action:
Number of mortalities:
Number of poles at which mortalities were documented:
Number of poles that have some retrofitting but do not meet current avian-safe standards: Number of poles with mortalities that have some retrofitting but do not meet current avian-safe standards:
Percent of total poles surveyed at which mortalities were documented:
Mortalities documented of the following species:

Summary by Circuit

Circuit	Number poles surveyed	Number (percent) of poles at which mortalities were documented	Number (percent) of poles surveyed that are avian-safe	Number of poles that have some retrofitting but do not meet current avian-safe standards	Number poles proposed for remedial action

Poles Proposed for Remedial Action: Breakdown of Selection Criteria
Mortality poles –
Poles requiring nest management –
Other non-avian-safe poles–
Poles requiring replacement of existing avian protection devices –

Comparison with Previous Risk Assessment Survey Results

Survey Area		
Survey year		
Number poles surveyed		
Percent of poles surveyed that are avian-safe		
Percent of poles surveyed with mortalities		
Percent of total mortalities comprised by eagles		
Percent of poles with evidence of raptor use		
Percent of poles with existing bird protection devices		

Transmission & Distribution Environmental Services	[DISTRICT, YEAR] Survey Summary Report	File Name: Revision Date: Page 1 of 1

VIII. MORTALITY REDUCTION EFFORTS (PROACTIVE RETROFITTING)

Transmission and Distribution Lines

Annual Budget for Avian Protection Efforts

Pacific Power has committed to a minimum annual budget of $650,000 for targeted proactive retrofitting efforts and associated risk assessment and follow-up surveys in identified priority areas. In addition to this proactive retrofitting, Pacific Power will continue to retrofit poles per our APP policy (including retrofits in response to mortality poles, bird-caused outages, and nests; retrofitting of poles adjacent to eagle mortality poles; avian-safe new construction outside city limits; avian-safe construction of rebuilt poles outside city limits; and retrofitting of rebuilt equipment poles in all areas). Pacific Power will also respond to "hot spots" as appropriate to address previously unidentified high risk areas in a timely manner. To maintain a current perspective on risk areas and allow for flexibility if priority areas change, the APP will forecast areas for risk assessment surveys and proactive retrofitting within a rolling five-year window which will be reviewed annually with the Service and updated as needed. This annual review will include assessments of current avian risks and priority areas, current estimates for percentage of poles needing retrofitting and cost per-pole for surveys and retrofitting jobs. Although proactive retrofitting will be forecast within a rolling five-year window, the APP will continue to be a long-term commitment.

Proactive Efforts

Risk assessment surveys are conducted throughout Pacific Power to identify high risk structures for proactive retrofitting (see section VII., Risk Assessments, for details on risk assessment surveys). Figure 24 includes locations of survey/retrofitting efforts in upcoming years and within-year schedules and milestones are included in Figure 26. Prioritizations may be modified as needed to address future mortality risks as they arise. Proactive retrofitting plans will clearly identify which structures are to be retrofitted, what remedial actions will be completed, material needs, estimated costs, and timelines for completion. As retrofitting work is conducted, trained inspectors will evaluate remedial actions to ensure that current avian-safe practices are being employed and proper bird protection materials are used and installed correctly. In addition, remedial actions taken will be documented and photos will be taken of work completed. Pacific Power will provide the U.S. Fish and Wildlife Service with summary reports of work completed and associated costs during regularly scheduled meetings and through annual permit reports.

Preventative Efforts

Pacific Power's Bird Management Program Policy requires avian-safe construction for all new lines and rebuilds outside city limits and new and repaired equipment poles in all areas (both within and outside city limits). This is intended to ensure that bushings, cutouts, arresters, and jumpers are appropriately covered. Pacific Power is also evaluating methods to track installation of bird protection materials done through line repairs, rebuilds, or other maintenance that does not involve a protected bird mortality. This will enable Pacific Power to identify the number and locations of additional poles made avian-safe each year.

Response to Eagle Mortalities
In response to eagle mortalities associated with Pacific Power's distribution facilities, five adjacent structures in each direction of the mortality pole will be inspected and retrofitted if not already avian-safe. This is intended to reduce the likelihood of subsequent eagle mortalities in the area. An assessment of the 2008 Worland, Wyoming, survey data was conducted to determine the appropriate number of adjacent poles to be retrofitted to most effectively reduce subsequent risk. This analysis showed a linear increase in the number of additional mortalities that were included in buffers of one to five poles adjacent to mortality poles and a leveling-off of mortality numbers from six to ten adjacent poles. Consequently, PacifiCorp adopted a policy of retrofitting five poles adjacent to eagle mortality poles.

Remedial action is required at eagle mortality poles within 30 days of discovery. The adjacent poles should be retrofitted as soon as possible and are typically completed within 30 days. The T&D Field Operations Manager and Environmental Services will develop a remedial action plan that identifies adjacent facility points and work to be conducted. This plan is then sent to the director for review and approval. T&D Field Operations is responsible for creating and closing out SAP notifications associated with this work. See Figure 8 for eagle mortality work flow procedure.

Procedures for Mortalities Found During APP Surveys
Poles with eagle mortalities that are documented during risk assessment surveys will be retrofitted within 30 days along with five poles in each direction, if not already avian-safe. Poles with other protected bird mortalities will be included in the APP retrofit schedule, and addressed during the circuit retrofitting job (typically the year following surveys). However, if there is an immediate concern regarding protected species (e.g., multiple mortalities in close proximity, high avian use, high risk nests, or other circumstances that pose a high immediate risk), Environmental Services and the local Field Operations district will evaluate and determine an appropriate action.

Hot Spots
Pacific Power will identify "hot spot" areas as they emerge. Hot spots are locations where the bird mortality risk was previously thought to be low, but suddenly increased due to a shift in bird populations, habitat, prey availability, or other factors. For example, a distribution line adjacent to an open farm field may have had no prior waterfowl collisions, however, a change in land use practices causes this field to be flooded. The flooded field now attracts concentrations of migratory swans, and numerous collisions with the adjacent distribution line have occurred. This area may be considered a hot spot. In addition to changes in the landscape, hot spots may emerge due to changes in prey populations. For example, cyclical jackrabbit populations may result in large differences in golden eagle numbers in an area over several years. When rabbit and eagle numbers are low, no electrocutions may occur; however, in years when rabbit and eagle numbers are high, if numerous eagle electrocutions occurred, this would be considered a hot spot.

Environmental Services regularly monitors bird mortality records input into the Bird Mortality Tracking System. If numerous mortality events are documented in close geographic proximity

within a short period of time, Environmental Services would work with the local T&D Field Operations district to assess the hazard. Likewise, T&D Field Operations may raise areas of concern as potential hot spots due to mortalities, outages, or other observations. If an area is identified as a hot spot, the location will be evaluated and appropriate remedial action taken. Remedial actions at hot spot areas will be completed in addition to proactive survey work. However, the prioritization of a hot spot circuit may be modified in the APP survey/retrofitting schedule as appropriate to reflect the new risk category.

Substations

In 2009, PacifiCorp finalized and published its bird/animal protection standards and policy for substations. New distribution substations will be built using avian-safe construction practices and applying bird/animal protection materials. Likewise, avian protection devices are installed (or the presence of existing avian protection devices is verified) at all substations (34.5 kV and below) during routine maintenance. Such avian protection devices would include covers at equipment locations where there is an increased risk of electrocution (e.g., circuit breaker bushings, substation transformer bushings and arresters, and station service transformers, cutouts, and arresters). Avian electrocution risk at substations will likely be greatly reduced through this proactive measure. However, if a need for additional retrofitting at high electrocution risk substations is identified, these substations would be included in this APP and added to the retrofit schedule in Figure 24.

Figure 26. 2014 implementation schedule for risk assessments and proactive retrofitting.

Action Items:	Responsible Department:	Milestone (Due Date)	Status
Meet with USFWS to discuss Pacific Power APP.	Executive Management Environmental Services T&D Field Operations T&D Substation Operations	October 9, 2014	
Conduct risk assessment surveys of identified circuits to evaluate electrocution risk.	Environmental Services	Start March 2015 End December 2015	
Conduct follow-up surveys at 25% of poles previously surveyed and retrofitted in Alturas, California and Walla Walla, Washington.	Environmental Services	December 2015	
Develop remedial action work plans that identify actions to be completed, materials needed, and target date of completion for each survey location.	Environmental Services Procurement Logistics T&D Field Operations T&D Substation Operations	December 31, 2015	
Conduct actions at facilities identified in 2014 remedial action work plans. Inspect work to ensure that it meets avian-safe standards.	T&D Field Operations	December 31, 2015	
Report all documented mortalities of protected avian species as part of USFWS Special Purpose Permit annual report (see Figure 12).	Environmental Services	January 31, 2015	
Continue to implement Pacific Power's Bird Management Program.	All affected Pacific Power employees	Ongoing	Ongoing

IX. AVIAN ENHANCEMENT OPTIONS

Pacific Power works in partnership with agencies, environmental organizations, scout groups, and others to identify and implement projects to improve wildlife habitat or further wildlife conservation research. Examples include the installation of nest platforms and boxes for various species, including ferruginous hawks, ospreys, American kestrels, and great blue herons.

X. QUALITY CONTROL

System Monitoring

Pacific Power will improve its system monitoring to better identify mortality "hot spots" as they occur throughout Pacific Power. Environmental Services will conduct field spot checks and communicate with USFWS and T&D Field and Substation Operations to identify areas that may emerge as mortality "hot spots." USFWS will also communicate with Pacific Power if they observe or are otherwise informed of increased mortalities or other areas of concern that need to be remediated. By improving our monitoring, Pacific Power will be able to respond quickly to mortality problem areas as they arise and modify our Pacific Power APP survey and retrofit schedules accordingly. In addition, by retrofitting five distribution poles in each direction of eagle mortalities, the electrocution risk in these areas will be reduced.

Site Audits

Pacific Power will conduct site audits as needed to ensure that avian-safe construction requirements are being met and that retrofitting in response to mortalities and nest management are being conducted according to current company policies and standards. These efforts will be done as needed for distribution and transmission lines as well as substations. Pacific Power will continue to evaluate its avian-safe construction standards to ensure that current best practices and bird protection materials are used.

Inspections During Proactive Retrofitting

Training and inspections will be conducted during proactive retrofitting to ensure that bird protection materials are installed properly and appropriate and complete remedial actions are taken. At the beginning of a retrofitting job, the line crew (either contract or internal) will be trained by Environmental Services and/or T&D Field Operations on what materials are being used, proper installation, and avian-safe designs. In addition, each job will have an inspector responsible for ensuring that all identified poles are retrofitted, appropriate and complete remedial actions are taken, bird protection devices are installed correctly, and photographs are taken of each completed pole. Jobs will not be signed off on without approval by the inspector, T&D Field Operations, and/or Environmental Services.

For substation retrofits, Environmental Services will work with T&D Substation Operations to identify material needs, proper installation, and avian-safe designs. In addition, manufacturers of bird protection devices may provide on-site guidance on appropriate cover-up materials and proper installation.

Risk Assessment Follow-up Surveys

Follow-ups surveys at circuits where risk assessments and proactive retrofitting were conducted can also be used as a method of quality control (see Section VII). Data from the follow-up surveys is analyzed to evaluate the effectiveness of risk assessments in predicting high risk locations and the effectiveness and durability of bird protection devices for poles and substations. Information obtained from these surveys is used to enhance future surveys, prioritizations, and retrofitting.

XI. PUBLIC OUTREACH

For many years, Pacific Power has been an active leader in educating the public, wildlife and natural resource professionals, and other utilities on avian/power line interactions. PacifiCorp was a founding member of the Avian Power Line Interaction Committee (APLIC) and continues to be an active APLIC member and instructor at APLIC-led courses and workshops. Pacific Power also participates in other professional organizations including Partners in Flight (PIF) and The Wildlife Society (TWS). Outreach is also conducted with the public and our customers through events, classroom presentations, and as needed or requested. The following table summarizes professional and public outreach activities in which Pacific Power may participate.

Figure 27. List of Pacific Power professional and public activities/organizations.

Group/Organization/Event	Audience Type	Frequency
Avian Power Line Interaction Committee (APLIC)	Utilities, state and federal wildlife agencies	Meetings twice per year (spring and fall) Short courses twice per year or as needed Conference calls and other meetings, etc. as needed
Partners in Flight (PIF)	Bird conservation professionals including state and federal agencies, academia, NGOs, environmental consultants	International conferences held every five years Other/local meetings as appropriate
The Wildlife Society (TWS)	State and federal wildlife agencies, academia, NGOs, environmental consultants	Annual national conferences and state meetings as appropriate
Agency meetings	USFWS, Bureau of Land Management (BLM), U.S. Forest Service (USFS), and state resource agencies	As needed to discuss avian/environmental issues associated with existing lines, new projects, permit renewals, etc.
Winter Wings Festival, Klamath Falls	Public	Annual
Yakima Greenway Festival	Elementary school students	Annual
Other	Public and schools	As appropriate

XII. KEY RESOURCES

The successful implementation of this Pacific Power Avian Protection Plan relies on the efforts of Pacific Power employees with support from external resources such as the U.S. Fish and Wildlife Service. The following tables identify internal departments and their responsibilities to APP commitments and external resources that provide guidance, support, or other assistance. The identified responsibilities for company personnel is not an exhaustive list. All responsible departments will communicate and work together to implement Bird Management Program Policy and Pacific Power Avian Protection Plan commitments.

Internal Communication

Pacific Power will improve its internal communications to ensure that Executive Management, T&D Field Operations, T&D Substation Operations, Environmental Services, Logistics, Asset Management, and Legal are sharing information on bird mortalities, survey results, retrofitting efforts, material needs, budgets, and other aspects/commitments of the Bird Management Program and Pacific Power APP. In 2010, Pacific Power held "Environmental Boot Camps" for its Operations managers, in which detailed training and exercises regarding environmental compliance (bird management, spill response, hazardous waste disposal, etc.) was covered by Pacific Power management and Environmental Services.

Pacific Power has developed an APP Steering Group, comprised of individuals responsible for successful APP implementation. The group includes the Pacific Power Vice President, T&D Operations Directors (for NW Wires, SW Wires, and Substations), Logistics, Asset Management, and Environmental Services. The group meets regularly to discuss APP progress, current and upcoming projects, material needs, bird mortality "hot spots", risk assessment survey progress, APP budget, and other relevant topics.

Figure 28. List of internal resources and responsibilities.

Department	Responsibilities
Executive Management	• Ensure compliance with Bird Management Program Policies (see Figures 1 and 2), USFWS Special Purpose permit requirements (see Figure 12), and APP commitments • Allocate appropriate budgets for bird-related commitments • Participate in meetings with USFWS • Participate in APP Steering Group
Transmission and Distribution Field Operations	• Ensure compliance with Bird Management Program Policy (see Figure 1), USFWS Special Purpose permit requirements (see Figure 12), and APP commitments • Apply avian-safe construction requirements identified in Bird Management Program Policy • Implement proactive remedial action plans • Inspect proactive retrofitting efforts to ensure that complete and appropriate bird protection is installed • Participate in meetings with USFWS

Department	Responsibilities
	• Report protected bird mortalities, bird-caused outages, and problem nests; track related expenditures through SAP notifications and bird work orders • Complete remedial actions at poles with eagle mortalities within 30 days and within 90 days for other protected bird mortalities. Work with Environmental Services to develop remedial action plans in response to eagle mortalities that include 5 distribution poles in each direction. • Participate in Bird Program Training as needed. Training may be delivered via bulletins, online information, or instructor/hands-on. • Provide input on effectiveness of bird protection products • Collaborate with Procurement and Environmental Services to identify bird protection material needs • Ensure that contract line crews are appropriately trained on Bird Management Program procedures, e.g. bird protection standards and retrofitting products, nest management, and reporting of protected bird mortalities • Consult with Environmental Services and ensure that avian issues are considered during siting and construction of new transmission and distribution lines • Participate in APP Steering Group
T&D Substation Operations	• Ensure compliance with Bird Management Program Policy (see Figure 2), USFWS Special Purpose permit requirements (see Figure 12), and APP commitments • Apply avian-safe construction requirements identified in Bird Protection Policy for Substations • Inspect proactive retrofitting efforts to ensure that complete and appropriate bird protection is installed • Participate in meetings with USFWS as needed • Report protected bird mortalities, bird-caused outages, and problem nests; track related expenditures through SAP notifications and bird work orders • Participate in Bird Program Training as needed. Training may be delivered via bulletins, online information, or instructor/hands-on. • Provide input on effectiveness of bird protection products • Collaborate with Procurement and Environmental Services to identify bird protection material needs • Collaborate with Environmental Services to implement remedial actions at high risk substations identified in APP • Ensure that contract substation crews are appropriately trained on Bird Management Program procedures, e.g. bird protection standards and retrofitting products, nest management, and reporting of protected bird mortalities • Consult with Environmental Services and ensure that avian issues are

Department	Responsibilities
	considered during siting and construction of new substations • Participate in APP Steering Group
Asset Management	• Allocate appropriate budgets for bird-related commitments (including proactive retrofitting, risk assessments, "hot spot" response, and mortality pole/problem nest response) • Participate in APP Steering Group
Environmental Services	• Ensure compliance with Bird Management Program Policies (see Figures 1 and 2), USFWS Special Purpose permit requirements (see Figure 12), and APP commitments • Provide technical support and resources to aid in implementation of Bird Management Program/APP • Track and report bird mortalities, problem nests, bird-caused outages, and retrofitting efforts • Conduct risk assessment surveys and prepare proactive remedial action plans • Work with T&D Field Operations to develop remedial action plans in response to eagle mortalities that include 5 distribution poles in each direction. • Develop and update training resources and guidance documents including Avian Protection Plans, Bird Management Program Guidelines, etc. • Collaborate with T&D Field Operations and Standards to update bird protection standards as needed • Collaborate with T&D Field Operations, Logistics, and Procurement to identify bird protection material needs • Renew federal permit and submit required annual report • Notify USFWS per SPUT permit timeline in regards to eagle mortalities • Contact USFWS as needed for active nest management permits • Conduct Bird Program Training and/or provide training resources as needed. Training may be delivered via bulletins, online information, or instructor/hands-on. • Collaborate with T&D Substation Operations to implement remedial actions at high risk substations • Participate in APLIC and other stakeholder, professional, or outreach activities • Participate in meetings with USFWS • Participate in APP Steering Group
Logistics and Procurement	• Maintain appropriate inventory levels of bird protection products for day-to-day use and large-scale proactive projects • Participate in APP Steering Group
Standards	• Review bird protection materials and modify standards as needed to include current state-of-the-art products

Department	Responsibilities
	• Review bird protection standards and modify as needed to ensure that standards meet or exceed recommended APLIC guidelines • Add standards for avian-safe new designs as needed or requested • Participate in APP Steering Group as needed
Vegetation Management	• Conduct training as needed with tree trimming crews regarding protection of bird nests
Information Technology and GIS Department	• Work with Environmental Services to identify and implement updates to Bird Mortality Tracking System as needed • Evaluate integration of bird data into Power Map
Legal	• Ensure compliance with Bird Management Program Policies (see Figures 1 and 2), USFWS Special Purpose permit requirements (see Figure 12), and APP commitments • Provide expertise on legal issues

Communication with U.S. Fish and Wildlife Service
While Pacific Power and USFWS have a history of working together, efforts will be made to improve communication. Pacific Power will schedule meetings with USFWS to ensure that we are coordinating and communicating on our bird protection efforts. Meetings will be held annually (more often if needed) between Pacific Power Executive Management, T&D Operations, and Environmental Services personnel and USFWS to review Pacific Power's progress on its APP and Bird Management Program commitments. Local meetings will also be held annually or as needed with USFWS and Pacific Power T&D Operations and Environmental Services personnel to review retrofitting work completed and upcoming surveys and work plans.

Figure 29. Schedule of annual USFWS Meetings.

Meeting Attendees	Frequency
• USFWS (Office of Law Enforcement) • Pacific Power (Executive Management, T&D Operations, Environmental Services)	Annual
• USFWS (Office of Law Enforcement) • Pacific Power (T&D Operations, Environmental Services)	Annual or as needed

Figure 30. List of external resources.

Agency/Group/ Organization	Resources Provided
U.S. Fish and Wildlife Service	• Notification of protected bird mortalities and nests • Guidance in selection of priority areas for risk assessment surveys and proactive retrofitting • Feedback on Bird Management Program/Avian Protection Plan efforts • Retrieval of eagle carcasses • Management of Special Purpose Permit
State fish and wildlife agencies	• Notification of protected bird mortalities and nests
APLIC	• Information on current avian-protection practices • Training materials and guidance documents
Manufacturers of avian protection products	• Development of new products and improvement of existing products to meet our needs • Training on product installation
Licensed wildlife rehabilitators	• Rehabilitation of injured wildlife • List of rehabilitators included in Bird Management Program Guidelines and on Environmental Services website

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APPENDIX A

Examples of Common Avian Protection Standards

Review and Amendment Record

DOCUMENT AMENDMENT RECORD			
Version	**Date Issued**	**Date Effective**	**Purpose of Issue and Description of Amendment**
005	7/14/2010		
006	10/17/2013		Updated Figures 10, 11, 13, 14, 22 and 24. Removed figure 21. Updated contact information Updated VIII. Mortality Reduction Efforts (Proactive retrofitting)
007	10/1/2014		Updated Background information (Page i) Updated Figure 9,10,11,12,13,14,15,22,23,and 26 Updated VI. Reporting (Data Entry) Updated Figure 28 (Environmental Services) Updated contact information Updated table of contents

Appendix B
PacifiCorp Vegetation Management Procedures

PACIFICORP

A MIDAMERICAN ENERGY HOLDINGS COMPANY

Transmission & Distribution Vegetation Management Program

Specification Manual

Rev	Status	Date	Author	Change Tracking
00	Issued for implementation	12/15/2008	R. H. Miller	Manual created
01	Reviewed/Updated	06/15/2012	R. H. Miller	1. Clarified language throughout 2. Revised Chapter 4 to reflect a process checklist used for project management. 3. Modified Clearance 2 to strictly reflect table 5 in IEEE 516-2003 Table 5. 4. Section 6.4.1 that if contract forest techs identify an imminent threat, that they contact the appropriate line patrolmen so they initiate the imminent threat procedure.
02	Reviewed/Updated	09/06/2013	R.H. Miller	1.Clarified language throughout. 2. Revised distribution action thresholds and clearance standards to accommodate 3 and four year cycles. 3. Modified transmission clearance requirements to accommodate FAC-003-02
03	Updated	06/25/2014	R.H. Miller	1. Brought language into line with FAC-003-03.

Approval: Curtis Mansfield, Managing Director, T&D Support Services Date: 06/25/2014

Transmission & Distribution Vegetation Management Program

Specification Manual

June 24, 2014

PacifiCorp, Director, Vegetation Management
1407 West North Temple, Room 230
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Transmission & Distribution
Vegetation Management Program

Specification Manual

Mission Statement:

Manage trees and vegetation around PacifiCorp's transmission and distribution facilities in a professional, cost effective and environmentally conscientious manner to provide safe, reliable and outstanding service to our customers.

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1. PROGRAM OVERVIEW

1.1 Introduction

Trees growing into or near power lines are a constant concern for PacifiCorp because they can create safety and service reliability risks. Close growing branches can provide access for children and others to high-voltage lines, exposing them to the potential danger of serious injury or death due to electric contact. Branches touching power lines can spark and start fires and cause interruptions in electric supply. Trees whipped by winds or weighed down by rain or snow often interrupt power, disrupting business and home life, as well as compromising critical community infrastructure, such as hospitals and emergency services.

Three major electric grid failures, including the catastrophic blackout on August 14, 2003, were initiated by tree-caused outages on transmission lines (U.S.-Canada Power System Outage Task Force 2003).

For these reasons and others, the National Electrical Safety Code (ANSI 2011) Section 2l8-A-l, states:

> *Trees which may damage ungrounded supply conductors should be pruned or removed. Note: Normal tree growth, the combined movement of trees and conductors under adverse weather conditions, voltage and sagging of conductors at elevated temperatures are among the factors to be considered in determining the extent of pruning required.*

PacifiCorp's distribution system averages scores of trees for every mile of line, any of which could potentially create problems. With that level of exposure, it is impossible to secure the system completely. Electric utilities, such as PacifiCorp, manage their systems to reduce electric supply and service reliability risks by clearing trees from power lines.

Often, particularly in the case of transmission lines, the best solution is to remove tall-growing trees and replace them with low-growing species that will never interfere with the high-voltage lines. However, it is not always possible to remove conflicting trees. Trees that cannot be removed must be pruned to clear the utility space using modern, arboriculturally-sound pruning practices.

PacifiCorp's specification manual covers the vegetation management program for both distribution and transmission. It includes program descriptions, specifications and protocols for customer relations. Its intent is to provide direction for foresters as well as contract GF/supervisors, forest techs and utility tree workers on PacifiCorp's system, and helps inform PacifiCorp employees about vegetation management.

1.2 Professionalism

PacifiCorp employs a staff of professional foresters to manage its vegetation program and communicate effectively the community service it provides. Contractor front line managers, supervisors or general foreman (GFs) must be Society of Arboriculture (ISA) Certified Arborists and ISA Certified Utility Specialists.

1.2.1 Forest Tech Qualifications

Forest Techs (contract utility foresters) should have the following qualifications:

- Forest Tech 1: No experience required. ISA certification and a certified applicator card not required. Maximum of 90 days in this position.
- Forest Tech 2: Up to two (2) years' experience. ISA certification and a certified applicators license required.
- Forest Tech 3: Over two (2) years' experience. Certified applicator's license and ISA certification required.
- Forest Tech 4: Over five (5) years experience. Certified applicator's license, ISA certification and Utility Specialist certification are required.
- Forest Tech 5: Over seven (7) years experience. Certified applicator's license, ISA certification and Utility Specialist certification are required.

Experience is defined as:

- Years of experience working in the green industry (horticulture, forestry, or commercial, municipal or utility arboriculture.
- Four (4) year degree in horticulture, arboriculture, urban forestry, botany or other related field equal two (2) years additional work experience.
- Two (2) year degree in horticulture, arboriculture, urban forestry, botany or other related field provide one (1) year additional work experience.

PacifiCorp vegetation management is founded on the industry's best practices, including systematic maintenance, scientifically-based pruning, tree removal, tree replacement, cover type conversion, herbicide use and tree growth regulator applications; as well as specialized tools and equipment. Practices should follow those outlined in ANSI A 300 Part 1-pruning (ANSI 2008) and Part 7-Integreated Vegetation Management (ANSI 2012a) as well as International Society of Arboriculture Best Management Practices: Utility Pruning of Trees (Kempter 2004) and Integrated Vegetation Management (Miller 2007). PacifiCorp is progressive in trying innovative methods, products and equipment in order to improve safety and productivity.

1.3 Tree Line USA

PacifiCorp has been a Tree Line USA recipient utility every year since 2002. Tree Line USA is an award from the National Arbor Day Foundation, which recognizes utilities for utilizing practices that protect America's urban forests. To qualify, utilities must apply scientifically-based tree care, conduct annual worker training, plant trees, and conduct public education, including participating in Arbor Day celebrations. Contract employees should participate in annual worker training to cooperate with and help PacifiCorp continue to merit this award.

2. GENERAL SPECIFICATIONS

2.1 Safety

Federal and state OSHA requirements governing vegetation management activities shall be followed at all times. ANSI Z133.1 (ANSI 20012) and OSHA 1910.269, are examples of these requirements. Activities shall be conducted in a manner that minimizes both tree crew and public safety risks. Crews shall have functional radio or telephone communication on the job site at all times.

2.1.1 Holds and Clearances

Minimum approach clearances for qualified line clearance arborists specified in ANSI Z133 or PacifiCorp's *Accident Prevention Manual* (Joint Safety Committee 2003 [Table 2.1]), should not be compromised. If there is a difference in the distances required in the two standards, the greater of the two is operative. If work requires violating minimum approach distances, or if a crew leader determines conditions to be unsafe, crew leaders should contact their supervisor/GF before proceeding. The GF/supervisor should determine whether or not a clearance or hold is necessary at that work site.

A hold means deactivating automatic line reclosers on a circuit. It is intended to protect PacifiCorp facilities and should not be considered a safety measure. If, in the judgment of the crew leader, an energized line cannot be worked safely, the GF/supervisor should arrange a clearance. A clearance is de-energizing a line.

PacifiCorp does not issue holds or clearances to tree crews. Rather, the Company will issue holds or clearances to a journeyman lineman, who shall be present at the site during work. Holds require at least 48 hours notice to dispatch, vegetation management and the district operations manager. In some cases, a clearance on transmission lines must be requested weeks or even months in advance. Customers do not need to be notified if a clearance is necessary to safely work trees from lines in an emergency.

Customers who will be affected by planned power outages associated with clearances must also receive 48 hours notice, except during emergency situations such as storm restoration work. However, if a clearance is necessary to work trees in an emergency, customer notification is not necessary.

De-energized lines; whether due to a planned outage, wind or storm damage, or some other reason; must be worked as if they are energized. If a line cannot be worked safely assuming it is energized, it must be grounded. Linemen must set the grounds and be present during work, and give approval prior to tree crew members breaching minimum approach distances to ensure safety.

2.1.2 Emergencies

An emergency is major storm (as declared by PacifiCorp), or situation where vegetation has caused or presents a clear, imminent threat of causing an outage, fire or public electric contact.

2.1.2.1 Whistles

Every crew member, supervisor/GF and forester shall carry a whistle at all times while on work sites. A whistle shall be used as an alarm, indicating danger, commanding all crew members to immediately stop work and

Figure 2.1. Emergency procedure for a tree on line incident.

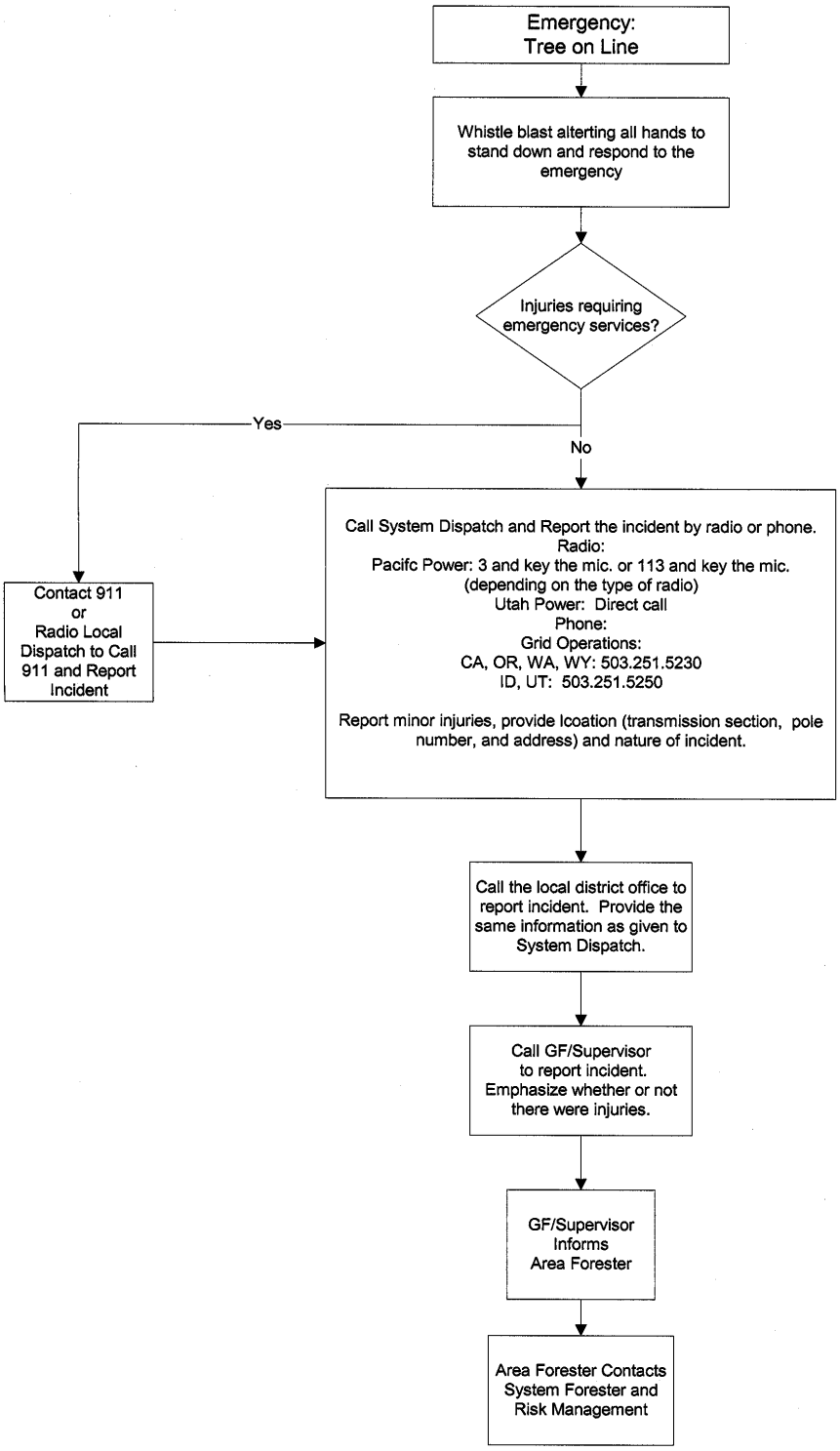

Table 2.1 Minimum approach distances for qualified line-clearance arborists and line-clearance arborist trainees.

Voltage Phase-to-Phase	Minimum Approach Dist.	Source
50-300 v	Avoid contact	APM/Z133
301-750 v	1 foot	APM/Z133
301 v-15 kV	2 feet, six inches	APM
15-46 kV	3 feet	APM/Z133
46-72 kV	4 feet, 2 inches	Z133
72-121 kV	4 feet, 6 inches	Z133
138-145 kV	5 feet, 2 inches	Z133
161-169 kV	6 feet	Z133
230-242 kV	7 feet 11 inches	Z133
345-362 kV	13 feet 2 inches	Z133
500-550 kV	19 feet	Z133

Note: APM is PacifiCorp's *Accident Prevention Manual* (Joint Safety Committee 2003). Z133 is the *American National Standard for Tree Care Operations*. Z133 distances are for sea level up to 5,000. Distances increase for elevations above 5,000 feet (ANSI 2012).

respond to the emergency. Whistle blasts should also be used to initiate aerial rescue drills. Whistles are not to be used for non-emergency situations, such as getting another crew member's attention.

2.1.2.2 Tree on Line

If a tree or tree part accidentally falls onto an energized line, work should stop immediately, and procedures outlined in Figure 2.1 followed.

2.1.3 Readily Climbable

Readily climbable trees have low limbs that are accessible from the ground and sufficiently close together and strong enough to support a child or average person so that the tree can be climbed by a child or average person without using a ladder or special equipment. Access into a tree by a vehicle does not render a tree climbable.

Readily climbable trees pose a hazard when a main stem would allow a child or average person to climb either within arm's reach of an uninsulated energized electric line or within such proximity to the electric line that the climber could be injured by direct or indirect contact. They are located near homes, schools, parks, businesses or other locations where people (particularly children) frequent.

If readily climbable trees are identified, within two weeks steps shall be taken to reduce the safety risk by removing the tree, or pruning to specification clearances. If possible, branches should be removed to at least 8 feet above the ground or altering facility construction so it can no longer be accessed through the tree.

2.1.4 Tree Houses

Tree houses built in trees growing near high voltage lines present possible electric safety risks. Safety risks in these cases could materialize if a tree house is

sufficiently close to the conductors so that children or others may contact the line either directly or indirectly. Indirect contact may occur through any conductive object, including a tree as tree parts contacting power lines can conduct electricity.

Tree houses built in trees growing in proximity to power lines must meet two criteria in order to remain where they are located. First, no part of the structure may be any closer than twice the minimum approach distances for persons other than qualified line-clearance arborists as specified in Table 2 of ANSI Z133 (Table 2.2). Second, the tree must be pruned so that it grows no closer than ANSI Z133 Table 2 (Table 2.2) distances, at least until the next scheduled work. Maximum sag and sway should be taken into consideration. Tree houses that do not meet these conditions shall be removed within two weeks of their identification.

Tree house safety risks may be managed by changing facility construction so tree house clearances can be maintained. Facility reconfiguration for this purpose may be done at a property owner's request, provided they cover the expense of the facility modification.

2.1.5 Fire Protection

Federal, state and local fire protection laws and regulations shall be followed, and the contractor performing the work must obtain necessary work permits. Crews shall have all fire fighting tools and equipment required by the responsible state or federal agency. Contractors shall also adhere to fire restrictions concerning work hours, fire watch following work and other policies of the pertinent jurisdiction.

Crews working in fire-prone rural areas should receive fire prevention and suppression training from the competent authorities.

2.2 Environment

Environmental respect is a MidAmerican Energy Holding Company core value, requiring strict adherence to all environmental rules and regulations.

2.2.1 Species of Concern

Tree work should not disturb or harm any rare, threatened, endangered, or protected plant or animal species. Nesting season work restrictions are examples of important scheduling considerations necessary to accommodate threatened and endangered species. Prior to beginning projects on federal and state lands, PacifiCorp foresters shall contact the responsible agency to determine whether or not such species are present on the right-of-way. If there are, foresters should contact PacifiCorp environmental services for support.

All tree and brushwork shall conform to guidelines of the responsible governing agency. Field data inventories of threatened or endangered species may be on file in PacifiCorp district offices. Moreover, PacifiCorp environmental services should be contacted whenever threatened and endangered species are identified.

2.2.2 Wetlands

Wetlands are lands where water saturation is the dominant factor determining the nature of soil development and the types of plant and animal communities living in and on the soil (EPA 2004). Wetlands shall be worked by hand. Federal, State and local laws and regulations concerning wetlands shall be followed.

2.2.3 Stream Protection

Work shall be planned to prevent water pollution. Trees shall not be felled into streams or drainage ditches in a way that could obstruct or impair the flow of water, unless instructed otherwise by the responsible governing agency. Machine work shall not be performed within fifty feet of a stream. Soil or debris shall not be placed below the high water mark of streams, unless instructed otherwise by a responsible authority. Equipment shall use existing or designated stream crossings. State forestry or fish and wildlife agencies shall be contacted if tree removal in and around streams could cause erosion or if resulting exposure could increase water temperature. Federal and state laws and regulations shall be followed concerning stream protection.

2.2.4 Bird Protection

Vegetation management activities may affect migratory birds. Migratory birds are protected by the *Migratory Bird Treaty Act of 1918* (16 USC 703-712). The act was most recently amended in 1998. All but a handful of bird species are protected under the act. Vegetation management's policy is that all bird species should be considered subject to the law's provisions. Foresters should provide annual training on bird protection to every tree crew.

The Migratory Bird Treaty Act prohibits removal of bird nests that have eggs or chicks, and killing protected species. Active nests may be disturbed in rare cases of urgent fire or electrical safety risk (in the judgment of the responsible forester). If tree crews identify a possible immediate risk, they should contact the forester for authorization. The forester may approve work if the line can be cleared within an hour. If the forester approves work, he or she shall notify environmental services within 24 hours. In all other cases work should be postponed until after young have left the nest.

Eagle and colonial water bird nests (such as those of cormorants and herons) may not be disturbed regardless of whether or not they are active. Eagles are subject to additional protection insofar as it is illegal to disturb them near their nests or winter roosting sites.

Raptors (birds of prey) and herons require buffers around active nests to prevent them from being disturbed (Table 2.2). In general, if a bird leaves a nest and does not return within an hour, it is being disturbed, and the buffer should be increased. In these cases, environmental services should be contacted within 24 hours to monitor the nest and respond appropriately if the adults fail to return to the nest.

2.2.4.1 Reporting

Active bird nests and inactive eagle nests should be reported to the appropriate forester and environmental services following the procedure outlines in Figure 2.2. Anyone working in vegetation management encountering a dead bird should report it to environmental services.

2.3 Archaeological Sites

Vegetation management activities shall not disturb known archaeological sites (Figure 2.3). If a forest tech or tree crew identifies something that might have archeological significance, they should move off site and contact the appropriate forester. The forester should contact environmental services for advice on whether or not to continue. Work should not proceed without environmental service's authorization.

Figure 2.2. Bird nest procedure.

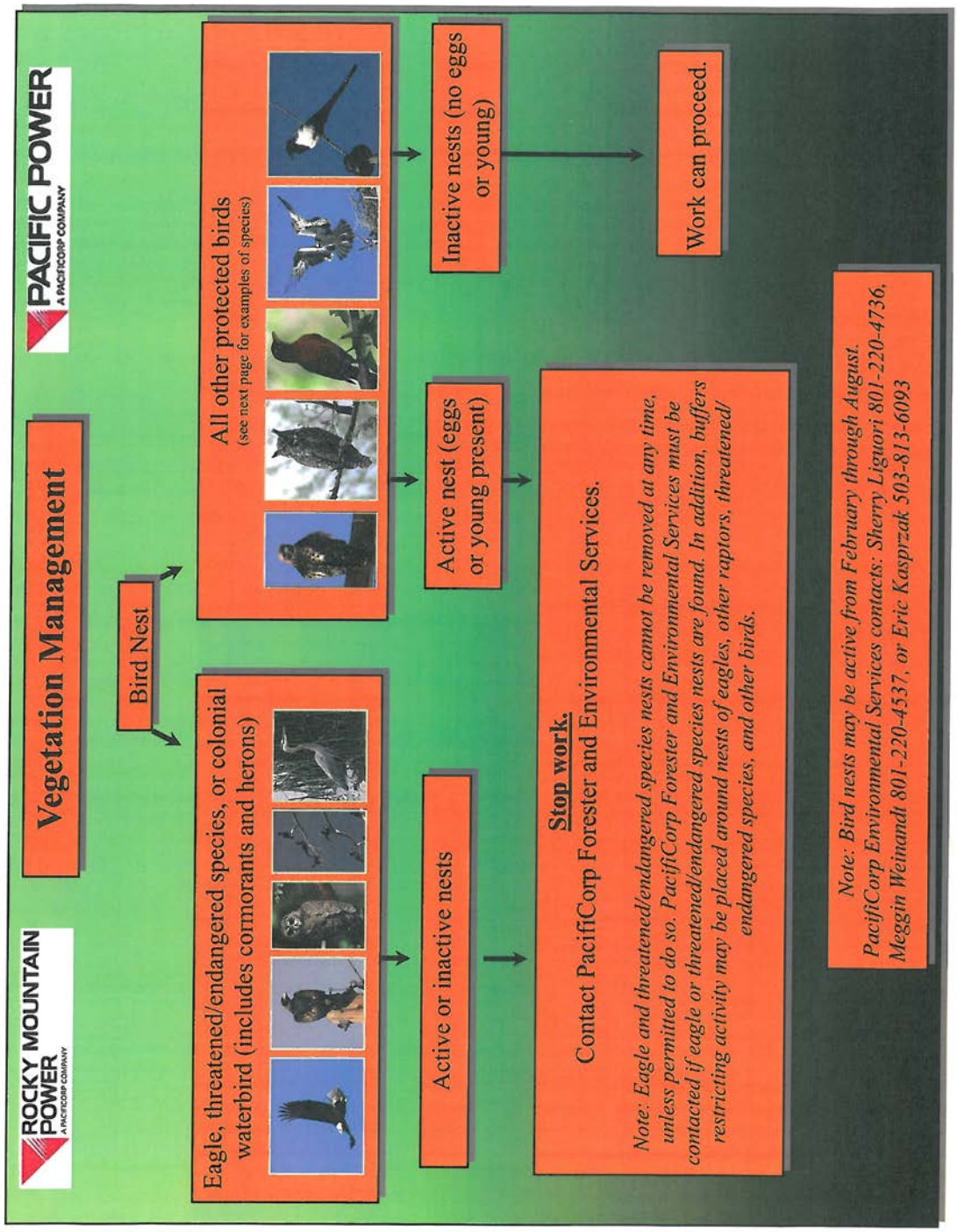

Table 2.2. Tree house clearances. Tree houses may only be allowed in a tree if they are more than minimum distances from conductors and the tree can be pruned to kept to clearances specified in this table at all times. Specified tree clearances are those for persons other than qualified line-clearance arborists specified in Table 2 of ANSI Z133. Minimum tree house distances are twice ANSI Z133 Table 2 distances.

Voltage (kV phase to phase)	**Minimum Tree House Distance From Conductors (ft-in)**	**Tree Clearance** (If tree house is built in a tree more than minimum distance from conductors)
0.31-0.75	20-00	10-00
0.751-15	20-00	10-00
15.1-36.0	20-00	10-00
36.1-50.0	20-00	10-00
50.1-72.5	21-06	10-09
72.6-121.0	24-08	12-04
138.0-145.0	26-04	13-02
161.0-196	28-00	14-00
230.0-242.0	32-10	16-05
345.0-362.0	40-10	20-05
500.0-550.0	53-04	26-08

Table 2.3. Work buffers around active nests of eagles and herons.

Species	**Work Buffer**
Herons	1000 feet
Owls	¼-mile
Hawks, ospreys, golden eagles	½-mile
Bald eagles	1 mile

Figure 2.3. An ancient food storage structure along the Camp Williams-Four Corners 345 kV right-of-way in Southern Utah. This is an example of the type of valuable archeological site that needs to be identified and protected during vegetation management work.

Rich Buelte photo

Prior to beginning work on federal and state lands, PacifiCorp vegetation management shall contact the appropriate agency to determine whether or not such sites are present on or near the right-of-way. PacifiCorp district offices may have field data inventories of known sites to assist in the determination. If present, foresters should secure the assistance of PacifiCorp environmental services.
Archeological sites shall be located and marked. Work must conform to guidelines of the responsible governing agency. If archaeological artifacts are located on private lands, the finding shall be reported to PacifiCorp environmental services. Field data inventories of known sites could be on file in PacifiCorp district offices.

2.4 Communication

Communication should be open and interactive. It should include everyone involved: management, planners, vegetation management crews, property owners, public land managers, appropriate governmental officials, members of organizations dedicated to related causes and others.

2.4.1 Internal Communication

Communication within a utility's vegetation management department needs to be clear and concise to ensure everyone involved understands the

desired results. Specifications and performance goals should delegate decision-making authority throughout the organization, as appropriate. Communication between vegetation managers and workers ought to be both written and verbal. Written instruction should include PacifiCorp Vegetation Management Specifications. It should also include details regarding concerned customers and locations of environmentally sensitive or archeological areas. Written instruction should be reviewed verbally. Appropriate communication also involves post work debriefings to review challenges and prevent problems from recurring.

Communication between utility vegetation management staff and other internal employees, such as engineers and operations managers, includes why, where, when and how vegetation management projects will be conducted. This is important because people within an organization but outside vegetation management can help set priorities, anticipate and prevent potential problems, and provide historical perspectives. Communicating with operations staff during work can also add a margin of safety. By knowing there is a vegetation management job underway, operations staff may be able to provide a timelier and more appropriate incident response than they would if they were unaware of the project. At the beginning of every week, districts in which vegetation management work is being conducted shall be emailed a spreadsheet with the approximate tree crew work locations for the coming week.

2.4.1.1 Communication of Vegetation Conditions that are Likely to Cause an Outage At Any Moment)

Members of the vegetation management team must comply with *Transmission Grid Operations Operating Procedure PCC-215,* which institutes the *NERC Transmission Vegetation Management Program* standard requires the control center with switching authority for the applicable line to be notified of vegetation conditions that could cause an outage at any moment (see Figure 6.6 for the appropriate PacifiCorp dispatch center). PacifiCorp may implement temporary action, such as rating reductions or taking transmission lines out of service until vegetation can be cleared. Inspectors should report the exact location of the subject trees (providing longitude and latitude if possible) as part of the process.

2.4.2 Communication with External Stakeholders

Public land managers, property owners, regulators, and civic organizations have interests in utility vegetation management activities. Educating potentially affected parties about the need for, benefits of and science behind vegetation management can clarify expectations. Members of the vegetation management team, including crewmembers, should know the facts about the program, be prepared to answer basic questions and refer more complex issues through to their GF/Supervisor.

Communication should begin well in advance of work and involve listening to and understanding people's concerns. Work on governmentally-managed property can involve administrative procedures that take months of advance work, including navigating through permit processes and the concerns of

specialists who have responsibility for stewardship over public lands. It is not always clear to lands specialists how vegetation management helps balance their [the land manager's] responsibilities against the public's need for a safe and reliable electric grid. A memorandum of understanding among Edison Electric Institute (EEI) member utilities and federal land management agencies (EEI 2006) establishes a framework for developing cooperative rights-of-way integrated vegetation management (IVM) practices among EEI shareholder-owned electric companies, federal land management agencies and the Environmental protection agencies.

2.5 Miscellaneous Items

2.5.1. Hydroelectric Facilities

PacifiCorp hydroelectric facilities and adjacent rights-of-way could have restrictions on vegetation management activities. PacifiCorp's hydro operations and implementation (compliance Group), PacifiCorp right-of-way services, or PacifiCorp environmental services shall be contacted before activities on or adjacent to hydroelectric facilities begin.

Herbicide use on or adjacent to PacifiCorp hydroelectric facilities shall be reported to the plant manager weekly. Tree crews working on property that is part of a hydroelectric project site should check in with the plant office before beginning work and check out after work each day.

2.5.2 Fences and Gates

Gates should be left open or closed as they were found, or as the property owner instructs. Damage to fences or gates shall be reported to the property owner and the appropriate supervisor/GF, and repaired as soon as possible.

2.5.3 Climbing Spurs

Climbing spurs shall not be used when climbing to prune trees.

Exceptions:

- when limbs are more than throw line distance apart and there is no other safe means of climbing the tree
- when the bark is sufficiently thick to prevent spur damage to the cambium
- when working hazard trees that are to be reduced in height and left for wildlife.

2.5.4 Winching Vehicles.

Winch cables or ropes should not be wrapped directly around anchor trees. Doing so damages a tree's bark and cambium and can not only reduce its health and value, but also eventually creates hazards to overhead lines. If the need arises to winch a vehicle (including an all-terrain vehicle), a nylon strap (or equivalent) at least 2-inches wide shall be used around the tree, and cables or ropes attached to the strap. Utility poles or towers shall never be used as winch anchors.

2.6 Tree Removal

Tree removal is an important component of PacifiCorp's vegetation management program. Tree removal can reduce safety risks, improve access to facilities, clear lines of sight and moderate future workloads. Tree conditions are site and tree specific.

Tree removal on distribution facilities requires either written notification to or signed permission from the property owner, unless there is a right-of-way, easement or permit that expressly authorizes tree removal. If such an easement or permit exists, notification

to the property owner may be verbal, provided it is documented. Signed permission may be obtained on the removal door hanger (see Section 8.2.1.3) or *Property Owner Permission Form* (see Section 8.2.2).

Stumps shall be cut to within six inches of the ground or as close to it as practical (for example, at the top wire of a barbwire fence with wire that has become imbedded in the trunk). Stumps of all deciduous trees, brush and vines that are removed shall be treated with an approved herbicide, where permitted (see Section 7.2.3.1).

PacifiCorp prefers to remove the entire tree in the following situations:

- Transmission rights-of-way where the conductors are less than 50 feet off the ground, or between 50 and 100 feet off the ground depending on the size of the tree (see Table 6.1 and Figure 6.3).
- High risk trees (dead, dying, clearly diseased, deformed, or unstable trees which have a high probability of falling and contacting transmission or distribution conductors). Note that every tree is potentially hazardous. With millions of trees under management, it is impossible to identify and correct every potentially hazardous tree. Nevertheless, PacifiCorp has a responsibility to maintain its system by making a reasonable effort to identify trees that are clearly hazardous, and correct the problems they could cause in a timely manner.
- Trees that will take no more than twice the time to remove than to prune during distribution cycle work, with the exception of hazard or cycle-buster trees.
- Trees that take no more time to remove than to prune during interim and ticket work. High risk trees excepted.
- Readily climbable trees.
- Trees with tree houses not meeting the clearance to transmission or distribution conductors shown in (Table 2.3)
- Fast-growing trees that could interfere with distribution conductors or violate specific state regulatory clearances before the next scheduled maintenance work (cycle-busters).
- Volunteer trees less than six-inches in diameter (DBH), which could eventually interfere with distribution conductors.

2.6.1 Equipment Mowing

Mowing is often more cost effective than manual methods of tree removal and should be pursued wherever practical (Figure 2.4). Mowing should be limited to fifteen feet either side of distribution primary wires and within transmission rights-of-way.

2.7 Mechanical "Trimmers"

Mechanical "trimmers" may improve productivity in rural, densely vegetated areas (Figure 2.5).

2.8 Slash Disposal

Slash is brush and limbs less than six-inches in diameter removed during tree operations.

2.8.1 Developed Areas

In developed areas, slash should be chipped and removed from the site unless an agreement has been reached with the property owner to leave it. Slash may be left temporarily, provided the crew has notified the property owner or tenant, and arrangements made to clean it up to the

Figure 2.4. Side mower used on distribution rights-of-way.

Figure 2.5. Jarraff mechanical “trimmer” that may improve productivity in remote areas.

Figure 2.6. Cracked pole – an example of the type of conditions tree crews should report.

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Figure 2.7. PacifiCorp Vegetation Management Maintenance inspection report form.

Maintenance Conditions Found by Crews			
Week Of			
Location - closest address, meter number if available and facility point number.			
Address (city and state)			
Meter #		Facility Point #	
Description of Problem:			
Employee Name:			

customer's reasonable satisfaction within two business days. Tree stems greater than six-inches in diameter should be left on site, and work locations left in a safe and orderly condition.

2.8.2 Rural Areas

In rural areas, slash should be disposed of on-site whenever possible.

For off-road, wooded areas, brush should be lopped into three-foot maximum lengths, and scattered in piles no more than two-feet high. Stems larger than six- inches in diameter should. They may be cut in firewood sized length at the customer's request.

Limbs and slash should be piled separately. Limbs and slash should be disposed of at the sides of distribution rights-of-way, and outside the wire zone of transmission rights-of-way, unless specified otherwise by the area forester. If brush is chipped, it should be broadcast on site wherever possible. Resulting chip piles should be no higher than two-feet. Debris piles should not limit or block access to the right-of-way, or create fire risk.

2.9 Storm Work

Storm work is done under the authority of the district operations managers. Tree crews and forest techs assigned to storms should work under the direction of circuit captains. Tree crews should report their progress at least daily to both the circuit captain and their GF/supervisor. The supervisor should report crew progress to the appropriate forester.

All storm work must be conducted as if the line is energized. If the line cannot be worked safely under the assumption it is energized it must be grounded in accordance with section 2.1.1. In general, PacifiCorp does not dispose of slash or debris resulting from storm damage. Trees that fall during storms would do so

regardless of whether or not the lines are present. It should not be the utility's responsibility to clear the debris simply because the tree or trees from which it originated damaged Company facilities on the way down. However, if an outage is preventable, slash may be cleaned-up and removed from a property at the forester's discretion.

2.10 Facility Inspection

While tree crew members are not facility inspectors, they can be helpful in identifying pronounced conditions, such as cracked poles (Figure 2.6) broken cross arms or insulators, loose guy wires, and other problems. Tree crew members should report the condition on the *Maintenance Condition Report Form* (Figure 2.7).

2.11 Freelance Work

No one employed in PacifiCorp's vegetation management department may solicit or perform arboricultural-consulting or tree work (pruning, removal, insect or disease control, fertilization etc.) for interests outside of officially authorized PacifiCorp projects on property served by feeders or grids subject to an open work release or on property adjacent to or within 220 yards of transmission lines subject to an open work release. Outside projects may include side jobs for cash, work for private arboricultural firms (whether or not they are owned by the tree crew members doing the work), consulting or any other arboriculturally related enterprise.

3. TREE BIOLOGY AND PRUNING

Pruning is primarily on distribution facilities, although it can have application to transmission lines in some cases. The primary purpose of utility line clearance work is to minimize safety and service reliability risks caused by tree-power line conflicts.

Pruning to clear conductors shall adhere to the principles of modern arboriculture. The *American National Standard for Tree Care Operations* A300 (ANSI 2008), International Society of Arboriculture (ISA) *Best Management Practices: Tree Pruning* (Gilman and Lilly 2002), *Best Management Practices: Utility Pruning of Trees* (Kempter 2004), and *An Illustrated Guide to Pruning* (Gilman 2002), among other references, convey those principles.

While proper utility line clearance work should be consistent with practices that promote tree health, utilities cannot place tree health over public welfare. Sometimes, there is no way to obtain proper clearance in a manner that ensures the health of a tree (Lilly 2010). This is particularly true regarding foliage retention. In cases were the tree cannot be pruned without harming its health, tree removal is often best for the tree, tree owner and utility. If tree removal is not permissible, the tree should be pruned to specification clearances, even if that work is against a customer's wishes or could harm the tree.

3.1 Utility (Directional) Pruning

Directional pruning is natural target pruning applied to routing tree growth away from utility lines (Miller 1998). ANSI A300 (2012a) and ISA's *Best Management Practices* (Kempter 2004) instruct that pruning to clear the utility space involves thinning cuts: removing at natural targets entire branches that are growing toward (or once cut will produce sprouts that will grow toward) the power lines.

While heading cuts produce sprouts that grow quickly back into the power lines, branch removal and reduction promotes growth away from conductors. Since the point of utility pruning is to train trees around power lines wherever practical, branches growing away from the electric facility should not be pruned. Instead, these stems should be allowed to develop to their natural height or length, provided that growth does not create unreasonable safety risks. This cannot be accomplished with strongly excurrent trees trapped directly beneath conductors.

Topping, round-overs, flush cuts, branch tipping and rip cuts are improper because they damage trees. Directional pruning is consistent with natural tree structure. Remaining branches retain their taper, strong attachments, growth regulators and spacing. They continue to grow and function normally, allowing the tree to reach to its natural height.

"V" shapes often result on properly pruned trees growing under power lines, particularly on decurrent, deciduous trees (Miller 1998, Shigo 1990, Gilman 2002, Kempter 2004) [Figure 3.1]). Limbs growing upward and toward the facility should be cut back to the trunk or to limbs growing away from the conductors.

Remaining branches should have sufficient clearance so they do not contact the conductors in inclement weather common for the locality (high wind, freezing rain, snow or other conditions). Excurrent trees (such as many conifers) are more problematic, but should be reduced to appropriate laterals or whorls.

"L" or one-sided shapes often result on properly pruned trees to the side of conductors. (Shigo 1990, Gilman 2002 [Figures 3.2]). Limbs on the wire side of trees located adjacent to facilities should be cut back to the trunk; or to limbs growing vertically, sideways or downward; depending on the distance to the line or available natural target.

3.2 Tree Biology

Understanding fundamental tree biology is essential to applying proper pruning to utility line clearance (Miller 1998).

3.2.1 Leaves

Leaves are the tree's food source. Tree survival depends on the leaves' ability to manufacture carbohydrates from the sun's energy, carbon dioxide and water. Current thinking among scientists is that if a tree abruptly looses a large portion of its foliage, as can happen with over-pruning, it could lack the energy resources to meet its needs. Trees with insufficient foliage could be weakened to the point where they become subject to attack by opportunistic insect and disease pests. Damage can extend to the roots as well as to above ground portions of the tree (Shigo, 1986). Trees can suffer sun injury after sudden excessive foliage loss (Miller 1998).

3.2.2 Stem Anatomy

Trunks and branches are tree stems. Their function is support, energy storage, and water, mineral, carbohydrate and growth regulator transport. The point of origin of a branch or limb is a node. A lead is an upright trunk or major limb with a dominant role in the tree crown, and a lateral is a branch off a parent stem. Some leads can also be laterals.

3.2.3 Xylem

Xylem is wood tissue. Sapwood is young, living xylem that stores carbohydrates, provides support, and conducts water and essential elements. Heartwood is old, dead xylem that provides support, and often contains anti-microbial compounds.

Long, hollow conducting cells (trachieds or vessels) predominate xylem structure. While trees need this vascular structure to conduct water and essential elements, it can be exploited by pathogens to spread up and down the stem. Trees attempt to block or "wall" off disease spread by plugging conducting cells in various ways, but pathogens can use food energy stored in the trunk or branch to breach these walls (Shigo1986).

Authorities disagree over how much foliage removal trees can tolerate in a given year. ANSI A300 (2008) recommends no more than 25%, while Gilman (2002) suggests less than 10 to 15 percent. Often, much more than 25% of foliage must be removed from the tree in order to appropriately maintain electric facilities. The ANSI committee did not intend the 25% provision to impede utilities from achieving appropriate clearances (Smith 2002). Utility arborists faced with the choice of maintaining public welfare by clearing the tree to specifications on one hand, or promoting tree health on the other, have no alternative but to safeguard the civic good.

Figure 3.1. ”V"-shapes can develop from crown reduction on deciduous trees (left). The ultimate objective is to train trees up and around the wire wherever possible, so the facility is clear and the tree is healthy. These two photos are of the same tree, in 1992 (left) and 2007 (right).

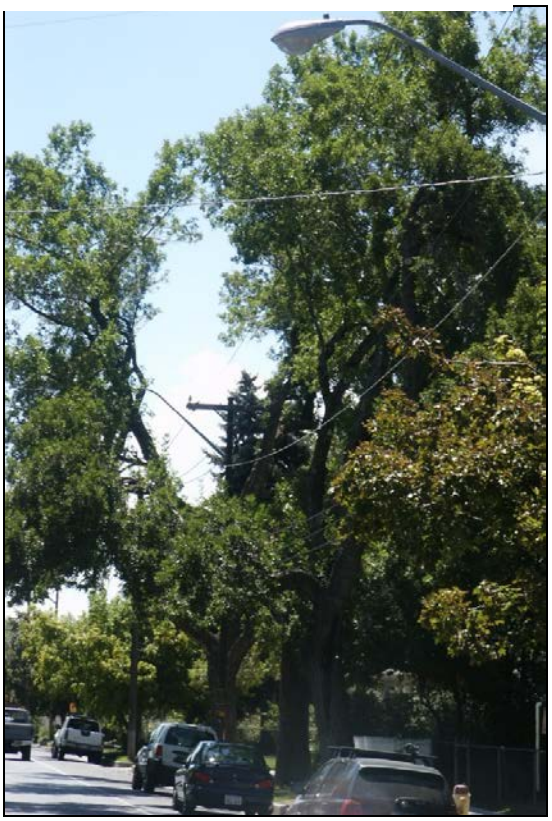
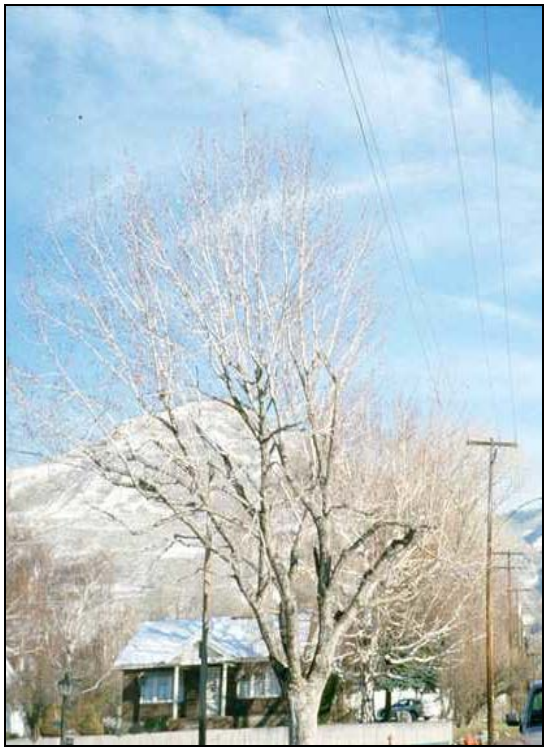
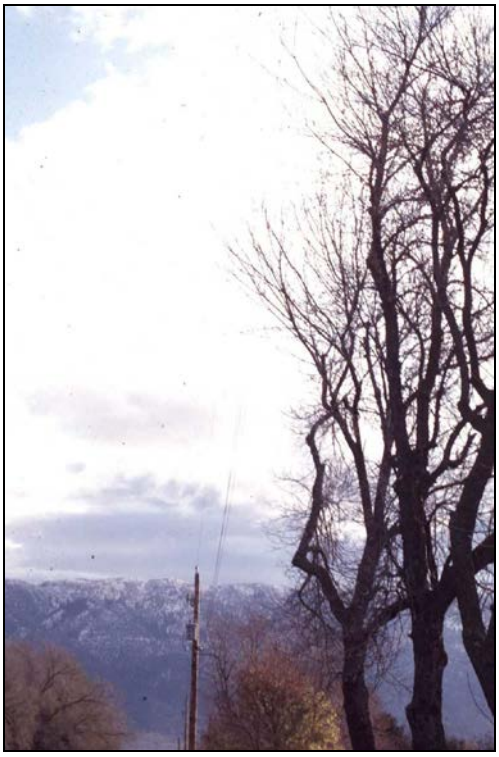


Figure 3.2 "L" or one-sided shapes often result on properly pruned trees growing to the side of conductors. Pruning may be mechanical in rural areas, below right.





3.2.4 Cambium

The tree's cambium is a thin layer of rapidly dividing cells around the outside of the sapwood. One of the functions of the cambium is to produce wood to its inside, creating diameter growth. This is the only source of wood production in the tree system, and the tree has no ability to replace damaged or decayed wood.

Pathogens gain access to wood through wounds. In response to wounding, the cambium generates a "barrier zone" containing antimicrobial compounds (Figure 3.3). It protects new wood by separating it from potentially infected wood that existed at the time of wounding. Following infection, a "race" develops between the cambium and wood-rotting microorganisms, with the structural integrity of the tree at stake. The cambium must produce new wood faster than pathogens can digest the former stem if the tree is to remain viable (Figure 3.3).

While the barrier zone contains strong antimicrobials, it is weak structurally. This structural weakness can be problematic, as cracks may develop along the barrier zone when the stem twists and flexes due to wind, ice or other stress loads. These cracks allow pathogens to breach the barrier zone and enter new wood, further threatening the tree (Figure 3.3 [Shigo 1986]).

3.2.5 Branch Collars

Branch collars are a combination of parent stem and branch tissue generated through coordinated growth around the branch attachment (Figure 3.4). In the spring of the year, diameter growth begins at branch tips, and works toward the base. When new wood meets the branch base, it turns at 90°, and wraps around the juncture. Later in the growing season, wood from the parent stem envelops branch wood laid down earlier. As a result, two layers of wood secure the branch every year, and the attachment increases in strength as the branch grows (Shigo1986).

3.2.6 Branch Bark Ridge.

An important structure associated with branch attachment is the branch bark ridge. The branch bark ridge is a line of raised bark, formed as the branch and parent stem grow together. It marks where branch wood meets stem wood Figure 3.5). A raised branch bark ridge is often a sign of a strong attachment.

3.2.7 Branch Protection Zone

Branch protection zones are areas of antimicrobial compounds that form internally at the base of diseased or injured branches (Shigo 1986). They inhibit pathogens in the branch from passing to the parent stem. While protection zones are effective, pathogens can overcome them using energy stored in the branch.

3.2.8 Taper

Tree stems taper from their bases, where they are widest, to twig tips, where they narrow to buds or apical meristems. Taper provides flexibility and strength that disperses loads from branch weight and from wind, snow or ice loads. The adaptation reduces the likelihood of failure under stress.

Figure 3.3 The cambium creates a barrier zone that contains discoloration and decay in old wood, protecting new wood. Note on the right, a ring shake formed along the old barrier zone. This is a structural flaw.

Figure 3.4. Branch collars form at branch bases.

Figure 3.5. A raised branch bark ridge is often a sign of a strong attachment. It marks where the branch meets the parent stem.

Figure 3.6. Codominant stems are at least 50% of the diameter of their parent stem. They have no branch collars or branch protection zones. Codominant stems can grow together and have bark included (embedded) between the stems in the attachment.

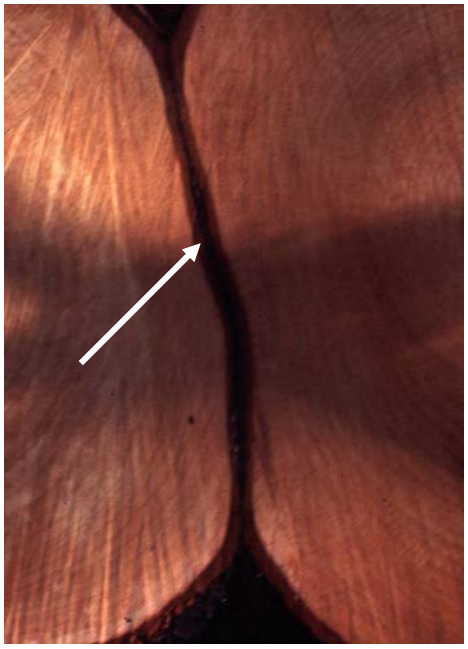


Figure 3.7. A before and after collar cut.

3.2.9 Codominant Stems

Codominant stems are stems that are at least half the diameter of their parent stem, and compete for dominance in the tree crown (Gilman 2002). They are similar to branches, but have no branch collars or branch protection zones. Disease moves from one codominant stem to another as readily as it moves through ordinary stems. Codominant stems can have a branch bark ridge. However, they are structurally flawed because they do not have room to develop (Figure 3.6). As crowded branches grow in diameter, they can press together, creating wounds and squeezing bark in between the two stems (Figure 3.6).

The resulting wounds allow disease entry and weaken branch attachments. Moreover, stems with included bark often pry one another apart as they grow, further weakening their attachments. Attachments with included bark often fail, and can be recognized by a crease between stems near their juncture (Figure 3.6).

3.2.10 Growth Regulators

Growth regulators are chemicals that coordinate plant growth. A growth regulator can have confusing, even contradictory roles depending on its concentration, the concentration of other growth regulators, environmental conditions the species of tree, and other factors. Nevertheless, scientists understand that growth regulators are responsible for orderly plant growth and development.

For example, auxin is a growth regulator produced in apical meristems, while cytokinin is another type synthesized in root tips. In response to environmental factors, roots grow and make cytokinens that stimulate shoot growth, which can result in auxin production that promotes root development. The resulting cycle is one way the tree system “communicates” to stay in balance as it grows. Auxin also functions in apical dominance. Auxin produced in apical meristems inhibits lateral growth, and helps to account for orderly branch development and spacing. Conversely, removing an apical bud or

meristem promotes lateral growth, which alters the tree's normal growth habit, and can lead to codominant stems, poor spacing, and included bark.

Gibberellins are another class of growth regulators. Among other functions, gibberellins promote cell elongation. Marketed chemicals commonly known as "Tree Growth Regulators" (TGRs) are actually gibberellin inhibitors. By inhibiting gibberellins synthesis, TGRs reduce cell elongation, which in turn slows growth

3.3 Natural Target Pruning

Natural targets are proper final pruning cut locations at strong points in the tree's disease defense system. Removing branches at natural targets rarely damages the joining trunk or limb (Miller 1998). The ISA *Best Management Practices: Tree Pruning* (Gilman and Lilly 2002) and *A300* (ANSI 2007) describe the technique. Targets vary depending on whether a branch is removed or reduced.

3.3.1 Collar Cuts

Branches should be removed at the collar (Figure 3.7). Cutting into the collar, known as flush cutting, is inappropriate because it creates a direct port of disease entry into the parent stem.

Disease can weaken stems, potentially creating safety risks. On the other hand, proper branch removal does not leave stubs that pathogens can use as an energy source to overcome the tree's defense system and spread into the trunk. If the branch is removed correctly, only the branch protection zone is exposed, giving an advantage to trees in keeping out disease. As a result, collar cuts virtually prevent decay from entering the parent stem (Figure 3.7 [Miller 1998]).

3.3.2 Approximating the Collar

Occasionally, branch collars are not readily evident and the collar must be approximated using the branch bark ridge (Figure 3.8). Start the cut in the branch crotch, just outside the branch bark ridge, and follow an outward angle that mirrors the inward angle the branch bark ridge makes with the trunk or parent stem. The cut should end roughly opposite the bottom of the branch bark ridge (Figure 3.8).

3.3.3 Reduction Cuts

Reduction cuts shorten leads to appropriate laterals. An appropriate lateral is no less than one-third the diameter of the original limb and retains at least three-quarters of the lead's foliage (ANSI 2008 [Figure 3.9]). The reason for these requirements is that branches are autonomous in their energy requirements. Removing too much foliage from a limb could deprive it of sufficient energy to establish apical dominance, maintain its taper, close the wound, and compartmentalize and "out-race" disease which will enter the wound.

As a result, the lateral will not develop into a structurally viable leader. Moreover, shortening a lead removes apical meristems and other points of growth regulator production, which can disrupt orderly growth. If, for example, auxin concentrations are insufficient, on some species a crowded mass of upright, rapidly growing, poorly attached shoots can sprout from the cut and grow directly back into the lines.

Therefore, removing more than 25% of foliage from a limb has the same damaging result as a random topping cut (Figure 3.10), regardless of whether or not the cut is made to a proper-sized lateral. Even under the best circumstances, reduction cuts are

potentially harmful, acting more like a heading than a thinning cut (Gilman 2002). Consequently, if a lead cannot be shortened to a limb at least one-third the diameter of the original lead, or if a cut removes more than 25% of the foliage, that limb should be either targeted for removal, or not pruned. Removal may be gradual over the course of several cycles.

3.3.4 Large Branches

Large branches (those 3-inches in diameter or greater) can seldom, if ever, be removed without harming the tree, particularly if they are codominant stems. Yet, large branches must be prevented from growing toward the utility space, and that nearly always means heading or removing them entirely. Either option can be harmful, but heading large branches not only injures the tree, but fails to effectively clear the conductors (Figure 3.10).

Removal may take a measured approach. For example, one or two large limbs might be removed out of three that are growing toward the conductors, and the remaining limb(s) targeted for removal on subsequent cycles.

Large branches selected for later removal can be subordinated, or removed gradually over subsequent cycles (either interim or cycle). Subordination thins a portion of a limb's foliage. Reducing a fraction of the foliage in this way suppresses the stem's growth, and allows the remaining tree parts to adjust and develop. In some cases, subordination can allow a codominant stem to develop into a branch over time, enabling a branch protection zone to form so a limb can be removed without unnecessarily subjecting a tree to disease (Gilman 2002). Using subordination over multiple cycles to remove large branches can reduce the effect of structural limb removal on tree health, while ultimately circumventing the permanent problems heading cuts can cause, even if that means temporarily heading the branch.

3.3.5 Old Heading Cuts

Removing large stems that have been headed often leaves wide gaps in the tree, because shoots that proliferate from the old heading cuts often dominate the crown (Figure 3.10), and gaps result when branches containing these shoot clusters are removed. Moreover, previously headed branches usually lack natural targets. When such branches are growing toward the conductors, there is often no alternative but to remove them entirely.

Headed branches growing away from the facility space should not be pruned as a matter of standard practice. However, shoots growing from the old heading cuts should be inspected for structural integrity during subsequent visits. Corrective action, such as crown restoration (ANSI 2008), could be necessary if these sprouts are found to be structurally weak. However, in some cases, structural defects resulting from heading cuts are so severe that they cannot be corrected (Dahle et al. 2005). In these cases, the customer should be contacted about removing the entire tree, or at least the subject branch or branches. If tree or branch removal is not possible, there could be no choice but to remove the weak growth with a new heading cut. This should be done only when extensive decay or hollow exists in the remaining branch, with the approval of the forester or GF/supervisor, for safety (not "aesthetic") purposes.

Figure 3.8 Approximated collar cut.

Figure 3.9. Crown reduction cut.

Figure 3.10. Old heading cut. Shoots that proliferate from these cuts often dominate the tree's crown, and gaps result when branches containing these shoot clusters are removed.

3.3.6 Reduction

Reduction is selective pruning applied to reduce the top or side of a tree or individual limb (ANSI 2008). In a utility context, the goal of reduction is to promote future tree growth away from the conductors, at least on decurrent trees (Figure 3.1)

3.3.6.1 Deciduous Trees

The "V" in many crown reduced deciduous trees quickly fills in with shoots. These shoots eventually require pruning to be kept from interfering with the lines (Figure 3.1) In subsequent cycles, it is important not to strip all these sprouts away, since that causes lion's tailing and can stimulate resurgent growth in many species. Rather, about half of the shoots should be removed, and the other half retained (Figure 3.11).

Shoots selected for removal should be the largest and most vigorous, leaving smaller sprouts behind. Growth selected for retention should be pencil-thin at the point of attachment. If need be, these remaining shoots may be headed back to obtain specification clearances. In this way, a rotation can be established where the largest, most vigorous shoots are removed each cycle, but smaller, suppressed shoots are left to soften the negative visual effect that many customers find objectionable.

Moreover, leaving shoots in the interior of a "V" provides shade and retains auxin production, both of which suppress vigorous sprouting, and helps the trees hold (Figure 3.11). Eventually the sides of the tree will overtop the wires, resulting in more of a "U," and shade the interior of the tree, suppressing shoot growth even more. In time, this top growth decreases the proportion of the crown occupied by the cleared utility space, and softens the negative aesthetics.

3.3.6.2 Conifers

Many conifers; such as pine (*Pinus spp.*), spruce (*Picea spp.*) and Douglas-fir (*Pseudotsuga menziesii*); have strong central leaders (excurrent form). When these types of trees grow directly under the lines, they should be reduced to the whorl or largest available lateral that provides specification clearance. Cuts made to conifer whorls are typically flat-topped in order not to damage any branches in the whorl (Figure 3.12). Laterals should be tipped on a conifers, which prevents them from forming compression wood and bending up toward the conductor.

3.4 Helicopter and Mechanical "Trimming"

Helicopter and mechanical "trimming" can be cost effective in rural areas. However, it can be difficult or impossible to hit natural targets with a mechanical saw. Consequently, decay and sprouts may develop that can cause problems in the long run. Therefore, care should be taken where to employ machines, and in subsequent years work needs to be monitored as hazard trees may develop.

Figure 3.11 On return visits to "V-Outs", under pruning should leave the smaller, suppressed shoots to retain foliage and soften the visual effect of crown reduction.

Figure 3.12. Crown reduction.

4. SCHEDULING AND REPORTING WORK

4.1. Scheduling Work

Scheduled work involves systematic cycle or interim projects on both distribution and transmission lines. Schedules should be based on the time elapsed since the last scheduled work, compliance, voltage (particularly for transmission lines), the frequency of tree-caused outages, customer count, the existence of important accounts (hospitals, factories, mines or other high demand facilities), tree conditions, the number of customer complaints, the growth rate of predominant tree species, geography, customer density, rainfall and other environmental factors.

4.2 Process Checklist

Scheduled distribution and transmission work should follow the *PacifiCorp Vegetation Management Process Checklist* (Figure 4.1). The purpose of the process checklist is to facilitate systematic project management. The project should be identified along with the start date on the top of the process checklist.

4.2.1 Authorize Project Work

PacifiCorp foresters are responsible for work authorization. No work should begin on a project until foresters have authorized it to proceed as outlined.

4.2.1.1 Contractor Work Release

Before beginning a scheduled project, the forester shall open a *Work Release* (Figure 4.2). The *Work Release* authorizes a contractor to proceed with a specific maintenance project, and provides written instructions for the work. Contractors will not get compensated for work performed on projects that have not been authorized through a work release.

The *Work Release* specifies the project type (distribution cycle or interim, transmission cycle or interim, TGR or chemical), and other systematic work. It provides instructions on tree removals, tree replacement, tree growth regulators (TGRs) and other particulars. It also assigns desired starting and ending dates. Before work begins, the GF/supervisor shall distribute copies of the *Work Release* to each crew assigned to the project, and review instructions for proceeding.

After the project is finished, the supervisor/GF shall sign the *Work Release* to certify the project is completed and closed. The contractor shall provide the actual starting and completion dates, as well as any pertinent comments. Comments should note work that is either incomplete (due to refusals, for example) or does not meet specifications at the time the *Work Release* is closed. By signing off on a project, the contractor guarantees that the work has been completed to PacifiCorp's specifications, and assumes responsibility for any failures to meet Company requirements, outside of exceptions noted in the comments.

4.2.1.2 Set Labor-hour Goals

The forester should set goals for labor-hours a tree and mile for distribution cycle and interim work. These goals should be based on production data drawn from the last work on the feeder or grid, with a stretch goal of 10% improvement. Goals should also be established for transmission facilities at labor-hours a mile from previous or similar projects.

Figure 4.1 Process Checklist

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Vegetation Management Process Checklist

Work ID: _____

Date: _____

Authorize Project Work - Utility Forester

- ☐ Open Work Release and Set Goals. Distribute and Discuss with Vegetation Contract Supervisor
- ☐ Labor-hour Goals Set for Trees, Miles or acre (for transmission lines)
- ☐ Work Release Sent to Consultant LD/SR, Service Coordinator and System Forester
- ☐ ☐ N/A Notify Operations Managers, Community Relations Managers, Communications

Project Plan - Forester, Contract Supervisor and Forest Technician

- ☐ ☐ N/A Identify Overbuilt Transmission and Open Transmission Work Release
- ☐ ☐ N/A Research and Identify Governmental, Tribal, and Environmentally sensitive areas
- ☐ ☐ N/A Identify External Agencies and Notify if Necessary (Federal, State County, City and pertinent NGOs
- ☐ ☐ N/A Conduct Pre-job Meetings With Government Agencies
- ☐ ☐ N/A Contract Expert to Delineate Sensitive Sites or Areas and Identify On Maps
- ☐ Forester Inventories, Compiles, Assembles, Checks Out Maps to Vegetation Contract Supervisor

Project Plan Developed - Contract Supervisor and Forest Technician

- ☐ Pre Job Meeting With Forester, Supervisor and Forest Tech — Date: _____
- ☐ Identify Concerned/Dangerous Customers
- ☐ ☐ N/A Identify and Obtain Federal Special Use Permits:
- ☐ ☐ N/A Identify and Obtain Federal, State, and Local Herbicide Use Permit(s)
- ☐ ☐ N/A Identify and Obtain Other Required Permits: Specify:
- ☐ ☐ N/A Identify Outstanding Ticket Work
- ☐ ☐ N/A Identify Flagging Work
- ☐ ☐ N/A Distribution Configuration ☐ Wye ☐ Delta

Work Identification - Contract Forest Technician

- ☐ ☐ N/A Review of Special Precautions: (list)
- ☐ ☐ N/A Follow-up: Personal Contact Requirements, Special Access, Time Sensitive Instructions
- ☐ ☐ N/A Verify Facility Point Inspections Locations
- ☐ ☐ N/A Verify Aerial Waypoint Locations
- ☐ ☐ N/A Review Environmental and Cultural Requirements:
- ☐ Inspect, Prioritize Work Areas
- ☐ Notify Private Landowners and Public Land Managers

Work Assigned to Project Crews - Contract Forest Technician and Supervisor

- ☐ Activity Reports And Other Pertinent Feeder/grid Information Issued to Crews
- ☐ ☐ N/A Required Permits Issued to Crew
- ☐ Work Release and Project Specifics Communicated and Issued To Crews
- ☐ ☐ N/A Sensitive Sites or Areas Reviewed With Crews — Date: _____
- ☐ ☐ N/A Special Instructions: (list below in comments section)

Figure 4.1. Continued

Project Closure - Contract Supervisor and Forest Technician

☐ Post Inspection of Work to Verify Completion Date: _____

☐ Inventory and Check In Maps

☐ Maps and Documentation Submitted

☐ ☐ N/A Concerned Customer Forms Submitted

☐ ☐ N/A Refusal Information Submitted

☐ ☐ N/A Dangerous Customer Information Submitted

☐ ☐ N/A Tree Replacement Voucher Copies Submitted

☐ ☐ N/A Hazard Forms - Copy in File and Copy to Utility General Foreman

☐ Daily Logs for Project Sent to Utility Area Forester

Project Closure - Forester

☐ Verify Receipt of All Maps, Daily Logs, Activity Reports, Tree Replacement Vouchers, and Hazard Forms

☐ Verify Receipt of Refusal and Concerned/Dangerous Customer Information

☐ Verify Receipt of Signed Work Release

☐ Close Work Release (Send to Consultant LD/SR, Service Coordinator and System Forester)

X_____ X_____

Contract Supervisor / Date Area Forester/ Date

Comments:

Figure 4.2.

PacifiCorp Vegetation Management

Contractor Work Release

This work release authorizes *Contractor* to proceed with the specified maintenance project. All work shall conform to PacifiCorp's Vegetation Management Specifications. Following project completion, a *Contractor* representative shall sign this work release, and return it to PacifiCorp. Refusals or any work performed that does not conform to PacifiCorp Specifications shall be noted.

District: **Project #:**

Contractor: **Supervisor/GF:**

_____ **Distribution Cycle Maintenance** **Feeder/Grid #:**
Work according to PacifiCorp *Specifications.* Identify and correct all climbable tree and tree house hazards, and remove danger trees.

_____ **Tree Removals:** Limit removals to cases where removal time equals twice pruning time. Forester approval is required for removals outside of this constraint.

_____ **Tree Replacement:** Use coupons to pursue removals as needed.

_____ **Tree Growth Regulators:** Pursue TGRs on cycle busters.

_____ **Bulk Transmission:** Work bulk transmission with distribution.

_____ **Other:** _____

Desired Starting Date: _____ **Completion Date:** _____

Area Forester Approval: _____ **Date:** _____

To be completed by the Contractor:

Starting Date: _____ **Completion Date:** _____

Comments: _____

Supervisor/GF Signature: _____

4.2.1.3 Work Release Forwarded to Senior Business Specialist and Director of Vegetation Management

The forester should forward the work release and goals to the PacifiCorp senior business specialist and director of vegetation management. The consultant will authorize payment for work on the project.

4.2.1.4 Notify Appropriate Company Personnel

The forester should notify internal stakeholders in the project. Before beginning work in a new area, always notify the operations manager, and customer-community manager for that area. In addition, notify line patrolmen when working on transmission lines and site managers when working on hydro or other operations sites. Notify the PacifiCorp tariff policy department if work will be conducted in a location where either past or current state public utility commission complaints have been received. Notify the PacifiCorp communications department if work will be conducted in the vicinity where public relations issues have surfaced in the past.

4.2.2 Project Plan

The project plans section provides direction for foresters, contract supervisors and forest technicians.

4.2.2.1 ID Overbuilt Transmission and Open Transmission Work Release

Transmission overbuilt on distribution lines should be worked in conjunction with distribution feeder or grid projects. All work should be billed to the highest voltage lines. Consequently, if overbuilt transmission exists on an open feeder or grid, foresters need to open a second work release covering the transmission work.

4.2.2.2 Research and Identify Governmental, Tribal and Environmentally Sensitive Areas.

Governmental, tribal and environmentally sensitive lands present particular demands. Lands under governmental or tribal management and environmentally sensitive areas should be identified early to allow time to work through the required processes.

4.2.2.3. Identify External Agencies and Notify if Necessary.

Identify federal, state, county, city and pertinent non-governmental organizations potentially affected by the project. The appropriate entity should be notified of the impending project, and asked whether or not they have any concerns.

4.2.2.4 Conduct Pre-job Meetings with Governmental Agencies

Before any field work begins, a meeting shall be conducted with governmental agencies at any level that have interest in the project. This is especially important for federal land managers and tribal leaders. In particular, no work may begin on Bureau of Land Management or Forest Service managed lands without a pre-work meeting among federal officials and vegetation management. Multiple projects and multiple agencies may be covered by a single meeting.

The meeting(s) shall be organized by the forester and PacifiCorp's environmental services must be notified and invited to attend. The meeting may be held either in person or through a conference call. Work shall not begin

until vegetation management receives written notice to proceed from the appropriate agency.

4.2.2.5 Contract Expert to Delineate Sensitive Areas

If environmentally or culturally sensitive areas are identified on governmentally-managed lands, a contractor with appropriate expertise should be retained to delineate subject sites or areas. Target locations should be marked on maps and on site. Care should be taken with field marking to ensure it is sufficiently clear to alert crews, while at the same time being sufficiently discreet to avoid casual detection.

4.2.2.6. Forester Inventories, Compiles, Assembles, Checks Out Maps to Vegetation Contract Supervisor

It is critical for foresters to be gatekeepers over company maps in order to ensure there is only a single master version of each. The forester will check out copies of the master version, which should include sensitive environmental or cultural sites. Effort should be made to work off of digitized maps wherever possible.

4.2.3. Project Plan Developed

The contract supervisor and forest technician are responsible for developing the project plan.

4.2.3.1. Pre-Job Meeting

The contract supervisor and forest tech must have a pre-job meeting to discuss the upcoming project. They should discuss elements of the project plan and focus on solving problem issues that arose during the initial stages of the planning process.

4.2.3.2. Identify Concerned or Dangerous Customers

Forest techs should research the feeder or grid file to identify customers with a history of concerns. Forest techs should be proactive in working with these customers. Forest techs, supervisors/general forepersons and foresters should discuss strategies for avoiding violence with dangerous customers.

4.2.3.3. Identify and Obtain Federal Special Use Permits

PacifiCorp facilities that cross federally-managed lands are in place under the authority of special use permits. Forest techs and supervisors should study and ensure the conditions in the pertinent special use permits are satisfied.

4.2.3.4. Identify and Obtain Federal, State and Local Herbicide Use Permits.

Herbicide or pesticide use permits are required in certain jurisdictions, particularly on federally-managed land. If a permit is required, foresters must ensure that forest techs or supervisors/GFs have obtained it before herbicide application may proceed.

4.2.3.5. Identify and Obtain Other Required Permits.

There are locations where permits may be required for work. Examples may include state road rights-of-way, some communities, county or state forests or riparian areas. All required permits shall be obtained before work may proceed.

4.2.3.6. Identify Outstanding Ticket Work.

From time to time, customers who have called in work requests have been told that their request did not present an

immediate threat to safety or electric service, and would wait until we arrived on scheduled work. Forest techs should research tickets associated with a feeder or grid, ensure contact is made with those customers, and either explain the reasons to the customer or assign the work to a tree crew.

4.2.3.7. Identify Flagging Work.

Many areas require flaggers and traffic control. Forest techs should identify areas where flagging support is necessary. Those locations should be identified on both the *Activity Report* and a map.

4.2.7.8. Distribution Configuration

The overwhelming majority of PacifiCorp distribution circuits are built with wye configuration, which includes a neutral wire. However, delta construction, which does not have a neutral wire, is found in some areas.

The difference is of little consequence on wires attached to cross arms, as all cross arm-mounted wires should be cleared to primary specifications (see section 5.5.5). However, there is a difference on lines without cross arms. Wye construction has a low neutral, while the low wire on delta carries primary voltage. This could lead to safety and clearance risks if the low primary is mistakenly identified. In noting that a circuit is delta construction, forest techs should alert tree crew leaders of the potential of a low-mounted primary, so proper safe work practices can be conducted and clearances obtained.

4.2.4 Work Identification

Forest techs are responsible for work identification.

4.2.4.1 Review Special Precautions

Before beginning field work on a project, forest techs should review special precautions. These might include areas where difficulties have arisen in the past, such as a particularly sensitive community or neighborhood, areas where the media has been called to help oppose line clearance work, locations where there is a concentration of people who object to herbicide application, environmentally or culturally sensitive areas, places that present particular challenges to tree crews or other considerations.

4.2.4.2 Follow-up On Items of Concern

Forest techs should follow-up with customers who requested personal contact in the past, note special access (property owners who have requested tree crews not use a gate or drive, for example), or time sensitive instructions. Examples of time sensitive instructions include advisories not to work prior to hay harvest, not to drive in a field during the raining season in the Pacific Northwest, or some other matter.

4.2.4.3 Verify Facility Point Locations

Forest techs should print outstanding facility points for the feeder, grid or transmission lines on which they are working. They should inspect outstanding conditions and assign work where necessary.

4.2.4.4 Verify Aerial Waypoint Locations

For transmission projects, forest techs should print outstanding locations from recent aerial patrols and ensure they are inspected and worked if necessary.

4.2.4.5 Review Environmental and Cultural Requirements

For work crossing governmentally managed land, forest techs should review any existing environmental and cultural requirements. These can include threatened and endangered species, riparian areas or areas in which culturally sensitive sites exist.

4.2.4.6 Inspect, Prioritize Work Areas

Forest Techs shall document their contact with property owners or land managers, and organize work for tree crews on an *Activity Report* (Figure 4.3).

The *Activity Report* should identify the district in which work is to be conducted, the project number (the discrete number assigned to the district), the contractor assigned to the job and the feeder or grid number for distribution or plant locality number for transmission.

For each work location, the forest tech should note the date they inspected the site, a detailed location, the identity of the tenant or property owner (if known), the type of contact (door hanger, letter, personal visit, telephone or no contact), the crew type required to perform the work (lift, climb, flagging, mowing or other), a description of the work, and comment, if necessary. Comments could include special considerations such as how to access the work, whether or not there is a dog on site, a sensitive area of the yard such as flower beds, cultural or environmental sites, or other matters.

4.2.4.7 Notify Private Landowners and Public Land Managers

Prior to any tree crew work, forest techs should attempt to contact the property owner or tenant on whose property the work will occur. Customer contact shall follow procedures outlined in Section 8.2.

Public land managers should have been consulted before this stage (see section 4.2.2.4). However, during the notification process, forest techs should followup with appropriate land managers to inform them that work is proceeding as planned, and provide an update on when crews are expected to begin work.

4.2.5 Work Assigned to Project Crews

Work assignments are the responsibility of both forest techs and supervisors/GFs.

4.2.5.1 Activity Reports and Other Pertinent Information Issued to Tree Crews.

Forest techs or supervisors/GFs should distribute completed *Activity Reports* to the tree crews.

4.2.5.2 Required Permits Issued to Tree Crews.

Appropriate permits shall be issued to tree crews. Tree crew members should have them available to produce to the appropriate authorities on demand.

4.2.5.3. Work Release and Project Specifics Communicated and Issued to Crews.

Before beginning work on a project, the tree crew should be issued the pertinent work release. Tree crews should be able to produce the work release to foresters during audits.

4.2.5.4 Sensitive Site or Area Review With Crews.

Any sensitive site locations should be communicated to tree crews.

4.2.5.5 Special Instructions

If there are any special instructions, such as working in sensitive areas, forest techs should communicate this in writing

Figure 4.3. PacifiCorp Vegetation Management Activity Report.

District : _____	**Cycle Maintenance**	**Interim Maintenance**	**Ticket Maintenance**	**Work Order**
Project #: _____	Trans. PL#: _____	Trans. PL#: _____	Trans. Ticket _____	W.O. #: _____ &
Inspected By: _____	Dist. F/G#: _____	Dist. F/G#: _____	Dist. Ticket _____	District CC #: _____

Date Inspect.	Detailed Location	Property Owner	Phone Number	Type of *Contact	^TGR s	Crew Type	Description of Work / Comments	Date Comp.	^Cst. Survey	Crew ID No.	Forem. Initials

*Type of Contact Legend: D-Door Hanger, L-Letter, N-None, P-Personal, T-Telephone

^TGRs and Customer Surveys: Check = yes, Blank = no

and ensure that tree crews have read and understand them.

4.2.6 Project Completion

After completing work, the crew leader shall note the date it was performed and initial the location entry.

4.2.6.1 Post Inspection to Verify Completion.

Supervisors are ultimately responsible for ensuring that all work on a project is completed to PacifiCorp specifications. They should either inspect the work themselves, or delegate that inspection to the forest techs. If the work is delegated to the forest techs, supervisors/GFs still have the responsibility for ensuring the project is completed to specifications. Any exceptions to specifications for any reason must be noted on the work release (see section 4.2.1.1).

4.2.6.2 Inventory and Check in Maps

Supervisors/GFs and forest techs should collect all maps that have been distributed to tree crews and return them to the forester from whom they were initially issued. Foresters shall account for all maps originally issued, and file them appropriately.

4.2.6.3 Maps and Documentation Submitted.

Supervisors should submit maps, completed activity reports and other pertinent documentation to foresters.

4.2.6.4 Concerned Customer tracking

Forest techs and supervisors should gather information on customers that might need follow-up the next time the project is worked. Examples are customers who refuse to allow work or access, customers who express concerns about work or customers or property owners who threaten vegetation management employees. Information should be presented to the forester in writing on the customer refusal form and appropriately filed, preferably digitally.

4.2.6.5 Tree Replacement Voucher Copies Submitted.

Forest techs and supervisors should submit digitized copies of tree replacement coupons to the forester.

4.2.6.6 Hazard Forms Copied, Filed and Submitted to the Utility General Foreman.

Forms documenting facility points (Figure 2.7) that need to be corrected (broken cross arms, broken insulators, leaning or unstable poles, for example) should be submitted to the PacifiCorp district general foreman or operations manager.

4.2.6.7 Daily Logs for Project Submitted to Area Forester.

Supervisors should collect *Daily Logs* from each crew member under their direction. These should be digitized and emailed to the forester, as well as filed by the forester.

4.2.6.8 Sign Work Release.

Once they have determined that all work on a project is completed to specifications, GF/supervisor should sign and date the work release. Any locations that have not been worked to specifications should be documented on the work release with an explanation of the circumstances (see section 4.2.1.1).

4.2.7 Project Closure.

Foresters are responsible for closing projects by completing the tasks in 4.2.7.1-4.2.7.3.

4.2.7.1 Verify Receipt of Maps and Other Pertinent Information.

Foresters should inventory maps and collect daily logs, tree replacement vouchers, hazard forms as well as concerned customer, dangerous customer and refusal information from the supervisor. Foresters should file this information digitally so it can be retrieved when work is conducted the next time through.

4.2.7.2 Verify Receipt of Signed Work Release.

Foresters should ensure they have received and filed a copy of the signed work release from the contractor. They should examine the comment section for any work that was not completed to specification, and if necessary, make provisions to correct those outstanding conditions.

4.2.7.3 Close Work Release

The forester should close the work release and inform the lead/senior consultant and director of vegetation management of the closure by electronic mail.

4.3 Reporting Work

After completing work, the crew leader shall document tree work on *Weekly and Daily Reports*. Note the date the work was performed, the crew ID number and the crew leader's initials.

4.3.1 Weekly Vegetation Report

Tree work shall be reported on the *Weekly Time & Vegetation Report* (Figure 4.4). The report is a combination contractor time sheet and PacifiCorp weekly production report. The back of the report provides instructions and definitions for each cell (Figure 4.5). Weekly Reports, along with the corresponding invoice should be submitted to the forester responsible for the area in which the report was completed,

Most of the items on the *Weekly Report* are self explanatory. A few cells warrant clarification, (reference Figures 4.4 and 4.5).

- Item 23. General Work Location: The general location should be the approximate address. For example, the 4000 block of Dead Elm Memorial Road. Note that for audit purposes, crew leaders will be responsible to find and identify all the trees they worked over the course of a week. Consequently, more detailed information should be kept in the *Daily Report* (covered in Section 4.3.2 [Figure 4.6]).
- Items 31 and 32. Woody plants (including vines) less than 4-inches in diameter at breast height are classified as saplings. The actual square footage occupied by the above ground portion of the plant should be measured and recorded, with a 10 ft^2 maximum per plant for both pruned and removed vegetation. Note that multi-stemmed woody plants where no single stem is over 4-inches in diameter are classified as saplings, with a maximum of 10 ft^2 per plant.
- Item 37. Stump Spraying: Document the time spent treating stumps of trees that have been removed during the day. Use quarter-hour increments.
- Item 39. Side Pruning: Document trees worked where the trunk is located 10 feet or more from the

center distribution line or that were outside the transmission right-of-way.

- Item 40. Crown Reductions: Document trees worked where the trunk is within 10 feet of the nearest distribution line, or inside the transmission right-of-way (in the cases where trees in transmission rights-of-way are pruned).
- Item 41. Overhang Pruning: Usually trees that were off to the side of the right-of-way with limbs overhanging the distribution conductors. There may be times when it is unclear whether a tree is a "side" or "overhang". In these cases, it should be categorized to whatever focus demanded the most time. If the time is roughly the same, the tree should be categorized as a "side" prune.
- Items 42-43. To obtain the diameters of multi-stemmed trees, add the diameters at breast height of individual stems. For example, if a tree has three stems of 8, 4 and 3-inches in diameter, the tree would be 15 inches in diameter and reported as a 12-24 inch removal. An exception would be if no stems on the plant are over 4-inches in diameter at breast height, in which case the plant should be classified as a sapling (see items 31 and 32). If only one stem is over 4-inches in diameter and the remaining stems are less, report the diameter of that specific removal as the diameter of the single largest stem.
- Item 48 and 49. Saplings pruned and removed. Saplings are trees under four-inches in diameter at breast height (they could also be 6-inches or less in diameter at the stump). Report area covered by the crown of the plant, with a 10 ft^2 maximum for each plant. There must be six inches of soil between stems of the same species for them to count as multiple plants.
- Items 55 and 56. For transmission cycle work, capture the number of acres cleared or sprayed respectively using linear feet.

4.3.2 Daily Report

The *Daily Report* shall be used by crew leaders to keep detailed records on their productivity (Figure 4.6). It is particularly important as a reference for locating trees during audits, and tracking chemical use. Like the *Weekly Report*, the *Daily Report* provides instructions on a cell by cell basis. The *Daily Report* is the property of PacifiCorp, and when completed, supervisors/GFs shall digitize it, and sent to the appropriate forester.

4.4 Tree Crew Audits

The primary purpose of a crew audit is quality control. Furthermore, crew audits offer an opportunity for the forester to provide tree crew leaders and their supervisors/GFs with a clear understanding of PacifiCorp's expectations.

Foresters shall audit one full week of work as many times a year as specified in their goals. All work, including transmission and pole clearing work shall be audited. Each audit should have the forester, the crew's GF/supervisor and the crew leader in the field together reviewing completed work. Audits should begin with the first tree, and progress in order to the last tree worked during the week. Over the course of the audit, the forester, supervisor/GF and crew leader should open a dialog regarding the week's results.

The audits should objectively assess quality, adherence to specifications, tree

counts, herbicide and other matters. Moreover, audits should provide the tree crew leader with feedback on production, professionalism, equipment, safety and crew efficiency. Results shall be documented on a *Tree Crew Audit Report* (Figure 4.8).

4.4.1 Objective Components

Objective audit components shall be determined on the straight percentage of trees that meet expectations compared to the total trees worked in each category. The percent score shall be averaged for the final rating.

4.4.1.1 Quality

The quality component documents crew adherence to natural target pruning as described in Section 3.1.2. Before conducting an audit, the forester and supervisor/GF should agree on a day to examine cut quality. One way would be to roll a die. In this case, 1 would indicate Monday, 2 for Tuesday and so on. Six would represent Saturday, and would require another roll until a different number turns up.

All final cuts made by the crew that day should be counted and examined for proper technique. A minimum of 20 cuts shall be inspected. If a crew did not make 20 cuts on the selected day, another day should be added until a minimum of 20 cuts have been evaluated. Note that if Friday is the selected day and 20 cuts were not made, the crew leader should alert the forester and GF/supervisor before the audit begins so another day can be added for cut quality.

Rip cuts, flush cuts and improper lateral selections violate the principles of natural target pruning, and shall be counted against the category score. Foresters should grant tree crews one grace faulty cut (the "Mulligan"). In addition, each “hanger” left in the tree will count as one improper cut per inch of the hanger’s diameter. For every two hangers under one-inch in diameter, a single cut penalty will be assessed.

4.4.1.2 Specification Adherence

The *Specification* section examines all trees worked over the course of a week, both pruned and removed. It takes a straight percentage of trees that comply with clearances specified in Chapters 5 and 6 against all those worked during the week. Brush feet sprayed may be counted as brush feet removed. In addition, if climbing spurs were used on a tree on which they were unnecessary in the judgment of the forester, the crew will be penalized for a tree out of specification.

4.4.1.3 Tree Count

The tree count section is used to validate numbers in the *Weekly Report* against those actually identified in the field on a straight percentage basis. Reported side pruned, overhang, crown reduction, secondary trees, and brush feet equivalents ($ft^2 \div 10$ of saplings pruned or removed) should be validated for discrepancies in these categories. If overall tree counts are accurate no penalty should be levied. However, the crew should be counseled about the importance of accurately categorizing tree work.

On transmission e projects, work in the right-of-way should be reported as acres cleared if there are more than 40 trees per acre. If there are fewer than 40 trees per acre, work should be reported as

Figure 4.4. Weekly Time and Vegetation Report

WKLY TIME REPORT & PACIFICORP WKLY VEGETATION REPORT

1 W/E _____ State _____ Local Union # _____ Crew _____ Contract# _____

Last 4	Employee Name	Code	T	Pay Rate	Sun	Mon	Tue	Wed	Thur	Fri	Sat	ST	OT	DT	Total	HOL	VAC	Other	PAD

Explain Other Hours:

PAD- Paid Absent Day

Eq Name	Equipment Number	Mileage	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat

MAN HOURS	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat
28 Travel & Misc.								
29 Inspection/Notification								
30 Traffic Flagging								
31 Chip/Cleanup/Dump								
32 Tree Prune								
33 Tree Removal								
34 Saplings Pruned								
35 Saplings Remove								
36 TGR								
37 Pole Clear/Treating								
38 ROW Clearing								
39 ROW Spraying								
40 Stump Spraying								
41 Total Man-Hours								

PRODUCTIVITY	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat
42 # Primary Pruning								
43 # Sec/Serv. Pruning								
44 # Removals 4"-11"								
45 # Removals 12"-23"								
46 # Removals 24"-Up								
47 TOTAL PRUNED/REMOVED								
48 Ft2 Saplings Pruned								
49 Ft2 Saplings Removed								
50 # Stump Appliction								
51 # Stumps Ground								
52 # TGR Application								
53 # Poles Cleared								
54 # Poles Treated								
55 # ROW Ac Cleared								
56 # ROW Ac Sprayed								
57 Ft2 Sprayed								
58 # Loads of Chips								
59 # Survey Cards								

2 District _____

3 Project _____

Crew Information

4 Crew Leader _____

5 Pacificorp # _____

6 Crew Type _____

7 Cert. Appl# _____

8 Supervisor _____

Work Activity

Local Transmission Maintenance

9 Trans Cycle (TRN) TID# _____

10 Trans Ticket (TTK) ❑

11 Trans Hot-Spot (THS) TID# _____

12 Trans Chemical (TCM) TID# _____

13 Trans Inspection (TNT) TID# _____

14 Trans Pole Clear (TPL) TID# _____

Distribution Maintenance

15 Dist Cycle (DST) F/G # _____

16 Dist Ticket (DTK) ❑

17 Dist Hot-Spot (DHS) F/G # _____

18 Dist Chemical (DCM) F/G # _____

19 Dist Pole Clear (DPL) F/G# _____

Main Grid Transmission Maintenance

20 MG Cycle (MGT) TID# _____

21 MG Hot-Spot (MHS) TID # _____

22 MG Chemical (MCM) TID# _____

23 MG Inspection (MGI) TID# _____

24 MG Pole Clear (MPL) TID# _____

25. District Work Order or Storm #s

PM Order # _____

26 Shop Location _____

27. General Work Location

Mon _____

Tue _____

Wed _____

Thrs _____

Fri _____

Sat _____

Sun _____

62 Crew Leader Signature _____

PAGE _____

Vegetation Weekly Report 6/14

Figure 4.5. PacifiCorp Weekly Time and Vegetation Management Report Instructions and Definitions.

Instruction & Definitions

1. Week Ending: The week ending date (Saturday).
2. District: The PacifiCorp district where the work occurred.
3. Project #: District identification number
4. Cr. Leader: Crew Leader's name.
5. Crew #: Three-digit crew number assigned to crew leader.
6. Crew Type: Two-character crew-type code (2-Lift, 2-Mow, 3-Lift, 3-Climb. 4-Climb, 5-Climb, F. Tech, Others)
7. Certified Appl. #: The certified applicators license number.
8. Supervisor: Crew's Supervisor's name.
9. Local Trans Cycle, TID#: Transmission line six-digit Tech ID number.
10. Local Trans Ticket: Check when working transmission tickets. Tech ID number not required.
11. Local Trans Hot-Spot, TID#: Transmission line six-digit Tech ID number.
12. Local Trans Chemical: Transmission line six digit Tech ID number.
13 Local Trans Inspection: Transmission line six digit Tech ID number.
14. Local Trans Pole Clear: Transmission line six digit Tech ID number California Only
15. Dist. Cycle, F/G#: Feeder or grid number, maximum eight characters.
16. Dist. Ticket: Check when working distribution ticket. Feeder or grid numbers not required.
17. Dist. Hot-Spot, F/G#: Feeder or grid number, maximum eight characters.
18. Dist. Chem. F/G#: Chemical Cycle Maintenance: Enter Feeder/Grid #.
19. Dist. Pole Clear F/G#: Feeder or grid number. maximum eight digits. This activity is only in California.
20. Main Grid Cycle: Transmission line six digit Tech ID number
21. Main Grid Hot-Spot: Transmission line six digit Tech ID number
22. Main Grid Chemical: Transmission line six digit Tech ID number
23. Main Grid Inspection: Transmission line six digit Tech ID number
24. Main Grid Pole Clear: Transmission line six digit Tech ID number California Only
25. District Work Order or Storm Work: Plant Maintenance (PM) Order and Cost Center.
26. Shop Location: Shop location.
27. General Work Location: General work location for the day. Detailed locations are to be kept separately in the "yellow books." For audit purposes, crew leaders are responsible to find and identify all trees they worked.
28. Travel & Misc. Man-hours: Number of travel and miscellaneous (meetings, stand-by, etc.) man-hours a day.
29. Inspection/Notification: Number of inspection and notification man-hours a day. Includes facility inspection property owner notification.
30. Traffic Flagging: Number of traffic flagging man-hours a day.
31. Chip/Cleanup/Dump: Number of chipping, cleanup, and dumping man-hours a day.
32. Tree Prune: Number of man-hours a day spent pruning, including setup.
33. Tree Removal: Number of tree removal man-hours a day, including setup.
34. Saplings Pruned: Man-hours a day spent pruning saplings, including setup. Saplings are woody plants under 4" DBH (diameter at 4.5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 10 ft2 a plant.
35. Sapling Removed: Man-hours a day removing saplings, including setup. Saplings are woody plants under 4" DBH (diameter at 4 .5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 10 ft2 a plant.
36. TGR: Man-hours a day applying TGRs. including setup.
37. Pole Clear/Treating: Pole clearing man-hours a day.
38. ROW Clearing: Transmission ROW clearing man-hours a day.
39. ROW Spraying: Transmission ROW spraying man-hours a day.
40. Stump Spraying: Man-hours a day spent spraying stumps and stubble from removed saplings. Use 1/4 hour increments
41. Total Man-Hours: Total number of man-hours a day and week. Use 1/4 hour increments.
42. Primary Pruning: Total trees pruned on primary conductor each day.
43. Sec/Serv. Pruning: Total trees pruned each day for secondary, service, or street light where there is no primary.
44. Removals 4"-11": Total trees removed between 4"-11" DBH
45. Removals 12"-23": Total trees removed between 12"-23" DBH
46. Removals 24" and greater: Total trees removed 24" DBH and greater.
47. TOTAL PRUNED/REMOVED: Total trees pruned or removed a day and week.
48. Sq. Ft. Saplings Pruned: Square feet (length x width) of saplings pruned. Saplings are woody plants under 4" DBH (diameter at 4.5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 100 ft^2 a plant.
49. Sq. Ft. Saplings Removed: Square feet (length x width) of saplings removed. Saplings are woody plants under 4" DBH (diameter at 4.5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 100 ft^2 a plant.
50. Stump Application: Total trees that were stump treated with herbicides.
51. Stumps Ground: Stumps ground out.
52. TGR Application: Trees treated with Tree Growth Regulators (TGRs [(Implants, soil drench, and soil injection]).
53. Poles Cleared: Poles cleared of trees and brush. This activity is only in California.
54. Poles Treated: Poles treated with herbicides.
55. ROW Acres Cleared: Transmission ROW acres cleared of trees and saplings.
56. ROW Acres Sprayed: Transmission ROW acres where trees and saplings were treated with herbicides.
57. Sq. Ft. Sprayed: Report the square feet of undesirable vegetation sprayed.
58. Loads of Chips: Loads of chips dumped.

59# Survey cards: Total number of survey cards distributed

60. CREW LEADER SIGNATURE: Crew leader signs the report to authenticate its accuracy.

Figure 4.6 Daily Report

PacifiCorp Vegetation Management Daily Report

'Crew Leader:

[2]Date	[3]Feeder/Grid #, Ticket Work, Trans. TID#, Work Order #	[4]Detailed Location: Street Address, Pole Number, Structure Number, Mile Marker, Reference Point	[5]# Side Prune	[6]# Crown Reductions	[7]# Over-hang Prune	[8]# Sec/Serv Prune	[9]# Brush Ft² Prune	[10]# Brush Ft² Removed	[11]# Removals 4"-11"	[11]# Removals 12"-23"	[11]# Removals 24" up	[12]# Stump Applications	[13]# Stumps Ground	[14]# TGR Applications	[15]# Poles Cleared	[16]# Poles Treated	[17]# ROW Acres Cleared	[18]# ROW Acres Sprayed	[19]# Brush Ft² Sprayed	[20]Herbicide Product	[21]# Oz. or # Gal. applied	[22]Temperature (F)	[23]Wind Direction	[24]Wind Speed (MPH)	[25]Start Time	[26]Finish Time	[27]Customer Survey

[28]Certified Applicator: _____ [29]Certified Applicator #: _____

[30]Forester _____

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Figure 4.7

PacifiCorp Vegetation Management Daily Report

Instruction and Definitions

1. **Crew Leader:** The name of the crew leader for the day.
2. **Date:** Date work was performed.
3. **Feeder/Grid #, Ticket work, Trans TID #, After Hours Trans or Dist. Storm Work, Worker Order #:** Identify the work with the appropriate number, or as ticket work.
4. **Detailed Location:** Report a detailed work location for each job site.
5. **Side Pruning:** Report the number of trees pruned to the side of the primary conductors.
6. **Crown Reductions:** Report the number of trees pruned under the primary conductors.
7. **Overhang Pruned:** Report the number of pruned overhanging the primary conductors.
8. **Sec/Service Pruned:** Report the number of trees pruned for secondary, service, or street lights where there is no primary.
9. **# Ft^2 Saplings Pruned:** Report the area of power line right-of-way where saplings were pruned. Report the area occupied by the crown of the plant(s), with no more than 10 ft2 reported for an individual plant. Saplings are defined as woody plants under 4" DBH (diameter at breast height) of species which have the potential to reach wire height at maturity.
10. **# Ft^2 Saplings Removed:** Report the area of power line right-of-way where saplings were removed. Report the area occupied by the crown of the plant(s), with no more than 10 ft2 reported for an individual plant. Saplings are defined as woody plants under 4" DBH (diameter at breast height) of species which have the potential to reach wire height at maturity.
11. **# Removals 4"-11", 12"-23", and 24" and up:** Report the number of trees removed in each size class measured 4½ feet above the ground).
12. **# Stump Applications:** Report the number of trees that were stump treated with herbicides.
13. **# Stumps Ground:** Report the number of stumps that were ground.
14. **# TGR Applications:** Report the number of trees treated with tree growth regulators.
15. **# Poles Cleared:** Report the number of poles cleared of trees and brush to bare ground.
16. **# Poles Treated:** Report the number of poles treated with herbicides.
17. **# ROW Acres Cleared:** Report the number of transmission ROW acres were cleared.
18. **# ROW Acres Spayed:** Report the number of ROW acres sprayed with herbicides.
19. **# Ft^2 Sprayed:** Report the number of square feet of right-of-way sprayed with herbicides.
20. **Loads of chips:** loads of chips dumbed that day.
21. **Herbicide Product:** Report the herbicide product used at the site. Refer to Herbicides A-F.
22. **# Oz., or # Gal. Applied:** Report the number of herbicide ounces or gallons applied at the site.
23. **Temperature (F):** Report the temperature when the herbicide application is made.
24. **Wind Direction:** Report the wind direction at the site when the herbicide application was made.
25. **Wind Speed (MPH):** Report the wind speed in miles per hour at the site when the herbicide application was made.
26. **Start Time:** Report the time when the herbicide application was started.
27. **Finish Time:** Report the time when the herbicide application was completed.
28. **Certified Applicator:** The name of the liscensed applicator.
29. **Certified Applicator #:** The number of the applicator's license.

FRPC000009

Figure 4.8 Tree Crew Audit Form.

CREW FOREMAN: _____ **CREW:** _____ **DATE:** _____

CONTRACTOR: Trees Inc. **QUARTER:** _____ **DISTRICT:** _____

	SCORE	WEIGHT	% FACTOR
QUALITY : # Cuts inspected: # Proper cuts: COMMENTS: (Laterals, flush cuts, bark rips, wounds, stubs, hangers)	100.0%	0.25	25%
CLEARANCE: # Trees Inspected: # Trees Spec. Clearance: # Trees non-spec. clearance: 0 COMMENTS:	100%	0.25	25%
TREE COUNT: # Trees reported: # Trees verified: COMMENTS:	100%	0.25	25%
HERBICIDE: # Trees reported: # Trees verified: Pesticide Applicators Lic. # Label & MSDS Sheets (Yes) (Proper Material, Application, Tools, & Knowledge):	100%	0.25	25%
AVERAGE RATING: Of all categories (0 to 100% adherence)	**TOTALS:**		**100.0%**

Specification Manual (yes/no) _____
PRODUCTION:

PROFESSIONALISM:

EQUIPMENT: (Appearance, condition, operational)

SAFETY: ***evaluated by contractor supervisor*** - (Work techniques, traffic control, personal protective equip)

CREW EFFICIENCY: (Job planning, multiple tasking idle labor, clean up chip disposal)

SUPERVISOR: _____ **FORESTER:** _____

**Crew Type & Equip:*
Customer Surveys: Good? _____ Comments: _____
**Week ending date:*

Table 4.1 Herbicide category deductions. Deductions are added together.

Penalty Description	Deduction
Failing to treat stumps or ft^2 of brush requiring treatment	Percentage of stumps or ft^2 of brush missed against the total of those requiring treatment.
Misreported stumps or ft^2 of brush	Percentage of over or under reported stumps, or ft^2 of brush against the total that were actually treated
Crews without a crew leader or an applicator (if required by state regulations) holding a current applicator's license	100% (crew may be shut down at the forester's discretion).
Crew leader or applicator (if required by state regulations) who have a current applicator's license, but does not have it on site.	10%
Missing herbicide MSDS or Label	10% for each missing document for every chemical on the truck

individual trees. Trees outside the right-of-way may be reported as individual trees.

4.4.1.4 Herbicide

The herbicide component should compare total treated stumps and brush feet equivalents (total $ft^2 \div 10$) against those that should have been treated. It should also compare stumps and brush feet equivalents treated with herbicide against the total number reported. Deductions for over or under treatment or reporting should be made on a straight percentage basis and added together (Table 4.1). For example, if in an area where herbicide use was acceptable, a tree crew removed five deciduous trees, but only treated four stumps, they would receive a 20% deduction ($(1 \div 5) \times 100 = 20\%$). Moreover, if they reported only three out of the four stumps actually treated, the crew would receive an additional 25% demerit. The total deduction in this example would be 45%, and the crew's herbicide score would be 55% (assuming everything else was in order).

Moreover, foresters should apply penalties for violations of herbicide policy. Penalties include a 100% category deduction for cases where the crew leader or applicator (where state regulations require) did not hold a valid applicator's (California excepted). The crew may be shut down until the crew is properly credentialed. Further penalties include a 10% penalty for crew leaders or applicators that have valid applicator's licenses, but do not have it on site, and a 10% penalty for each required pesticide document that is missing (MSDS and labels, for example [Table 4.1]).

Failing to report treated trees is a violation of law, in addition to not providing PacifiCorp with accurate information. Examples of trees and brush that do not require treatment include conifers that do not sprout from the stump (pines, firs, spruces, cedars and

others), and stumps located in areas where herbicide use is prohibited (certain Federal jurisdictions, most municipal watersheds and private property where the owner objects to herbicide use).

4.4.2 Subjective Components

While not included in the final audit score, subjective factors such as productivity, professionalism, equipment and safety are also critical to program success. The audit process allows the forester to comment on these items.

4.4.2.1 Production

Foresters should provide the tree crew's *Statistics Report* (Figure 4.1) and a *Crew Productivity Report* from PVM for the year to date. On the *Statistics Report,* foresters should review the percentage of removals, the type of removals, the amount of nonproductive time and other factors that affect a tree crew's productivity and quality. The *Crew Productivity Report* compares the subject crew's data with the average productivity of crews working in similar areas. It enables crew members to compare their performance against that of their peers.

While productivity data is objective, valid comparisons involve subjective judgment because specific work types are different from one another. For example, a climb crew's production results will invariably be lower than those of lift crews, ticket work will be worse than cycle work, and one cycle crew working in a vegetation-dense area will have different production from crews working in urban areas. Nevertheless, 70% of PacifiCorp's contractor performance formula is based on productivity; so, audits should stress productivity's importance to program success.

4.4.2.2 Professionalism

Since tree crews have more interaction with PacifiCorp customers than any other department, it is vitally important for tree crews to exhibit professionalism. Foresters should comment on factors such as ISA Certification, and other considerations.

4.4.2.3 Equipment

The condition of equipment relates to professionalism and productivity. Well cared for equipment and organized tool boxes are not only a positive reflection on the crew, but they also make work safer and more efficient. Foresters should comment on the appearance and functionally of equipment and organization of the bins.

4.4.2.4 Safety

Safety should be evaluated by the supervisor/GF. However, if a forester observes unreasonable safety risks or obvious safety violations (such as someone failing to wear personal protective equipment), he/she should relate their concerns to the crew, and inform that crew's GF/supervisor so that he or she may correct the situation. All crew members should know the safety requirements applicable to their positions and take responsibility for following those requirements.

4.4.2.5 Crew Efficiency

Reviewing work systematically from the first to last tree worked allows foresters and supervisors/GF to gain an impression of job planning, which is a reflection of crew efficiency. Foresters should share their impression of crew efficiency and also comment on methodology, clean up and chip disposal. Inefficient work organization may be the

Figure 4.9. Herbicide Audit Form.

Herbicide Crew Audit Form

CREW FOREMAN: _____ **Crew #** _____ **DATE:** _____

CREW/CONTRACTOR: **WEEK OF WORK AUDITED:** _____

DISTRICT: **QUARTER:**

	SCORE	WEIGHT	%FACTOR
QUALITY: # Stumps reported: _____ #Stumps treated properly: _____	100%	0.33	33%
Ft² brush/Acres: _____ Ft² brush/Acres treated properly: _____			
COMMENTS:			
COUNT: # Trees deciduous stumps: _____ # Deciduous stumps treated verified: _____	100%	0.33	33%
FT² saplings/Acres recorded: _____ Ft² saplings/Acres treated verified: _____			
COMMENTS:			
HERBICIDE: Pesticide Applicators Lic. # _____ Label & MSDS Sheets (Y/N) , _____	100%	0.33	33%
# Stumps/Acres reported _____ # Stumps acres verified _____			
Material, Tools & Knowledge: Herbicide appliation looked good			
AVERAGE RATING: Of all categories (0 to 100% adherence)	**TOTALS:**		***100%***

Specification Manual (yes/no) _____

PRODUCTION:

PROFESSIONALISM:

responsibility of the forest tech who originally lined-out the work. Trends in disorganization may require forest tech counseling.

4.4.2.6 Crew Composition

Foresters will note the number of crew members and equipment type on the crew being audited. The field notes will be compared to an itemized invoice for accuracy. Foresters should also note the week ending date to help access the proper invoice. Results should be reported monthly on the invoice audit.

4.4.2.7. Customer Surveys

Foresters should compare surveys distributed against the occupied buildings along the audit. The score will be based on the number of surveys distributed against the number that ought to have been distributed. It will not count toward the overall audit score.

4.5 Herbicide Crew Audit

The primary purpose of the herbicide crew audit is quality control. Audits should evaluate one full week of herbicide crew work. Each audit should have the forester, the crew's GF/supervisor and the crew leader in the field together observing completed work. Audits should begin with the first area treated, and progress in order to the last area worked during the week. Over the course of the audit, the forester, supervisor/GF and crew leader should open a dialog regarding the week's results.

Moreover, audits should provide the herbicide crew leader with feedback on production, professionalism, equipment, safety and crew efficiency. Results shall be documented on an *Herbicide Crew Audit Report* (Figure 4.9).

4.5.1 Objective Components

Objective audit components shall be determined on the straight percentage of trees that meet expectations compared to the total trees worked in each category. The percent score shall be averaged for the final rating.

4.5.1.1 Quality

The quality section examines proper brush ft^2 treatment following specifications described in Chapter 7. Calculate the score by using percentages of proper brush or acres treated against the total number treated.

4.5.1.2 Count

To complete the *Count* section, check the number brush ft^2 or acres treated against which should have been sprayed.

4.5.1.3 Herbicide

Moreover, foresters should apply penalties for violations of herbicide policy. Penalties include a 100% category deduction for cases where the crew leader or applicator (where state regulations require) did not hold a valid applicator’s license (California excepted). The crew may be shut down until the crew leader or applicator are properly credentialed. Further penalties include a 10% penalty for crew leaders or applicators that have valid applicator's licenses, but do not have it on site, and a 10% penalty for each required pesticide document that is missing (MSDS and labels, for example [Table 4.1]).

Failing to report treated trees is a violation of law, in addition to not providing PacifiCorp with accurate information. Examples of trees and brush that do not require treatment include conifers that do not sprout from the stump (pines, firs, spruces, cedars and

others), and stumps located in areas where herbicide use is prohibited (certain Federal jurisdictions, most municipal watersheds and private property where the owner objects to herbicide use). Foresters should also comment on material, proper tools and crew knowledge.

4.5.2 Subjective Components

While not included in the final audit score, subjective factors such as productivity, professionalism, equipment and safety are also critical to program success. The audit process allows the forester to comment on these items.
Failing to report herbicide treatment or not having a licensed applicator on the crew is a violation of the law.

4.5.2.1 Professionalism

Same instructions as 4.4.2.2

4.5.2.2 Equipment

Same instructions as 4.4.2.3

4.5.2.3 Safety

Same instructions as 4.4.2.4**4.5.2.4 Crew Efficiency**

Same instructions as 4.4.2.5

4.5.2.5 Crew Composition

Same instructions as 4.4.2.6

4.5.2.6 Customer Surveys

Same instructions as 4.4.2.7

4.6 Worksite Inspection

PacifiCorp has a *Worksite Inspection Form* (Figure 4.10), which is designed to check tree crew safety. Foresters are required to perform a number of worksite inspections as specified in their annual goals. Foresters may use the form during crew visits. The form provides a general review, as well as tailboard, bucket or climb setup, vehicle, herbicide and other safety provisions.

4.7 PVM

PacifiCorp Vegetation Management (PVM) is a PacifiCorp intranet-based program available at: http://pdxus033.pacificorp.com/cognos7/cgi-bin/upfcgi.exe, which organizes data downloaded from the *Weekly Report* (Figure 4.4). PVM offers a variety of reports, such as the *Statistics Report* (Figure 4.11), which enable program analysis.

The statistics reports are designed to be flexible. They allow data examination on a program level (it contains data since 1996 for Pacific Power, for example), down to a crew level for a specific week of work. They also provide cost and man-hours per tree, the percentage of various work types (tree removals, the size of trees removed, the number of side pruned trees, crown reduction and others), the percentage of time spent on travel, flagging, cleanup and other activities.

Other PVM reports compare the productivity of individual crews, or breakdown production by district, state, and work code. The reports provide objective information upon which foresters and supervisors/GFs can make sound management decisions based on objective information.

4.8 Monthly Reports

Vegetation management has monthly reports tracking distribution cycle and interim progress, distribution spray progress, tree crew deployment, cycle progress, California Pole Clearing and transmission progress reports. These reports can be found at the PacifiCorp T&D Support Services Website: http://idoc.pacificorp.us/pacificorp_organization/rmp/rmpto/rtss/vm.html. A

Figure 4.10. Vegetation Management Worksite Inspection Form.

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

VEG. MANAGEMENT WORKSITE INSPECTION FORM

Employee Name(s)

Feeder/Grid # _____ District _____

Inspection Date _____ 0 Crew Leader _____

Work Location (Address or GPS) _____

Required? Yes	Required? No	General	In Use? Yes	In Use? No
☐	☐	Hard Hat	☐	☐
☐	☐	Safety Glasses/Face Shield	☐	☐
☐	☐	Hearing Protection	☐	☐
☐	☐	Hand Protection	☐	☐
☐	☐	Chaps	☐	☐
☐	☐	Appropriate Footwear	☐	☐
☐	☐	Safety Vest	☐	☐
☐	☐	Job-site Housekeeping	☐	☐
☐	☐	Proper Clothing	☐	☐
☐	☐	Whistle	☐	☐
☐	☐	Communication	☐	☐
☐	☐	First Aid Kit	☐	☐
☐	☐	Fire Extinguisher	☐	☐
☐	☐	Backpack Water Fire Sprayer	☐	☐
☐	☐	Shovel and Pulaski	☐	☐
☐	☐	Fire Wagon	☐	☐
☐	☐	Dispatch Notified	☐	☐
☐	☐	Seasonal Tools	☐	☐

Required? Yes	Required? No	Bucket Work	In Use? Yes	In Use? No
☐	☐	Bucket Lanyard/Harness	☐	☐
☐	☐	Minimum Separation	☐	☐
☐	☐	Wheel Chocks in Place	☐	☐
☐	☐	Clearance Over Roadway	☐	☐
☐	☐	Outrigger Placement	☐	☐
☐	☐	Hydraulic Saw Use/Storage	☐	☐
☐	☐	Chain Saw Use/Storage	☐	☐
		Climb Work		
☐	☐	Pre-Climb Inspection	☐	☐
☐	☐	Saddle	☐	☐
☐	☐	Rope	☐	☐
☐	☐	Lanyard	☐	☐
☐	☐	2-point Attachment	☐	☐
☐	☐	Proper Tie-in Position	☐	☐
☐	☐	Figure 8 knot	☐	☐
☐	☐	Carabineers/Snaps	☐	☐
☐	☐	Minimum Separation	☐	☐
☐	☐	Ladder Use/Placement	☐	☐
☐	☐	Pole Pruners Hung Safely?	☐	☐

Required? Yes	Required? No	Tailboard	In Use? Yes	In Use? No
☐	☐	Electric Hazard	☐	☐
☐	☐	Traffic	☐	☐
☐	☐	Parked Vehicles	☐	☐
☐	☐	Structures	☐	☐
☐	☐	Fences	☐	☐
☐	☐	Pets/Livestock	☐	☐
☐	☐	Trip Hazards	☐	☐
☐	☐	Slope	☐	☐
☐	☐	Public/Property Owner Access	☐	☐
☐	☐	Yard Ornaments	☐	☐
☐	☐	Other	☐	☐

Required? Yes	Required? No	Vehicle	In Use? Yes	In Use? No
☐	☐	Wheels Chocked	☐	☐
☐	☐	Positioning and Set-up	☐	☐
☐	☐	Loads Secure	☐	☐
☐	☐	Emergency Brake	☐	☐
☐	☐	Conned off	☐	☐
☐	☐	Signage	☐	☐
☐	☐	Chipper Use	☐	☐
☐	☐	Seatbelt Use	☐	☐

Herbicide

Required? Yes	Required? No		In Use? Yes	In Use? No
☐	☐	Labels	☐	☐
☐	☐	MSDS	☐	☐
☐	☐	Containers Labeled	☐	☐
☐	☐	Sprayers Labeled	☐	☐

Required? Yes	Required? No		In Use? Yes	In Use? No
☐	☐	Rubber Gloves	☐	☐
☐	☐	Proper Application	☐	☐
☐	☐	Wetland Product	☐	☐
☐	☐	Current Applicator's Lisc.	☐	☐

COMMENTS: _____

CREW LEADER: **FORESTER:** _____

description of three prominent reports follows.

4.8.1 Distribution Progress Report

The distribution progress report (Figure 4.12) accounts for line miles achieved on systematic distribution work compared to goals for a given year. Systematic distribution work is cycle work throughout the six state service territory, as well as interim work in the Pacific Power service territory. The goal is the recommended cycle (three or four years depending on the state) prorated by the week of the year.

The report provides a summary of line miles achieved, breaks down progress by Pacific Power and Rocky Mountain Power's service territory, includes monthly miles ahead or behind goals, a chart depicting monthly line mile progress, and progress in each state by district and where appropriate, by forester.

4.8.2 Distribution Cycle Progress Report.

The distribution cycle report records line miles achieved over the course of the current recommended cycle compared to goals (Figure 4.13). Goals are prorated monthly and compared to actual progress.

4.8.3 Tree Crew Deployment Report

The tree crew deployment report (Figure 4.14) lists tree crews, forest techs and supervisors/general foremen by forester and district as of the first of each month. In addition to providing information on tree crew locations, the tree crew deployment is used for budget projections.

4.8.4 Invoice Audit Report

Foresters will compare invoices to crew composition information obtained during the crew audits (see sections 4.4.2.6 and 4.5.2.5). Each month, results will be submitted to the director of vegetation management and senior business specialist on the Invoice Audit Report (Figure 4.15). The senior business specialist will ensure discrepancies are reconciled with the appropriate contractor.

Figure 4.11. A sample PVM *Statistics Report* showing distribution cycle data for Oregon 2010.

PacifiCorp Vegetation Management

Data Updated on 6/13/11 15:10:25 PM

Statistics Report

FISCAL YEAR: 2011

WORK ENDING: 01/03/2010 TO 01/01/2011 INVOICE

COMPANY NAME CREW CODE

STATE OR CREW TYPE

DISTRICT CODE DST

PROJECT WORK ID

SUPERVISOR FOREMAN

FORESTER

TRIM TOTAL	% SIDE TRIMS	%CROWN REDUCTION TRIMS	%OVERHANG TRIMS	SEC/SERV TRIMS	# BRUSH TRIMS
103,658	44.99	41.95	1.90	4,563.00	70,109

REMOVALS TOTALS	%TREE REMOVALS	#BRUSH FT REMOVED	% BRUSH FEET REMOVED	% 4 - 11 REMOVED	% 12 - 23 REMOVED	% 24+ REMOVED
90,956	46.74	772,283	84.91	12.56	2.02	0.51

TOTAL TREESBRUSH	#STUMP APPLICATIONS	#ACRES SPRAYED	#ACRES CLEARED	#TGR APPLICATIONS
194,614	6,098	0	0	668

#STUMP GROUND	#POLES CLEARED	#POLES TREATED
6	15	0

TOTAL MANHOURS	%TRAVEL./ MISC MANHOURS	%INSPECT/ NOTIFY MANHOURS	%TRAFFIC/ FLAGGING MANHOURS	%CHIP/ CLEANUP MANHOURS
147,737	7.66	13.09	9.73	41.35

%TRIM MANHOURS	%REMOVAL MANHOURS	%TGR MANHOURS	%POLE CLEARING MANHOURS	%ROW CLEARING MANHOURS	% SPRAYING MANHOURS	%STUMP TREAT MANHOURS
22.42	3.64	0.17	0.00	0.00	0.00	0.28

TOTAL COST	TOTAL $/TREE	TRIMMING $/TRIM	REMOVAL $/REMV
$7,797,560	$40.07	$63.34	$11.73

TOTAL MH/TREE	TRIMMING MH/TRIM	REMOVAL MH/REMV	TRIM MH/10FT2 SAPPRUN	REMV MH/ 10FT2 SAPREM
0.76	1.20	0.22	0.06	0.03

06/14/2011 Page 1 of 1

Figure 4.12 Monthly Distribution Progress Report

PACIFICORP VEGETATION MANAGEMENT 2011 DISTRIBUTION PROGRESS REPORT

Summary

Through Dec 3, 2011

	CYCLE WORK					INTERIM WORK			
	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	43,047	**12,182**	**10,058**	**11,244**	**-1,186**	**4,908**	**4,001**	**4,530**	**-529**
State									
California	2,323	581	569	536	33	581	457	536	-79
Idaho	4,358	1,453	1,135	1,341	-206	0	0	0	0
Oregon	14,184	3,655	2,111	3,373	-1,263	3,438	2,675	3,173	-498
Utah	11,377	3,792	3,528	3,501	27	0	0	0	0
Washington	3,557	889	591	821	-230	889	870	821	49
Wyoming	7,248	1,812	2,125	1,673	452	0	0	0	0
Total	43,047	12,182	10,058	11,244	-1,186	4,908	4,001	4,530	-529

SUMMARY OF SYSTEMATIC WORK* BY FORESTER

	Total Line Miles	Total Miles Scheduled	*Line Miles Completed	*Line Mile Completed Goal	Miles Ahead/(Behind)
	43,047	**16,200**	**14,059**	**15,774**	**-1,715**
Forester		*	*	*	*
Hooley	2,830	1,415	868	1,306	-438
Evans	6,030	2,010	1,690	1,855	-166
Jones	2,351	784	931	723	208
Partridge	3,919	1,960	1,135	1,809	-674
Phillips	5,823	2,912	2,368	2,688	-320
Vanderhoof	14,602	4,263	4,167	3,935	232
Armstrong	7,492	2,857	2,900	3,458	-558
Total	43,047	16,200	14,059	15,774	-1,715

*Combines cycle and interim work.

Weeks 48

Figure 4.13. Cycle Progress Report.

PACIFICORP VEGETATION MANAGEMENT 2011 CYCLE DISTRIBUTION PROGRESS REPORT

Pacific Power - Rocky Mountain Power

Through December 3, 2011

	CYCLE WORK				INTERIM WORK			COMBINED		
	Total Line Miles	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	43,047	**20,653**	**23,826**	**-3,173**	**14,840**	**16,887**	**-2,047**	**35,493**	**40,713**	**-5,220**
Pacific										0
California	2,323	1,529	1,698	-169	1,602	1,698	-96	3,131	3,395	-264
Oregon	14,184	11,043	13,905	-2,862	11,661	13,480	-1,819	22,704	27,385	-4,681
Washington	3,557	1,293	1,710	-417	1,577	1,710	-133	2,870	3,420	-550
Total	**20,064**	**13,865**	**17,312**	**-3,447**	**14,840**	**16,887**	**-2,047**	**28,705**	**34,200**	**-5,494**
Rocky Mt										
Idaho	4,358	1,135	1,341	-206			0	1,135	1,341	-206
Utah	11,377	3,528	3,500	28			0	3,528	3,500	28
Wyoming	7,248	2,125	1,672	453			0	2,125	1,672	453
Total	**22,983**	**6,788**	**6,514**	**274**	**0**	**0**	**0**	**6,788**	**6,514**	**274**

SUMMARY OF SYSTEMATIC WORK* BY FORESTER					INTERIM WORK			COMBINED		
	Total Line Miles	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	43,047	**20,653**	**23,826**	**-3,173**	**14,840**	**16,887**	**-2,047**	**35,493**	**40,713**	**-5,220**
Forester/Pacific		*	*	*						
Hooley	2,830	1,578	2,776	-1,197	2,362	2,776	-414	3,940	5,551	-1,611
Partridge	3,919	2,861	3,770	-909	2808	3770	-962	5,669	7,541	-1,871
Phillips	5,823	4,655	5,203	-548	4,742	5,203	-461	9,397	10,407	-1,010
Armstrong	7,492	4,771	5,563	-792	4,928	5,138	-210	9,699	10,701	-1,002
Total	**20,064**	**13,865**	**17,312**	**-3,447**	**14,840**	**16,887**	**-2,047**	**28,705**	**34,200**	**-5,494**
Forester/Rocky Mt										
Evans	6,030	1,690	1,855	-166			0			0
Jones	2,351	931	723	208			0			0
Vanderhoof	14,602	4,167	3,935	232			0			0
Total	**22,983**	**6,788**	**6,514**	**274**	**0**	**0**	**0**	**0**		**0**

Figure 4.14. Monthly Tree Crew Deployment Report.

PacifiCorp Vegetation Management

Monthly Crew Report: Summary

Date: 12/1/2011

State	Distribution & Local Trans													Main Grid Trans							Total Crews
	2 Man Lift	3 Man Lift	3 Man Climb	4 Man Climb	3 Man Skidder	2 Man Mow	2 Man Slash	2 Man Pole Clear	1 Man Chem	2 Man Flagger	For. Tech	Billed Super	Sub Total	3 Man Climb	3 Man Skidder	2 Man Slash	2 Man Pole Clear	1 Man Chem	Forest Tech	Sub Total	
California	5.0	1.0	3.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	3.0	2.75	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
Idaho	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.00	5.0	1.0	0.0	0.0	0.0	0.0	0.3	1.0	6.0
Oregon	30.0	12.0	6.0	0.0	0.0	0.0	0.0	0.0	0.5	6.5	12.5	8.25	55.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	57.0
Utah	27.0	2.0	38.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	13.0	10.50	73.0	4.0	0.0	0.0	0.0	0.0	2.0	4.0	77.0
Washington	5.0	1.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	1.5	2.00	10.0	2.0	0.0	0.0	0.0	0.0	0.5	2.0	12.0
Wyoming	5.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.50	8.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	8.0
TOTAL	77	17.0	49.0	0.0	0	0	0	2	13	8.5	32.3	26.00	166.0	9.0	0.0	0.0	0.0	0.0	3.3	9.0	175.0

Forester	Distribution & Local Trans													Main Grid Trans							Total Crews
	2 Man Lift	3 Man Lift	3 Man Climb	4 Man Climb	3 Man Skidder	2 Man Mow	2 Man Slash	2 Man Pole Clear	1 Man Chem	2 Man Flagger	For. Tech.	Billed Super	Crew Sub-Total	3 Man Climb	3 Man Skidder	2 Man Slash	2 Man Pole Clear	1 Man Chem	Forest Tech	Sub Total	
Hooley	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.0	2.00	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5
Evans	9.0	1.0	8.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	6.0	3.00	20.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	22.0
Jones	11.0	1.0	20.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	5.0	4.00	35.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	35.0
Partridge	12.0	7.0	5.0	0.0	0.0	0.0	0.0	0.0	2.5	3.0	5.5	3.50	29.5	2.0	0.0	0.0	0.0	0.0	0.0	2.0	31.5
Phillips	15.0	1.0	4.0	0.0	0.0	0.0	0.0	0.0	4.0	1.0	7.0	5.00	25.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	25.0
Vanderhoof	17.0	1.0	12.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	4.3	6.00	31.0	3.0	0.0	0.0	0.0	0.0	1.8	3.0	34.0
Armstrong	8.0	1.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	3.0	2.5	2.50	14.0	2.0	0.0	0.0	0.0	0.0	0.5	2.0	16.0
TOTAL	77.0	17.0	49.0	0.0	0.0	0.0	0.0	2.0	12.5	8.5	32.3	26.00	166.0	9.0	0.0	0.0	0.0	0.0	4.3	9.0	175.0

Figure 4.15. Monthly Invoice Audit Form.

PACIFICORP VEGETATION MANAGEMENT 2013 INVOICE AUDIT REPORT

Through Aug 31, 2013

Forester: T Jones **Month:** Aug-13

Week Ending Work	Invoice #	Feeder/ GRID/Trans Line	Crew Name	Crew Member Composition	Equipment	Invoice Matched ? (Y or N)	Nature of Discreptency, if Any	Cost Discreptency (±)
8/3/2013	3300	SW5/SW7	John Doe	2A	Self feeder-Disc	Y		
8/3/2013	2300	SW5	Jane Doe	3C	Split,BYL & Disc	Y		
8/3/2013	67300	WEAPONS	Ed Doe	2A	Squirtboom-Drum	Y		
8/3/2013	4300	SW5	Dorthy Doe	2A	60/70, Drum	Y		
8/3/2013	6300	SW5	Fred Doe	3C	Drum	N	Fred off on Friday 8hrs/Marcia fill-in foreperson 8hrs	$331.04
8/10/2013	36300	SE4	Rachel Doe	2A	(Squirt Boom) Drum	Y		
8/10/2013	37300	SE4/SE5	Earnest Doe	3C	Self feeder-Disc	Y		
8/10/2013	N/A	MET067011	Camen Doe	3C	Self feeder-Disc	N/A	No invoice provided from contractor?	
Total:								$331.04

5. DISTRIBUTION SPECIFICATIONS

Distribution lines are overhead facilities that are energized less than 46 kV. Distribution primary voltage ranges from 600 to 45,000 volts, while lines energized below 600 volts are secondary.

5.1 Distribution New Construction Clearing

Every effort should be made by the Company not to build new line over or through trees that will need to be cleared from the facilities in the future. New distribution rights-of-way should be cleared to specification before the lines are energized. Initial clearing is very important because it sets a pattern for future work.

5.2 Distribution Cycle Maintenance

Trees and vegetation should be cleared from distribution facilities on scheduled cycles. Cycle work is methodical, and facilities shall be worked systematically, either by feeder or grid map. Cycles should be based on considerations such as the time elapsed since the last scheduled work, the type of facilities, tree conditions, the number of customer complaints, the growth rate and density of predominant tree species, geography, the frequency of tree-caused outages, customer count, the existence of important accounts (hospitals, factories, mines or other facilities) customer densities, single or multiple phase wires and other factors. Trees and vegetation should be cleared from distribution facilities to last until the next scheduled cycle work.

The intent of the cycle program is to:

- Systematically obtain specification clearance and maintain compliance with state regulatory rules, laws or regulations.
- Remove trees to reduce inventories, provide clearance, or improve access to facilities. This includes removing non-landscape trees 6-inch DBH or less, after providing the property owner notification (following Section 8.2).
- Identify and correct readily climbable trees.
- Identify and remove tree houses built inside of criteria specified in Table 2.1.
- Clear insulated services that have stems causing strain to the point of deflection (Figure 5.4) or that are abrading the insulation to the extent they could cause an outage before the next scheduled cycle to relieve the strain. If pruning or removal is not practical, arrangements should be made with operations to re-route facilities or have suitable material or devices installed to avoid insulation damage by abrasion.
- Prune non-insulated services and streetlight wire for one-foot of clearance.
- Prune pole to pole insulated secondaries to 2-feet of clearance from the conductors
- Prune pole to pole non-insulated services and secondaries for three feet of clearance from the ocnductors
- Identify and remove hazard trees that could fall through facilities.
- Apply herbicide to saplings (< 4” DBH) of tall-growing species after property owner notification (presuming the property owner has not expressed objection to herbicide application).
- Apply tree growth regulators (TGR’s) to fast-growing tree species after providing property owner notification.

5.3 Distribution Interim Maintenance

In some cases, fast-growing trees will not hold for an entire scheduled cycle. In California and Oregon, resulting tree conditions on a feeder or grid should be corrected systematically in the interim half way through the scheduled cycle.

Interim work should be restricted to critical conditions, including:

- Hazard trees.
- Trees interfering with primary or open-wire secondary conductors or violating specific state regulatory agency regulations.
- Trees with clearances that will violate specific regulatory or other governmental agency tree regulations before the next scheduled work (i.e. 2-years).
- Readily climbable trees.
- Identifying and removing tree houses built inside of criteria specified in Table 2.1.
- Trees deflecting insulated secondaries that have been reported in the facility point inspection system or otherwise recorded as needing correction should be addressed. Moreover, trees that are causing strain to the point of deflection and highly likely to cause an outage.
- All work should be completed to company specifications. Non-critical conditions should be monitored until the next scheduled maintenance cycle work.

5.4 Distribution Ticket Maintenance

Customers, district operations staff, governmental bodies, regulatory agencies or others alert vegetation management to real or perceived conflicts between trees and power lines from time to time. The intent of ticket maintenance is to determine whether or not the reported conditions present immediate, unreasonable safety or electrical service risks, and if they do, correct them.

Emergency situations should be corrected within 24 hours. Critical conditions reported by regulatory agencies and other urgent situations should be inspected within 48 hours and corrected within 7 days. Other tickets should be inspected within 10 business days from the date of request, and a determination made regarding whether or not the reported condition warrants work.

The concerned party shall be contacted regarding the inspection determination. This contact may be face to face if the customer is present, or by door hanger, letter, or telephone if they are not present.

Ticket work should be limited to critical conditions, including:

- Trees representing an unreasonable safety risk as determined by the responsible forest tech.
- Trees that have caused an outage.
- Trees violating specific state regulatory regulations.
- Limbs that are deflecting secondary conductors to the extent they present a high probability of tearing down the wire before the next scheduled cycle work.
- Trees that are likely to start a fire.
- Readily climbable trees.
- Trees where the property owner requires clearance so non-utility line clearance workers may work the tree. This work complies with various state line safety acts.

All work should be completed to Company specifications. Non-critical conditions should be monitored when the next scheduled maintenance cycle work is lined out, and worked if necessary.

5.5 Distribution Clearance Specifications

Removals are encouraged. When trees are pruned, branches should be cut to natural targets rather than predetermined clearance limits (following section 3.3). Consequently, the clearances in this specification should not be used as strict boundaries requiring cuts at the precise distances indicated. Rather, they are guidelines to use in obtaining proper clearances. Accurate natural target pruning is the overriding principal, with tree structure dictating appropriate cut locations. In many cases, the best targets are outside established clearance limits. So, many properly pruned trees will have more than specified clearance from conductors.

The type of facility and tree growth rate determine distribution clearance. Trees should be removed or pruned to provide for specification clearances as described in Figures 5.1, 5.2 and 5.3 and Table 5.1. The figures and table provide work thresholds and specification clearances for slow, medium and fast-growing trees. Trees that exceed work threshold distances should hold until the next scheduled cycle work and not be pruned. However, these trees should still be considered to be removal candidates. <u>If trees violate pruning thresholds, they shall be removed or pruned to provide specification clearances</u>.

5.5.1 Growth Rate Definitions

Slow-growing trees grow vertically less than one-foot a year. Moderate growing trees grow between one and three feet a year and fast-growing trees grow more than three feet a year.

5.5.2 Side Clearance

Side work thresholds and side clearances from conductors can be found in Table 5.1 and Figures 5.1 to 5.3.

Side clearances from conductors may be reduced to 18-inches for structurally sound limbs greater than 6-inches in diameter at wire height, provided the tree is not readily climbable and the tree shows no evidence of conductor contact due to wire or tree sway. High risk trees should be removed or pruned to reduce the potential threat they pose.

5.5.3 Under Clearance

Under clearances work thresholds and clearances from conductors can be found in Table 5.1 and Figures 5.1 to 5.3.

5.5.4 Overhang Clearance

Trees overhanging primary conductors should be removed or pruned to provide at least ten feet of clearance from the conductors (Figures 5.1, 5.2 and 5.3). Increased or even complete overhang clearance should be considered by the forester or GF/supervisor under the following types of circumstances: three-phase lines, rural or difficult to access areas, weak wooded or fast-growing tree species, weak structured trees and foreseeable weather conditions such as high wind, heavy rains, ice and snow. Dead wood that could fall or be blown into the primary conductors shall be removed. In some cases, such as three phase lines or remote areas, all overhanging branches may be removed.

5.5.5 Neutral and Insulated Pole-to-Pole Secondary Clearance

During cycle work, trees should be maintained to provide at least two-feet of clearance around insulated pole-to-pole secondary and neutral conductors (Table

Figure 5.1. PacifiCorp Vegetation Management
Distribution Primary Clearances

Slow Growing Trees

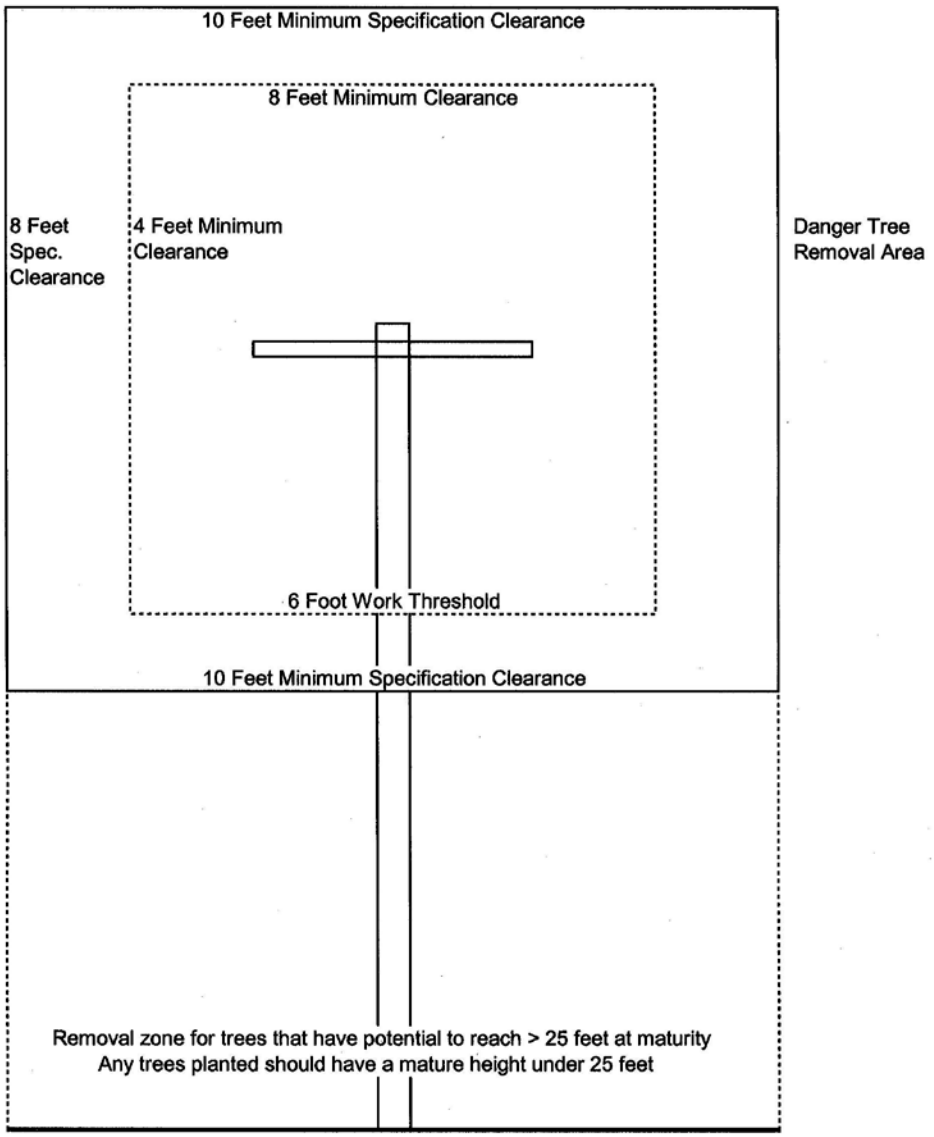
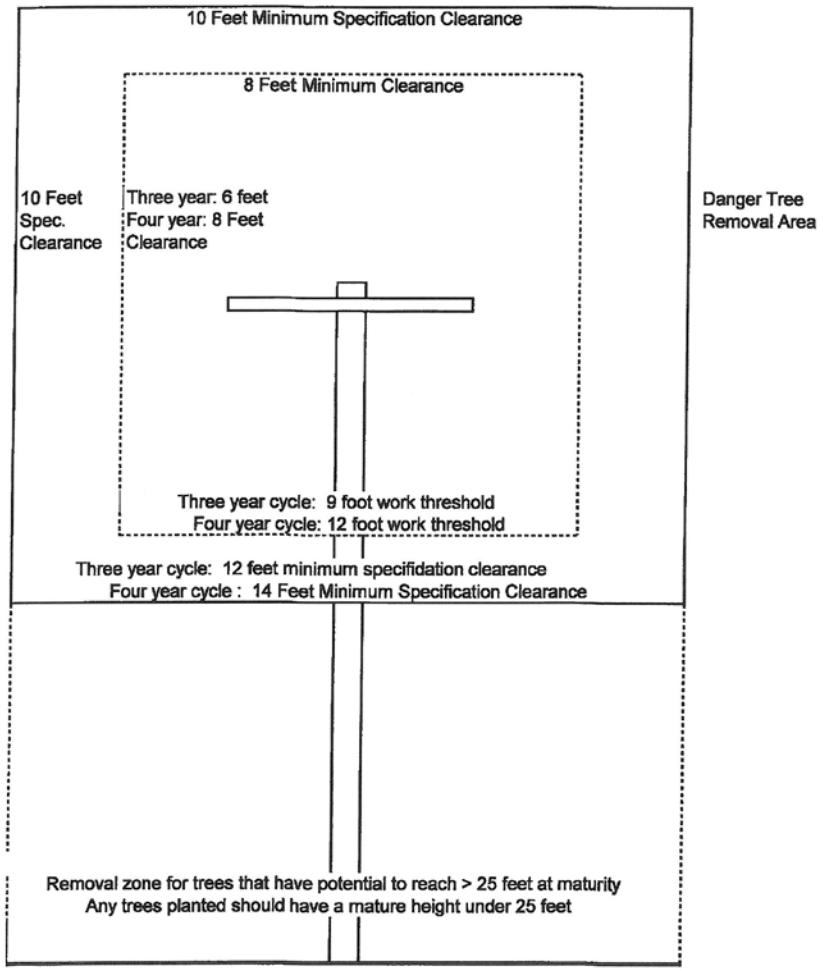


Figure 5.2: PacifiCorp Vegetation Management Distribution Primary Clearances

Moderate Growing Trees



Fgure 5.3: PacifiCorp Vegetation Management
Distribution Primary Clearances

Fast Growing Trees

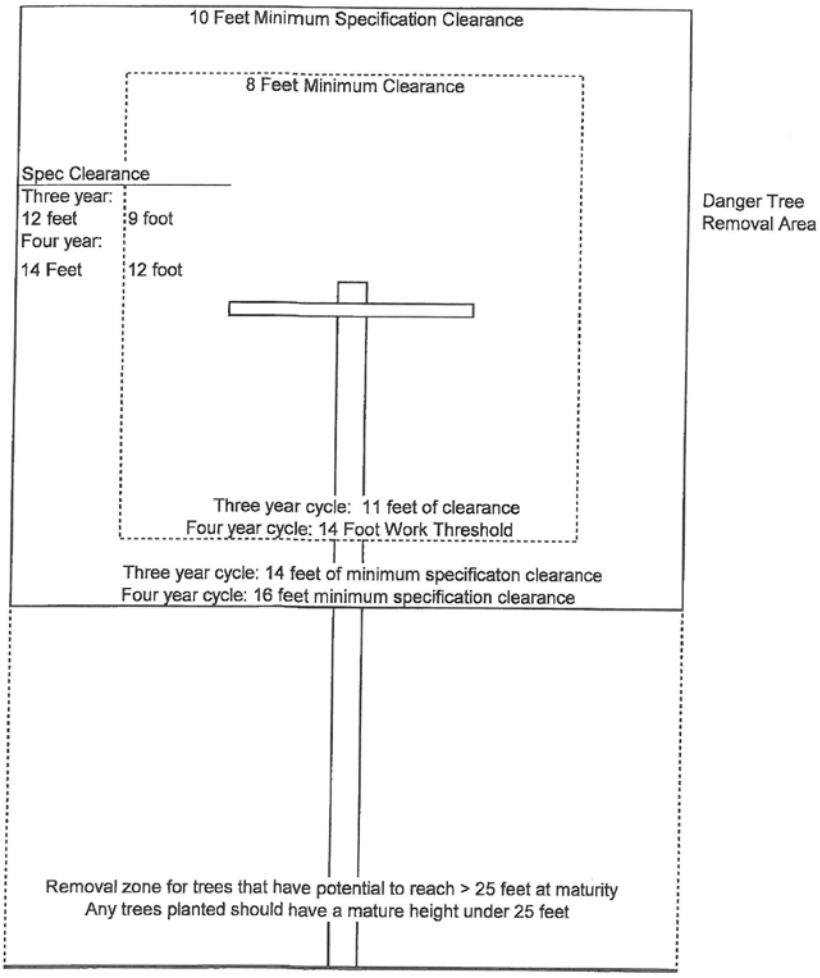


Table 5.1. Distribution primary clearances**.**

	Slow-Growing < 1 foot/year		Moderate-growing 1-3 feet/year		Fast-growing > 3-feet/year	
	Work Threshold	***Specification Clearance***	***Work Threshold***	***Specification Clearance***	***Work Threshold***	***Specification Clearance***
Three-year cycle						
Side Clearance	4 feet	8 feet	6 feet	10 feet	9 feet	12 feet
Under Clearance	6 feet	10 feet	9 feet	12 feet	11 feet	14 feet
Overhang Clearance	8 feet	10 feet	8 feet	10 feet	8 feet	10 feet
Four-year cycle						
Side Clearance	4 feet	8 feet	8 feet	10 feet	12 feet	14 feet
Under Clearance	6 feet	10 feet	12 feet	14 feet	14 feet	16 feet
Overhang Clearance	8 feet	10 feet	8 feet	10 feet	8 feet	10 feet

*Note: Specified clearance distances are assumed to be from conductors, Growth-rate definitions refer to vertical growth. Side and overhang growth toward the conductors are assumed to be slower. Specification clearances are minimum, and actual distances achieved at the time of work will often need to exceed those itemized above. Trees with clearances that exceed the pruning threshold should not require work, provided they will not interfere with the primary conductors or violate state tree clearance requirements before the next scheduled cycle work. Work threshold may have to be expanded for fast-growing trees.

Table 5.2. Non-primary wire clearances.

Line Type	Work Threshold	Specification Clearance
Triplex service	Deflection/abrasion	Relieve pressure
Triplex pole-to-pole secondary/streetlight wire	Deflection/abrasion	2-feet
Non-insulated wire service/street light wire	Contact	1-foot
Non-insulated wire pole-to-pole secondary	Contact	3-feet
Neutral low condition	Contact	2-feet
Neutral on cross arm	Primary as in Table 5.1	Primary as in Table 5.1
Guy wire	2-inch or greater diameter limb applying pressure, threatened by high risk trees	Relieve pressure or remove high risk trees.

5.2). Tree limbs should not be allowed to remain between primary and neutral or insulated secondary conductors. Neutral conductors in a raised (primary) position should be provided secondary clearance distances during ticket or interim work, and primary specification clearance distances during cycle work.

5.5.6 Non-Insulated Open/Spaced Secondary Clearances

Trees growing around non-insulated open/spaced secondary conductors shall be pruned on cycle to provide a minimum of three-feet of clearance from the secondary wires (Table 5.2). During cycle work, trees shall be cleared from the space between primary and non-insulated open/spaced secondary conductors. Side clearances may be reduced to one foot for structurally sound limbs greater than 6-inches in diameter at wire height.

5.5.7 Insulated Service and Insulated Street Light Line Clearances

Stems that are causing strain to the point of deflection (Figure 5.4) or that are abrading the insulation to the extent they could cause an outage before the next scheduled cycle should be pruned to relieve the pressure (Table 5.2). If pruning or removal is not practical, arrange with operations to have the facility re-routed or have suitable material or devices installed to avoid insulation damage by abrasion.

If the customer desires to remove other limbs or trees around these lines, they must arrange for a temporary disconnection to allow the desired work to be done safely. PacifiCorp does not clear trees for street light illumination, unless required to by specific language in a franchise agreement.

5.5.8 Non-insulated Service Line and Non-Insulated Street Light Line Clearances

Trees should be pruned to provide at least one-foot of clearance around non-insulated service and street light lines (Table 5.2). If the customer desires to remove other limbs or trees around these lines, forest techs or crew leaders should inform the customer to call the customer service line to arrange for a temporary disconnection of the facilities to allow safe completion the desired tree work, as required by law.

5.5.9 Other Facility Clearances

5.5.9.1 Guy Wires.

Trees or branches two-inches or more in diameter applying direct pressure to or threatening to fall on or through poles or guy wires shall be removed or pruned (Table 5.2).

5.5.9.2 Poles.

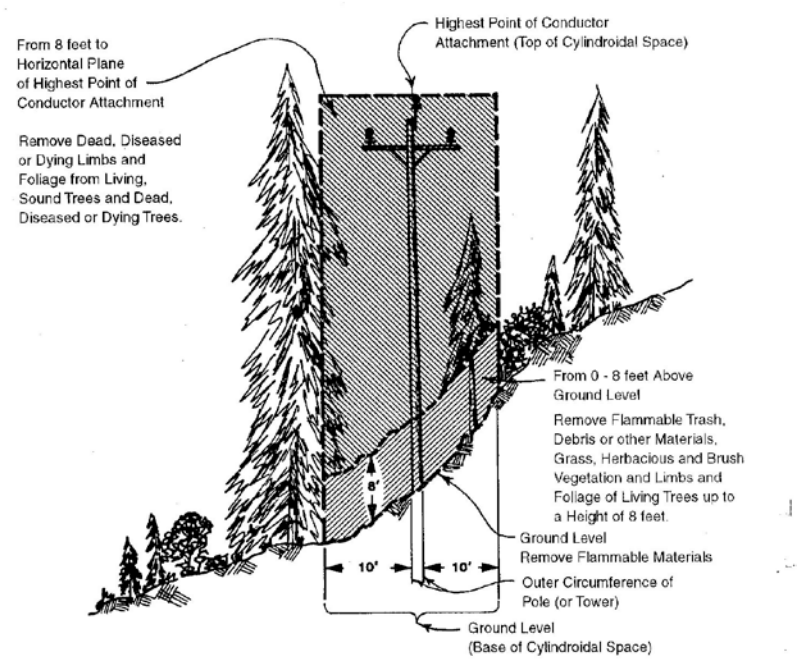
One-third of the circumference around poles shall be cleared of vegetation to a distance of 5-feet to allow linemen a clear climbing path.

5.5.9.2.1 Vines

Vines shall be removed from poles and guys, cut at ground level, and treated with an approved herbicide (see Section 7.3). They shall be reported as brush or tree removed (depending on stem diameter). Vines clearly part of a landscape and rooted well away from the pole may be pruned and reported as saplings pruned. Vines shall be pulled off the bottom 5-feet of poles after they have been cut. The facility point shall be documented by the tree crew and given to their supervisor/GF, who shall report it to operations to clear the remainder of the

Figure 5.4. Trees with branches applying sufficient pressure to cause damage to insulated service and street light lines should be pruned on cycle to relieve the pressure.

Figure 5.5. California pole clearing requirements (from Nichols et al. 1995).



pole, and arrangements made with PacifiCorp journeymen linemen for the job.

5.5.9.3 Telecom and Private Electrical Lines

Trees should not be pruned or removed expressly to provide clearance for television cable, telephone lines or

5.5.9.4 Street Light Illumination

private electrical facilities unless authorized by the area forester. Moreover, trees shall not be pruned to improve streetlight illumination, unless required by specific language in a franchise agreement.

5.6 Pole Clearing.

California Resource Code 4292, requires a ten-foot radius cylinder of clear space from pole top to bare ground around "subject" poles in delineated resource areas during designated fire season. Trees or saplings with trunks within clearance zone should have eight feet of vertical clearance from the ground to the highest limb (Figure 5.5).

Subject poles have fuses, air switches, clamps or other devices that could create sparks and start fires (Nichols et al. 1995). This cleared space should be established and maintained by pruning and removing above ground branches and plant parts. After removing vegetation to bare ground for a 10-foot radius around subject poles, herbicides, including soil sterilants, should be applied.

5.7. Substations

Forest techs should provide a limited visual assessment on the vicinity around substations for trees that have a high probability of falling into the facility. They should conduct a basic assessment of those trees. If the basic assessment indicates trees are likely to fail and strike the substation, the trees should be assigned to a tree crew for removal or mitigation. Limited visual and basic assessments are described in Smiley, Matheny and Lilly (2011). Tree crew substation activity should be charged to a work order supplied by sub operations.

6. TRANSMISSION VEGETATION MANAGEMENT PLAN (SPECIFICATIONS)

Transmission facilities are overhead lines energized to greater than 45kV. Typical transmission voltages on PacifiCorp's system are 46kV, 69kV, 115kV, 138kV, 161kV, 230kV, 345kV and 500kV. Facility voltage and type determine the amount of transmission clearance needed. Table 6.1 provides specification clearances for transmission rights-of-way.

Transmission work shall comply with the ANSI A300 Part 7: *American National Standard for Tree Care Operations (Integrated Vegetation Management a Electric Utility Rights-of-way* [ANSI 2012a]) and the ISA *Best Management Practice: Integrated Vegetation Management for Electric Utility Rights-of-way* (Miller 2014).

Transmission work on lines at or above 200 kV and those designated by the Western Electricity Coordinating Council as an element of the major transfer path in the bulk electric system, including those that extend greater than one mile or 1.609 kilometers beyond the fenced area of the generating station switchyard to the point of interconnection with a Company facility or do not have a clear line of site form the generating station switchyard fence to the point of interconnection with a Company facility shall also conform to the North American Electric Reliability Corporation's (NERC) Reliability Standard FAC-003 (NERC 2008) along with other chapters in this manual.

6.1 Work Objective

The objective of systematic transmission work is to improve the reliability of PacifiCorp's transmission system by preventing outages from vegetation located on transmission rights-of-way and minimizing outages from vegetation located adjacent to the right-of-way.

6.2 Philosophy

PacifiCorp's vegetation management philosophy for transmission lines is to utilize integrated vegetation management best practices to conduct cover type conversion and to cultivate stable, low-growing plant communities comprised of plants that will never interfere with transmission lines in their lifetime.

Reliability and safety are most effectively protected through establishing and maintaining a right-of-way consistent with the wire-border zone concept (Figures 6.4a and 6.4b). When the line is less than 50 feet off the ground, the wire-border zone should be cleared of all incompatible vegetation unless an easement fails to provide authority or there are legal impediments preventing the work.

6.3 Initial Clearing and Construction

Newly constructed transmission lines should be cleared to this specification prior to being energized.

6.4 Inspection

Transmission lines falling under the auspices of FAC-003 should be inspected at least once a year by ground or air, depending on the inter-relationships between vegetation growth rates and vegetation control methods. Inspections should bear in mind the movement of applicable line conductors under their rating and all rated electrical conditions.

Line Patrolmen have responsibility for inspecting transmission lines subject to FAC-003 and reporting conditions to vegetation management. In addition, each area forester shall meet twice each year to discuss vegetation conditions with the line patrolman with mutual geographic responsibilities.

Line Patrolmen encountering a tree that poses a threat of causing a transmission outage at any moment shall follow procedures in PacifiCorp Operating Procedure PCC-215, in order to comply with Requirement R4 of NERC Standard FAC-003 (*Transmission Vegetation Management Program.* Line patrolmen must:

- Immediately notify the grid operator by phone and describe the nature and extent of the threat.
- Complete and process the Emergency Tree Action Form.
- Communicate the vegetation conditions to vegetation management for urgent attention.

Examples of tree conditions that pose a threat of causing a transmission outage at any moment include (but are not limited to) trees that violate or pose a risk within 72 hours of violating NERC Minimum Vegetation Clearance Distance (MVCD), uprooted trees that are leaning toward the line and pose a risk of immediate failure and trees with structural failures that may cause them to break in part or whole onto the transmission facilities (See Smiley, Matheny and Lilly 2011).

6.4.1 Additional Inspection

Foresters should annually select lines among those over 200kV and those designated by the Western Electricity Coordinating Council as elements of the major transfer path in the bulk electric system for annual inspection in addition to that performed by line patrolmen. These inspections supplement, rather than substitute for, those conducted by line patrolmen. Foresters should assign representatives to complete these inspections.

Such inspection should identify trees that pose a threat of causing an outage at any moment, and trees that will violate NERC MVCDS within the next year. Engineering records of maximum line movement under all rated electrical operating conditions should be used to ensure against encroachments of the following types:

- An encroachment into the MVCD, observed as it is occurring, without a sustained outage.
- An encroachment due to a fall-in from inside the right-of-way that could cause a sustained outage.
- An encroachment due to blowing together of applicable lines and vegetation located inside the right-of-way that could cause a sustained outage.
- An encroachment due to vegetation growth into the line MVCD that could cause a sustained outage.

Range finders to confirm the MVCD has not or is not about to be been violated. Locations should be noted on an activity report, and assigned to a tree crew for work, with the appropriate forester's approval.

If the inspections discover a tree that poses a high likelihood of posing an outage at any moment, forest techs shall contact the appropriate forester within three hours. Foresters shall immediately request the appropriate line patrolman to inspect the line according to the imminent threat procedure described in section 6.4.

6.5 Work Plan

The Vegetation Management A300 standard (ANSI 2012a) and the ISA integrated vegetation management best management practice (Miller 2014) recommend against cycle-based transmission work thresholds. Rather, work should be scheduled depending on line voltage, line importance, vegetation conditions that violate the action thresholds in Table 6.1, location, predominant species' growth rates, threatened and endangered species, archeological sites, topography and other factors.

A comprehensive approach that exercises the full extent of legal rights is superior to incremental management in the long term because it reduces overall encroachments, and it ensures that future planned work is sufficient at all locations on the right-of-way Removal is superior to pruning. Removal minimizes the possibility of conflicts between energized conductors and vegetation.

6.5.1 Annual Work Plan

PacifiCorp performs vegetation management work in accordance with annual work plans that details the circuits and facilities to be managed during a calendar year. Plans should include:

- A list of facilities subject to scheduled work.
- If only a portion of a line is scheduled, the line segment must be identified (e.g. structure to structure).
- Dates when work is anticipated to start and end on each project (Gantt charts are recommended).
- A description of the type of control methods, (cycle, herbicide, mowing, aerial etc.)

6.5.1.2 Annual Work Plan Adjustments

The annual work plan may be adjusted during the year to account for changes in conditions that require a circuit, line segment or project to be moved into or out of the work plan. Examples of reasons for adjustments include, but are not limited to, vegetation growth in excess of anticipated levels, vegetation inspection results, new construction projects or removal of existing facilities. Adjustments to the annual work plan shall be documented as they occur.

6.6 Clearances

6.6.1. Minimum Clearances Following Work.

Minimum clearances from conductors to be achieved at the time of work are in Table 6.1. These distances should be increased, depending upon local conditions and the expected time frame to return for future vegetation management work. Local conditions may include appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, worker approach distance requirements and other factors.

6.6.2 MVCD

NERC Minimum Vegetation Clearance Distances (MVCD) are established in FAC-003 (NERC 2008), and represent radial distances from the lines inside of which trees should not encroach (Table 6.1) Trees that violate MVCDs shall be corrected within 24 hours of their identification following

Table 6.1. Transmission clearance requirements (in feet).

	500 kV	345 kV	230 kV	161 kV	138 kV	115 kV	69 kV	45 kV
Maximum Flash Distances (MVCD)	7.35	4.74	4.53	3.14	2.7	2.25	1.34	N/A
Action thresholds	17.5	14.75	14.5	13.25	12.75	12.25	10.5	5
*Minimum clearances following work	50	40	30	25	25	25	25	20

The Minimum Vegetation Clearance Distance (MVCD) represents minimum clearances that should be maintained from conductors at all times, considering the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. MVCDs in this chart are for 10,000-11,000 feet above sea level (the maximum in Table 2 of FAC-003-02) and apply across PacifiCorp's service territory regardless of elevation. Action thresholds indicate work should be scheduled within the next year. They are roughly MVCD plus 10 feet, with the exception of the 46kV, for which no MVCD exists.

PacifiCorp SOP-PCC-215. *Transmission Grid Operations Operating Procedure.*

6.6.3 Action Thresholds

The action thresholds in Table 6.1 provide roughly ten-foot buffers from NERC MVCD. Trees identified within the action thresholds should be scheduled for work within twelve months.

6.6.4 Side Clearance in Transmission Rights-of-Way

Specification side clearances from the conductors are presented in Table 6.1. Consider potential sway of conductors in foreseeable high wind, particularly mid span, where clearances could need to be increased at mid span to accommodate conductor sag and swing in high temperature and winds.

6.6.5 Structure Clearances

Trees and brush should be cleared within a twenty-five foot radius of transmission "H" or metal structures, a ten-foot radius of single pole construction and a five-foot radius of guy anchors. Clearing activities shall not damage poles, structures, guys or anchors.

6.6.6 Guy Wires

Trees or branches two-inches or more in diameter applying direct pressure to or threatening to fall on or through poles or guy wires shall be removed or pruned

6.7 Integrated Vegetation Management

The purpose of vegetation management on utility rights-of-way is to establish sustainable plant communities that are compatible with the electric facilities. These communities are stable, low-growing, compatible with conductors, foster diversity, and establish a sustainable supply of forage, escape and nesting cover, movement corridors for wildlife, reduced fire risk, and more open access to the line (Yanner and Hutnik 2004). Establishing native vegetation will also reduce the invasion of noxious weeds into the corridor (BPA 2000).

6.7.1 IVM Control Methods

Control methods are the processes used to achieve objectives. Many cases call for a combination of methods. There are a variety of controls from which to choose, including manual, mechanical, chemical, biological, and cultural options (Miller 2014). Ground disturbance shall be minimized on all rights-of-way.

6.7.1.1 Manual Control Methods

Manual methods involve workers using hand-carried tools, including chainsaws, handsaws, pruning shears and other devices to control incompatible vegetation. Manual techniques are selective and can be used where others may not be appropriate, including urban or developed areas, environmentally sensitive locations (such as wetlands or places inhabited by sensitive species), in the vicinity of archeological sites and on steep terrain.

6.7.1.2 Mechanical Control Methods

Machines are used for mechanical control. They are efficient and cost effective, particularly for clearing dense vegetation during initial establishment, or reclaiming neglected or overgrown rights-of-way. On the other hand, mechanical control methods can be non-selective and disturb sensitive sites, such as wetlands, archeologically rich localities or developed areas. At times, machines leave behind petroleum

products, leaks and spills from normal operation. Furthermore, heavy equipment can be risky to use on steep terrain, where they may be unstable.

6.7.1.3 Chemical Control Methods

Tree growth regulators and herbicides must be used according to directives on their labels. Applicators are not only required to comply with label instructions, but also all other laws and regulations pertaining to tree growth regulator and herbicide use (see Chapter 7).

6.7.1.3.1 Tree Growth Regulators

Tree growth regulators (TGRs) are designed to reduce growth rates by interfering with natural plant processes. TGRs can be used to slow fast-growing trees, and be helpful where removals are prohibited or impractical.

6.7.1.3.2 Herbicides

Herbicides control plants by interfering with specific botanical biochemical pathways. There are a variety of herbicides, each of which behaves differently in the environment and in their affects on plants, depending on the formulation and characteristics of the active ingredient. While appropriate herbicide use reduces the need for future intervention, if misused they can cause unintended environmental harm due to drift, leaching and volatilization.

6.7.1.4 Biological Control Methods

Biological control uses natural processes to control undesirable vegetation. For example, some plants, including certain grasses, release chemicals that suppress other plant species growing around them. Known as allelopathy, this characteristic can serve as a type of biological control against incompatible species. Promoting wildlife populations is also a form of biological control. Birds, rodents and other animals can encourage compatible plant communities by eating seeds or shoots of undesirable plants.

A biological control known as cover-type conversion provides a competitive advantage to short-growing, early successional plants, allowing them to thrive and eventually out-compete unwanted tree species for sunlight, essential elements and water. Cultural methods also take advantage of seed banks of native, compatible species lying dormant on site. In the long run, cultural control is the most desirable method where it is applicable.

The early successional plant community is relatively stable, tree-resistant and reduces the amount of work, including herbicide application, with each successive treatment.

While it is a type of biological control, cover-type conversion employs a combination of manual, mechanical, herbicide and cultural methods. For example, although encouraging allelopathic plants and increasing wildlife populations by improving habitat are types of biological controls, they are also forms of cultural control.

Tree-resistant communities are created in two stages. The first involves non-selectively clearing the right-of-way of undesirable trees using the best applicable control method or methods. The second develops a tree-resistant plant community using selective techniques, including herbicide applications and releasing the seed bank of native, compatible species for germination.

Cover type conversion, uses herbicides to remove incompatible tall-growing trees and other vegetation from the right-of-way in order to establish a

stable, low-growing plant community. The specific IVM technique selected for a particular site is based upon various conditions, which include terrain, accessibility, environmental considerations (wetlands, streams, etc.) cultural factors, worker and public health, economics and other factors.

6.7.1.5.1 Wire-Border Zone

Over sixty years of research on transmission rights-of-way has demonstrated that integrated vegetation management applied to creating distinct, compatible plant communities not only effectively manages vegetation on rights-of-way, but also enhances wildlife habitat, at least in forested areas (Yanner and Hutnik 2004). The wire zone-border zone concept was developed by W.C. Bramble and W.R. Byrnes (Bramble et al 1991).

On flat terrain, the wire zone is the right-of-way portion directly under the wires and roughly 10-feet to the field side of the outside phases. The border zone ranges from ten-feet outside the outer phases to the right-of-way edge (Figure 6.4a). The border zone may be reduced or eliminated on the up-slopes slope where wire sag and sway may preclude leaving trees of any type. It may also extended on down-slopes (Figure 6.4b).

Properly managed, wire zone-border zone linear corridors not only effectively protect the electric facilities, but also can become an asset for forest ecology and forest management (Bramble et al 1991, Yanner, Bramble and Byrnes 2001, Yanner and Hutnik 2004).

6.7.1.5.1.1 Region A

Region A is the area where lines are less than 50 feet off the ground (Figure 6.5). The 50 foot height should be from maximum engineered sag mid-span, with attention to side slope and potential sway of conductors in high wind. The right-of-way in Region A should be cleared following the wire zone - border zone recommendations of Bramble and Byrnes (Bramble et. al. 1991 [Figure 6.2]).

After clearing, the Region A wire zone should consist of grasses, legumes, herbs, ferns and low-growing shrubs (under 5-feet at maturity). The border zone should consist of tall shrubs or short trees (up to 25 feet in height at maturity), grasses and forbs. These cover types benefit the right-of-way by competing with and excluding undesirable plants.

6.7.1.5.1.2 Region B

Region B occurs where the lines are between 50 and 100 feet off the ground from maximum engineered sag (Figure 6.5). In Region B, a border zone regime should be established throughout the right-of-way.

Note that many transmission structures are over 50 feet high. So, in many cases, a border zone community can be maintained near structures. Care should be taken to maintain access to the structure.

6.7.1.1.3 Region C

Region C is where the lines are 100 feet or more off the ground (Figure 6.5). Tall-growing trees may be allowed in Region C provided they have at least 50 feet of clearance. Trees with less than 50 feet of clearance can be selectively removed.

6.7.1.5 Cultural Control Methods

Cultural methods modify habitat to discourage incompatible vegetation. Cultivated landscapes of compatible plants and agricultural crops are examples of cultural control.

6.8 Transmission Rights-of-Way Widths

Right-of-way clearing should conform to the width indicated on the easement or permit. Removals are always desirable under transmission lines.

Transmission lines may be constructed on the edge of dedicated road right-of-way where that may or may not be an easement or permit on the adjoining property allowing encroaching vegetation to be cleared. In these cases or others where the easement or permit does not specify a width, right-of-way dimensions in Table 6.2 apply. However, if no authority exists to remove trees, at minimum work should conform to Tables 6.1 and 6.2.

Easements should be researched through PacifiCorp Right-of-Way Services referencing the *Plan and Profile.* The *Plan and Profile* may also be useful in determining if the age of the line qualifies it for a prescriptive easement (see Section 8.3.1.1 and Table 8.1). Ground disturbance shall be minimized on all rights-of-way.

6.9 Post Work Assessment

Foresters should audit transmission work following procedures outlined in Section 4.4. The audits should objectively assess quality, adherence to specifications, production, herbicide and other matters. Moreover, audits should provide the tree crew leader with feedback on production, professionalism, equipment, safety and crew efficiency. Results shall be documented on an *Audit Report* (Figure 4.7). Following systematic work, the entire length of completed line shall be inspected by the contractor to verify work complies with PacifiCorp specifications.

6.10 Mitigation Measures

NERC Requirement R1.4, directs transmission owners to develop mitigation measures to achieve sufficient clearances for protection of the transmission facilities when it identifies locations on the right-of-way where the transmission owner is restricted from attaining Clearance 1.

Whenever the restriction is caused by a landowner, the refusal process in Chapter 8 shall be followed. If the refusal process has been completed without attaining Clearance 1 distances, such locations should be documented on the *Work Release* (Figure 4.2). These sites should be reported in writing to the appropriate line patrolmen within 30 days. The line patrolmen should report annually on these site's status. Moreover, foresters or their contract designee should inspect the site biannually.

6.11 High Risk Trees

High risk trees are structurally unsound and could strike a target (such as electric facilities) when they fail. Off right-of-way hazard trees shall be identified following Smiley, Matheny and Lilly. 2011 and bearing prevailing winds and soil depth in mind. Trees on the uphill and windward sides of rights-of-way should receive particular scrutiny. Hazard trees should be either removed or pruned to reduce the exposure. Work shall be performed in a manner that neither damages trunks nor disturbs root systems of adjacent trees. Damaged trees could decline, decay or die, threatening the conductors if they fall.

Federal and state agencies could request high risk trees to be topped to create "wildlife trees". PacifiCorp may honor such requests provided the safety of the tree workers or facilities are not

Figure 6.1. Right-of-way reclamation using mechanical control. In this case, a slashbuster.

TABLE 6.2. Active transmission right-of-way widths.

Facility	Distance from Center	Urban Width	Rural Width
46 kV Single pole	25 feet	50 feet	50 feet
69 kV Single pole	25 feet	50 feet	50 feet
115 kV Single pole	30 feet	60 feet	60 feet
138 kV Single pole	30 feet	60 feet	60 feet
161 kV Single pole	40 feet	80 feet	80 feet
230 kV Single pole	40 feet	80 feet	80 feet
69 kV H frame	40/50 feet	80 feet	100 feet
115 kV H frame	40/50 feet	80 feet	100 feet
138 kV H frame	40/50 feet	80 feet	100 feet
161 kV H frame	40/50 feet	80 feet	100 feet
230 kV H frame	62½ feet	125 feet	125 feet
345 kV H frame	75 feet	150 feet	150 feet
345 kV Steel tower	75 feet	150 feet	150 feet
500 kV Steel tower	87½ feet	175 feet	175 feet

Note rights-of-way should be cleared to those specified in the easement. If no easement exists or if no width is specified in the easement, rights-of-way in this table apply. Widths conform to PacifiCorp Transmission Construction Standard TA 181.

Figure 6.2 In densely vegetated areas, rights-of-way usually have to be completely cleared as the initial stage of establishing a wire-border zone.

Figure 6.3. Line 4 in California following work (note the trees midspan where the line is more than 100-feet off the ground).

Lorelei Phillips photo

Figure 6.4a. Bramble and Byrnes Wire Zone - Border Zone (adapted from Yahner, Bramble and Byrnes, 2001).

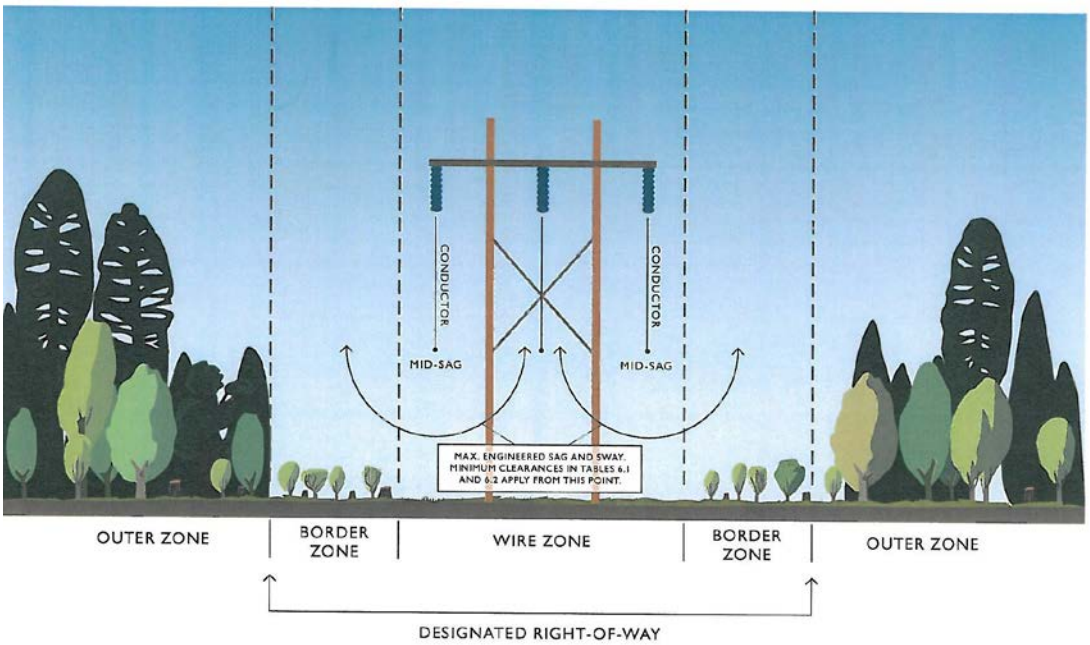
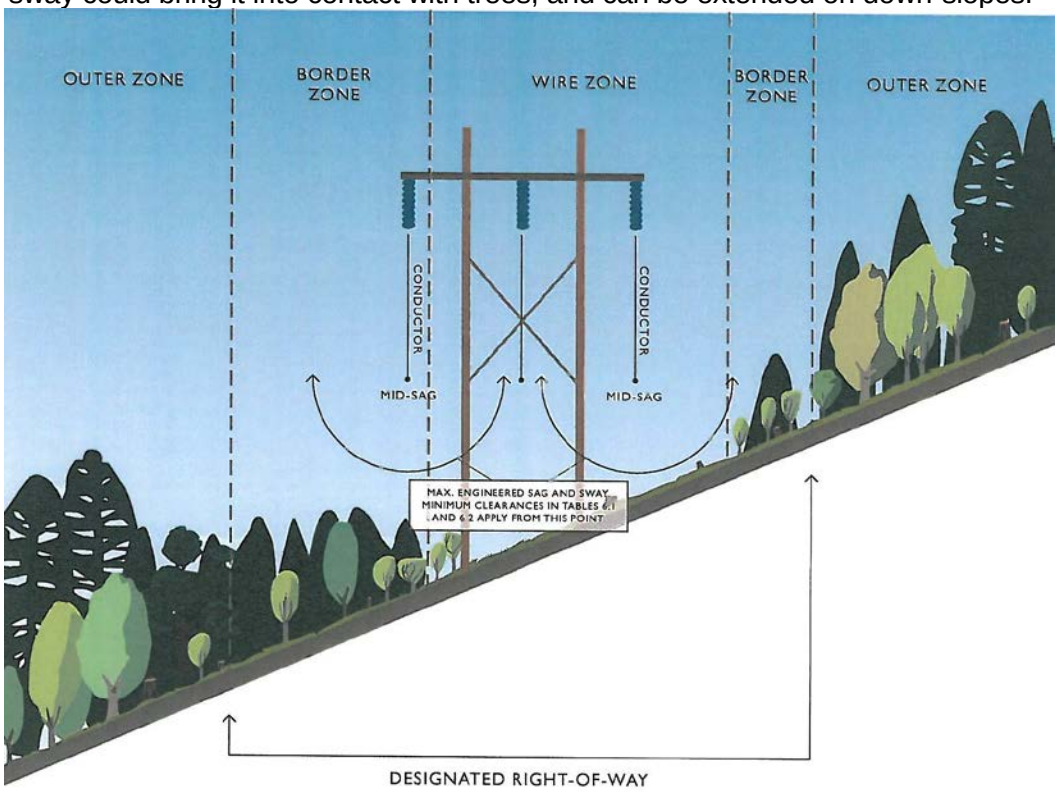
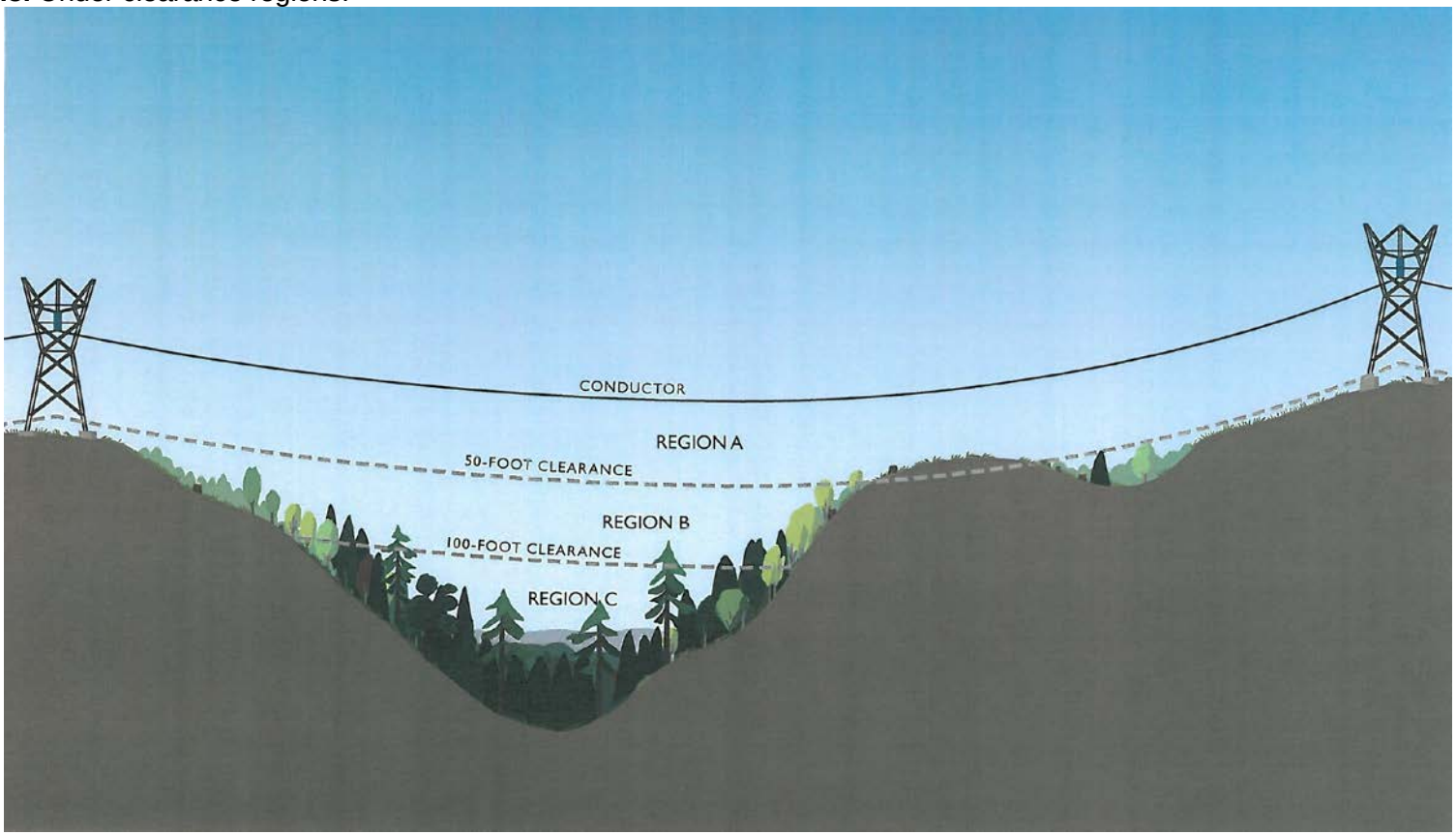


Figure 6.4b. The border zone may be reduced or eliminated on up-slopes where wire sag and sway could bring it into contact with trees, and can be extended on down-slopes.



Brad Gouch drawings (Figures 6.4 and 6.5).

Figure 6.5. Under clearance regions.



Region Definitions:

Region A: Where conductor to ground clearance is less than 50 feet (from maximum engineered sag and sway.

Region B: Where the conductor to ground clearance is 51-100 feet (from maximum engineered sag and sway.

Region C: Where the conductor to ground clearance is over 100 feet (from maximum engineered sag and sway.

Appropriate Region Plant Species:

Region A: Grasses, legumes, ferns and low-growing shrubs (<5' at maturity).

Region B: Region A species as well as large shrubs and short-growing trees (<25' at maturity).

Region C: All tree and shrub species.

compromised, and the trees are topped below a height that would allow them to contact Company facilities should they fall.

PacifiCorp manages multitudes of trees across its over 15,000 mile transmission system. In every mile of line, the Company potentially has hundreds or thousands of trees, any one of which could compromise public safety and electrical service reliability. It is impossible to completely secure an electrical system from that level of exposure. Nevertheless, PacifiCorp has a responsibility to make a reasonable effort to maintain vegetation to reduce risks to both the public and power supply.

6.12 Vegetation Screens

Vegetation screens may be required by federal or local authorities in some locations at high visibility areas such as major road crossings. Where these mandates exist, vegetation screens should consist of border zone communities and be located near structures (where the line is unlikely to sag), if possible. If no border zone species are present, tall-growing trees may be left provided they have at least the minimum clearances in Table 6.1 following scheduled work.

Leaving tall-growing trees in transmission rights-of-way should be discouraged because they impede cover type conversion. So, trees should be removed (gradually over a number of years, if need be), rather than be pruned to obtain proper clearances, if at all possible. Vegetation screens should be no more than twenty-five feet from frequented vantage points into the right-of-way. Areas where tall-growing species are retained as screens shall be documented and monitored annually by line patrolmen. If remaining trees violate work thresholds specified in Table 6.1, within 30 days line patrolmen should report them to Vegetation Management for correction.

6.13 Merchantable Timber

Rights-of-way could contain merchantable timber. Merchantable timber is defined as a tree with at least six-inch diameter at breast height (DBH), that is recoverable and has a market in the local area. Merchantable timber belongs to the property owner unless the easement or permit states otherwise. If merchantable timber needs to be felled, the property owner should be contacted regarding timber recovery.

After the merchantable timber is felled, it should be de-limbed and left in total tree length on the right-of-way for recovery by the owner. In limited cases, PacifiCorp may decide to purchase merchantable timber from the property owner and retain or transfer ownership to another party. A forest practice permit from the appropriate state department of forestry is required for timber recovery.

6.14 Transmission Safety Procedures

The following safety procedures shall be followed by all tree crews on PacifiCorp transmission facilities.

6.14.1 Pre-work Communication with Dispatch

Operative communication capability is <u>mandatory</u> at all times on transmission rights-of-way Communication with dispatch is critical for tree crew safety. Every morning before starting transmission work, tree crews shall call the dispatcher from the right-of-way by radio or telephone and provide the following information to comply with *Power Delivery System Operations System policy SOP-152* (Figure 6.6):

- Name of crew leader
- Name of company
- Name of transmission line
- Line section (substation names between which work is to occur, such as "Alvey to Dixonville," or "Ben Lomond to Terminal")
- Location of work (structure number, address or both)
- How long the crew will be working at that location
- Radio or cellular telephone number of the crew
- Name of GF/supervisor and their cellular telephone number

If radio or telephone contact cannot be made with the dispatcher from the right-of-way, non-emergency work shall not be performed at that site. The crew should relocate to work where they can communicate with the dispatcher. . Satellite phones could be necessary in remote locations to provide the required communication.

6.14.2 Post-Work Communication with Dispatch

Each afternoon after completing transmission work for the day, tree crews shall call the dispatcher and provide the following information (Figure 6.6):

- Name of crew foreman and company.
- Name of transmission line
- Line section (substation names between which work occurred, such as "Alvey to Dixonville," or Ben Lomond to Terminal").
- Location where work was performed Crew members and equipment are off the right-of-way or in the clear.

6.14.3 Safe Working Procedure

Do not take chances. If a tree cannot be felled or pruned safely, do not proceed. If a tree or limb falls into the conductors, stop work and immediately and follow the emergency procedure in Figure 2.1. Minimum approach distances (Table 2.1) shall not be violated. Remember, transmission conductors can sag considerably at mid-span during hot weather, ice buildup and heavy loads. Trees that have safe clearance in the morning may not have safe clearance in the afternoon. Conditions could require a hold or clearance. Clearances on some transmission lines can take weeks or months to schedule. Conditions could require a hold or a clearance. See Section 2.1.1 for hold and clearance instructions.

6.15 Monthly Progress Tracking

Progress on the annual work plan for NERC Transmission Lines shall be tracked on the *PacifiCorp Main Grid Transmission MASTER* for lines under the auspices of NERC Standard FAC-003. Progress on the annual work plan for other transmission lines shall be tracked on the monthly *Local Transmission Progress Report.* Both reports track miles achieved against plan on a monthly basis (Figure 6.7).

6.16 Quarterly WECC Audit Report

PacifiCorp is required to report outages on transmission lines subject to FAC-003.

Figure 6.6. Transmission communication procedure with Dispatch (operative communication is mandatory at all times on transmission rights-of-way. Satellite phones could be necessary in remote locations).

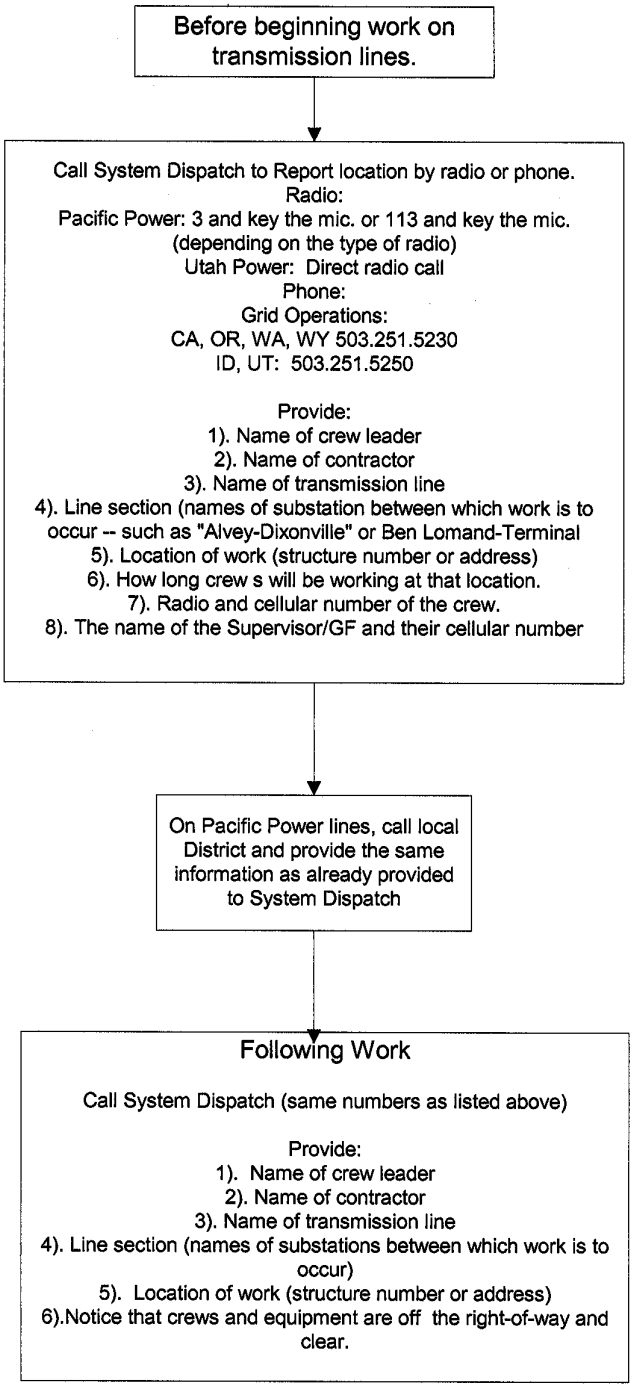


Figure 6.7. Summary pages of main grid and local transmission monthly reports.

PACIFICORP VEGETATION MANAGEMENT 2011 MAIN GRID TRANSMISSION PROGRESS REPORT

Through Dec 31, 2011

STATE SUMMARY

	TOTAL Line Miles	Line Miles Scheduled	Line Miles Completed	Line Miles Goal	Line Miles Ahead/Behind
	7,160	795	803	795	8
State					
California	129	23	11	23	-11
Idaho	1,206	99	99	99	0
Misc States	66	0	0	0	0
Montana	137	46	30	46	-16
Oregon	1,131	224	224	224	0
Utah	2,329	207	230	207	23
Washington	284	160	168	160	8
Wyoming	1,877	37	41	37	4
TOTAL	7,160	795	803	795	8

FORESTER SUMMARY

	TOTAL Line Miles	Line Miles Scheduled	Line Miles Completed	Line Miles Goal	Line Miles Ahead/Behind
	7160	795	803	795	8
Forester					
Armstrong	609	306	311	306	5
Evans	1865	127	142	127	14
Jones	64	21	21	21	0
Partridge	284	35	42	35	8
Phillips	734	58	46	58	-12
Vanderhoof	3,534	239	237	239	-2
Hooley	71	9	4	9	-5
Total	7,160	795	803	795	8

PACIFICORP VEGETATION MANAGEMENT 2011 LOCAL TRANSMISSION PROGRESS REPORT

Summary

Through Dec 31, 2011

LOCAL TRANSMISSION WORK

	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	7,936	2,136	2,316	2,136	180
State					
California	572	106	116	106	10
Idaho	797	38	46	38	8
Oregon	1,836	279	340	279	61
Utah	3,747	1,445	1,587	1,445	142
Washington	324	131	89	131	-42
Wyoming	660	137	138	137	1
Total	7,936	2,136	2,316	2,136	180

SUMMARY OF WORK BY FORESTER

	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	7,936	2,136	2,316	2,136	180
Forester		*	*	*	*
Hooley	356	9	41	9	32
Evans	2,304	977	1,035	977	58
Jones	766	330	413	330	83
Partridge	594	259	191	259	-68
Phillips	1,038	90	138	90	48
Vanderhoof	2,134	313	323	313	10
Armstrong	744	158	176	158	18
Total	7,936	2,136	2,316	2,136	180
Weeks					
52					

7. CHEMICAL SPECIFICATIONS

Herbicides and tree growth regulators (TGRs) are an integral part of PacifiCorp's Vegetation Management program. Chemical applications shall be performed according to federal, state and local regulations. Labels are the law, and chemical use must comply with labeling. PacifiCorp's director of vegetation management shall approve all products and mixes. Property owners shall be notified at least five days, but no more than six weeks in advance, whenever chemicals are to be used on their property. Property owner objection to herbicide use shall be honored.

The company making the application is responsible for chemical purchase and storage, record keeping as well as container disposal. Crew leaders in all states except California shall hold a valid applicator's license. Applicators shall either hold that license, or work under the direct supervision of a certified applicator as required in the state in which they are working. Tree crews found working without a crew leader or applicator without a valid applicators license for the state in which they are working may be shut down at the forester's discretion. Supervisors/GFs of qualified applicators shall hold a certified applicator's license in the state or states in which they supervise crews.

7.1 Chemical Reports

All chemical applications shall be documented in the *Daily Report* (Figure 4.6). The company making the application shall be responsible for maintaining reports for review by the state departments of agriculture.

When chemical work is done on or adjacent to PacifiCorp Hydro properties, copies of chemical reports shall be provided to the plant manager weekly.

7.2 Herbicide Applications

Herbicide applications shall be pursued wherever possible as a vegetation management tool. Herbicides prevent sprouting from stumps of deciduous trees and should be used on saplings of tall-growing species to reduce future inventories (Figure 7.2). Herbicides are essential in establishing the wire zone-border zone method on transmission lines.

When properly used, herbicides are effective and efficient, minimize soil disturbance, and enhance plant and wildlife diversity. Herbicide application can benefit wildlife by improving forage as well as escape and nesting cover. In some instances, noxious weed control is a desirable objective on utility rights-of-way that can be satisfied through herbicide treatment.

Herbicide use can control individual plants that are prone to re-sprout or sucker after removal. When trees that re-sprout or sucker are removed without herbicide treatment, dense thickets develop, impeding access, swelling workloads, increasing costs, blocking lines-of-site, and deteriorating wildlife habitat (Yanner and Hutnik 2004 [Figure 7.1]).

Treating suckering plants allows early successional, compatible species to dominate the right-of-way and out-compete incompatible species, ultimately reducing work.

7.2.1 Selectivity

Herbicides can be selective or non-selective depending on their type. Selective herbicides only control specific kinds of plants, when applied according to the label. For example, synthetic auxins are a class of selective herbicides that control broadleaved plants, but do not harm grass species when applied according to the label. By contrast, non-selective herbicides work against both broadleaved plants and grasses. Non-selective herbicides can be effective where a wide variety of target plant species are present, like those often found during initial clearing or reclaiming dense stands of invasive or other undesirable vegetation.

Application techniques can also be either selective or non-selective. Selective applications are used against specific plants or pockets of plants. Non-selective techniques target areas rather than individual plants (see *Application Methods*). Non-selective use of non-selective herbicides eliminate all plants in the application area. Non-selective use of a selective herbicide controls treated plants that are sensitive to the herbicide, without differentiating between compatible or incompatible species. Selective use of either would only control targeted vegetation. Selective use is preferable unless target vegetation density is high.

7.2.2 Herbicide Best Management Practices

PacifiCorp is dedicated to ensuring proper application of approved herbicides to minimize the effects on non-target vegetation, human health, fish and wildlife species and water quality (Childs 2005).

Herbicide applications shall (Childs 2005):

- Follow all product label mandatory provisions such as registered uses, maximum use rates, application restrictions, worker safety standards, restricted entry levels, environmental hazards, weather restrictions, and equipment cleansing.
- Follow all product label advisory provisions such as mixing instructions, protective clothing and others matters.
- Have on site a copy of the label and MSDS sheets.
- Be made in the presence of a licensed applicator valid for the state in which work is performed.

7.2.3 Wetlands and Water Bodies

The affects of herbicides on wetland and water resources should be minimized by utilizing buffer zones (Table 7.1). Buffer zones reduce the movement of herbicides into from the application site into adjoining water bodies. They must be followed unless instructed otherwise by competent authorities. Climate, geology and soil types should be considered when selecting the herbicide mix with the lowest relative risk of migrating to water resources (Childs 2005).

7.2.4 Spills

Mixing, loading and cleaning equipment are critical activities that present the greatest exposure to accidents or spills (Miller 1993). To prepare for accidental spills, some kind of absorptive material shall be available.

Figure 7.1. Untreated rights-of-way quickly fill in with thickets of sprouts following mowing

Jay Neil photo

Figure 7.2. Incompatible species treated in the Line 72 right-of-way in, Oregon two years after reclamation. Herbicide treatments help maintain the right-of-way and are used to convert it to a wire zone-border zone prescription (Figure 6.3)

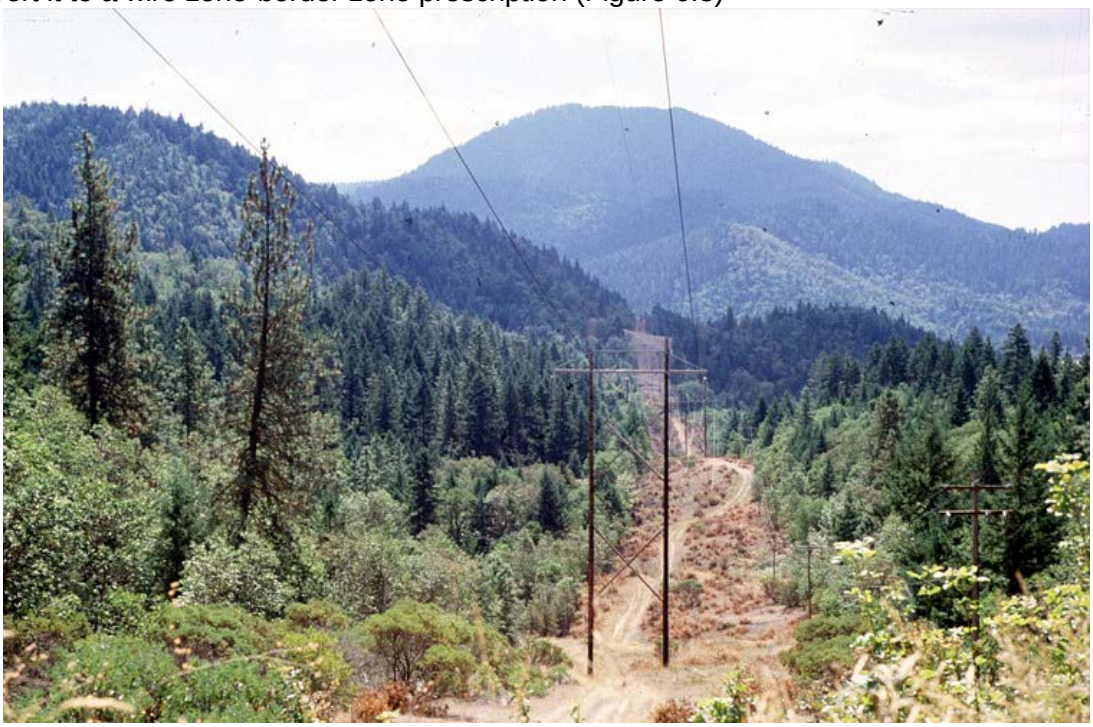


Table 7.1. Buffer Widths to Minimize Impacts on Non-Target Resources (adapted from Childs 2005).

Herbicide Ecological Toxicities and Characteristics	Buffer Width from Water Resource per Application Method			
	Spot	Localized	Broadcast	Mixing, Loading, Cleaning
Practically Non-toxic to Slightly Toxic	Up to the Edge	Up to Edge	50 feet	100 feet
Moderately Toxic, or Label Advisory for Ground/Surface Water	25 feet	35 feet	300 feet	250 feet
Highly Toxic to Very Highly Toxic	35 feet	100 feet	Noxious weed control only. Buffers shall comply with local regulations	250 feet

In the event of a spill or misapplication:

- STOP, CONTAIN, ISOLATE
  - Stop the source of the spill
  - Contain the spill (it is especially important to prevent the spill from entering waterways)
  - Isolate the area – prevent people or vehicles from passing through the area.
- Report the spill to the Spill Hotline: 800.94.SPILL and provide:
  - Caller and manager's name
  - Date and time spill was discovered
  - Location (address or longitude and latitude)
  - Manufacturer name and serial number
  - Cause of spill
  - Amount of spill
  - Types of surfaces contaminated
  - Containment and/or clean up activities performed so far
- Request the help of and notify supervisor/GF and PacifiCorp forester.
- Remediate the spill
  - Clean up the spill or have it cleaned up, following directives from the Spill Hotline
  - Wash equipment and vehicles.
  - Properly dispose of cleanup materials
  - Follow up with appropriate cleanup documentation.
- Clean-up at or near PacifiCorp generating sites or substations must comply with site specific spill prevention and remediation plans.

7.2.5 Inappropriate Applications

There are situations where herbicide applications are inappropriate. If application company representatives are uncertain whether or not applications are appropriate, they shall consult the appropriate forester. Inappropriate situations include (but are not limited to):

- Areas where the property owner expresses objections to herbicide use.
- Governmental lands where herbicides are prohibited.
- Conditions of heavy precipitation or strong winds. If these conditions exist, the treatment should be deferred until weather improves.
- High temperatures that would cause product volatility and damage off-target plants. This is particularly important for foliar applications. During high temperatures, treatment should be deferred until weather cools.
- Trees that could be root grafted to desirable trees.
- Trees that are near desirable plants where the herbicide could move into contact with off target foliage or roots.
- Trees that are sufficiently close to contaminate agricultural crops or harvestable, edible plants.

If there is any uncertainty regarding whether or not an application is appropriate, contact the forester with responsibility for the area.

7.2.6 Application Methods

Herbicide application methods are categorized by the quantity of herbicide used, the character of the target, vegetation density and site parameters. Dyes can be used in the herbicide mix to mark areas that have been treated. Treatments include individual stem, broadcast and aerial treatments.

7.2.6.1 Individual Stem Treatment

Individual stem treatments are selective applications. They include stump, basal, injection, frill, selective foliar and side-pruning applications. Due to their specific nature, proper individual stem applications work well to avoid damage to sensitive or off target plants. However, they are impractical against broad areas or sites dominated by undesirable species.

Stump applications are a common individual stem treatment, where herbicides are applied to the stump cut surface around the cambium and to the top side of the bark. Water-based formulations require immediate stump treatment, while oil-based herbicides can be applied hours, days or even weeks after cutting.

Injections involve inserting herbicide into a tree. Frill (commonly called “hack and squirt”) treatments, consist of herbicide application into cuts in the trunk. Injections or frill treatments are especially useful against large incompatible trees to be left standing for wildlife.

Basal applications often use an herbicide in an oil-based carrier at the base of stems and root collar. The oil penetrates the bark, carrying the herbicide into the plant. Although basal applications can be made year round, dormant treatment is often best on deciduous plants, when they do not have foliage that can obstruct access to individual stems.

Selective foliar applications are done by spraying foliage and shoots of specific target plants. They can be either low or high volume treatments. For low volume applications, comparatively high concentrations of herbicide active ingredient are made in lower volumes of water than would be used with high volume treatment. Foliar applications are only made during the active growing season, normally late spring to early fall.

Side pruning is a technique where non-translocatable herbicides are applied to control specific branches growing

toward the electric facility. Treating large branches could damage trees in the same way as removing them through pruning.

7.2.6.2 Broadcast Treatment

Broadcast treatments are nonselective because they control all plants sensitive to a particular herbicide in a treatment area. They can provide a degree of selectivity with proper herbicides. Even then, broadcast treatments do not differentiate between compatible and incompatible plants that the herbicide controls. Broadcasting is particularly useful to control large infestations of incompatible vegetation (including invasive species) in rights-of-way or along access roads.

Broadcast techniques include high-volume foliar, cut-stubble and bare ground applications. High volume foliar applications are similar to high volume selective foliar applications. The difference is that broadcast high volume foliar treatments target a broad area of incompatible species, rather than individual plants or pockets of plants. Cut-stubble applications are made over areas that have just been mowed. Bare-ground treatments are used for clearing all plant material in a prescribed area, such as in substations or around poles to protect against fire. Bare-ground applications are usually granular or liquid applications following mechanical removal of vegetation, or used as a pre-emergent in maintaining graveled areas such as substations.

7.2.6.3 Aerial Treatment

Aerial treatments are made by helicopter (rotary wing) or small airplane (fixed wing). Rotary wing aircraft provide the most accuracy, because helicopters can fly more slowly and are more maneuverable than airplanes. However, airplanes are less expensive to operate than helicopters. Aerial control methods are also nonselective, but can provide a level of selectivity with proper herbicides. Aerial applications can be useful in remote or difficult to access sites, and be cost effective and quick, especially if large areas need to be treated. They also can be used where incompatible vegetation dominates a right-of-way. The primary disadvantage of aerial application is that it carries the threat of off-target drift, so it must be performed under low-wind conditions with low toxicity herbicides.

7.3 Approved Herbicides

A list of approved products appears in the following sections. PacifiCorp's director of vegetation management must authorize other chemicals.

7.3.1 Stump Application

- 2, 4-D
- Glyphosate
- Picloram
- Triclopyr

7.3.2 Low Volume Basal Application

- Imazapyr
- Triclopyr

7.3.3 Foliar Application

- 2, 4-D
- Aminopyralid
- Fosamine ammonium
- Glyphosate
- Metasulfuron methyl
- Picloram
- Sulfometuron methyl
- Triclopyr

7.3.4 Soil Application

- Diuron
- Imazapyr

- Picloram
- Sulfentrazone
- Tebuthiuron

7.4 Tree Growth Regulators

Tree Growth Regulator (TGR) applications are intended to retard fast-growing trees so that they will not interfere with facilities or violate state regulatory agency tree policy before the next scheduled maintenance.

7.4.1 Approved TGR Application Chemicals

- Fluprimidol
- Paclobutrazol

8. CUSTOMER RELATIONS

Representatives of vegetation management meet with more customers than any other Company department. As a result, customers often develop an impression of the entire Company based on their experience with PacifiCorp vegetation management. Since vegetation management work is often controversial, excellent customer service is imperative for a successful program. Company and contract personnel must be professional, prompt, fair and courteous to customers.

8.1 Educational Information

PacifiCorp has a variety of educational materials about tree-power line conflicts and planting the right tree in the right place.

8.1.1 Trees and Power Lines Brochure

The *Trees and Power Lines* brochure is a companion to the "yellow door card" (see Section 8.2.1). It explains the need for line clearance work, as well as natural target pruning. It also provides color pictures of how properly pruned trees could look following line clearance.

8.1.2. Small Trees for Small Places

The *Small Trees for Small Places* is a publication in PDF format available at PacificPower.net or RockyMountainPower.net. It provides tree selection tree planting and electrical safety information. It offers an easy to use chart on ornamental and adaptive characteristics of 100 different species that can be used adjacent to power lines. Not all these trees can be used everywhere in PacifiCorp's service territory. However, the idea is that with a choice of 100 small-statured trees, there should be a choice of several to use in any given location around PacifiCorp's system.

8.1.3 Right Tree in the Right Place Poster

The *Right Tree in the Right Place* poster provides illustrations and descriptions of small trees that are suitable across PacifiCorp's service territory. It also relates information about proper utility tree pruning and tree planting.

8.2 Notification for Tree Work

Notification for tree work is not required by any state tariff in PacifiCorp’s service territory. However, PacifiCorp vegetation management attempts to notify property owners or tenants prior to vegetation management work at home and business sites. PacifiCorp area foresters should authorize any line clearance work to be done without property owner or tenant notification. In cases of municipal, county, state or federal properties, the proper agency representative shall be notified. The appropriate customer and community relations manager should be notified prior to meeting with governmental officials.

Notification, including that for tree or chemical work, should be by letter, phone, personal visit or door card at least five business days, but no more than six weeks, prior to the crew arriving. Notification shall be documented on an *Activity Report* (Figure 4.3). Notification cards shall not be placed in U.S. Mail boxes. Notification cards should be used

only where the owner or tenant is likely to be present on a regular basis. Some circumstances, such as work on historic, unique or unusual trees, could warrant personal contact with the customer.

8.2.1 Door hangers

PacifiCorp has a variety of door hangers (Figure 8.1). These door hangers come in Pacific Power and Rocky Mountain Power versions. Pacific Power door hangers shall be used in California, Oregon and Washington. Rocky Mountain Power printings shall be used in Idaho, Utah and Wyoming.

8.2.1.1 Distribution (Yellow)

PacifiCorp's distribution door hanger is yellow, and should be used to notify customers of upcoming distribution cycle or interim work. The door hanger has forest tech contact information, an explanation of the need for line clearance work, of how the work will be performed and how much clearance is required. The door hanger informs customers that volunteer trees (those not planted as part of a landscape) six-inches or fewer in diameter at breast height will be removed. It also includes drawings of shapes customers could expect from the work, and tips about tree planting (Figure 8.2)

8.2.1.2 Ticket (Blue)

The blue door hanger should be used to communicate with customers who have called in requests for tree work. It has four check boxes with the most common responses to customer requests. The tree(s):

- Do not pose an immediate threat to electric service.
- Are not affecting PacifiCorp facilities.
- Are growing in proximity to service lines, but do not threaten electric service. If a customer wishes to have the tree pruned, PacifiCorp can disconnect the line to enable the customer to safely perform the work or hire a professional tree care company to do it for them.
- Are the customer's responsibility because they have more than ten feet from distribution primary conductors.

The form also has space for comments, and forest tech contact information.

8.2.1.3 Distribution Removal (White)

The white door hanger is a tree removal request, to fulfill PacifiCorp's requirement for written permission to remove trees where no easement granting authority exists to do so (see Section 2.7.1). The white door hanger identifies trees to be removed, has check boxes indicating whether or not the logs will be cut to firewood length and the stumps treated with herbicide. The door card also provides contact information for the forest tech, or comments and a sketch to help the customer understand the request.

8.2.1.4 Rural Transmission (Purple)

The rural transmission door hanger explains the need to remove trees under transmission lines. It relates the process the customer can expect, how trees and how debris will be left. It informs them that herbicide could be used on their property, and that we have a coupon program for tree replacement. It provides information on the voltage of the line and widths of the right-of-way. The door hanger also has a wire zone-border zone illustration and offers forest tech contact information.

Figure 8.1 Various PacifiCorp Vegetation Management door hangers.

8.2.1.5 Urban Transmission (Forest Service Green)

The green transmission door hanger is for use in urban or developed areas. It differs from the rural door hanger insofar as it doesn't have a diagram of wire-border zone technique. It still stresses removal.

8.2.1.6 TGR (Grey)

The grey TGR door hanger is for notifying customers about upcoming tree growth regulator application on their property. It provides space to see what trees will be treated and forest tech contact information.

8.2.1.7 Herbicide (Grey)

The grey herbicide door hanger is for notifying customers about upcoming herbicide application on their property.

8.2.1.8 Tree Crew Request (Orange)

The orange door hanger is for tree crews to use to ask customers for their cooperation with upcoming tree work. It provides information about when a tree crew will arrive on site, and has check

Figure 8.2. "Yellow" door hanger.

The Steps for Tree Removal, Pruning and/or Herbicide Application

- This door card is the first step in the process. We are leaving it between one and six weeks before work on your property is planned.
- Please call the arborist listed on the other side of this door card within a week of receiving the verbal or this written notice, with questions or to notify us of any issues on your property.
- Tree crews will remove, prune or treat the trees with herbicides or tree growth regulators as indicated on the front of the card. The main trunk and large limbs will be left for your use. In addition, brush and trees that are under 6-inches in diameter and not intentionally planted as part of the landscape will be removed and treated with herbicide.
- We offer coupons to replace incompatible trees with utility-friendly species that you can plant in appropriate locations on your property. Talk with the forest technician about this option.
- This service is provided at no cost to you.
- If you have questions, please contact the arborist listed on the other side of this door card.

Here are some shapes you may expect from proper pruning around power lines.

For more information on electrical safety, tree pruning or planting the right tree in the right place, we invite you to visit **rockymountainpower.net/trees.**

Para más información, llame al 1-888-225-2611 y podrá hablar con un representante que hable español. ***Este servicio se ofrece sin ningún costo para usted.***

Tree Maintenance & Power Line Safety

It's a pleasure to provide you with safe, reliable, reasonably priced electricity. Keeping trees away from power lines is one of the most important ways to ensure you and your neighbors receive reliable electric service. It also helps keep you and our employees safe.

☐ After routinely inspecting the power lines on your property it's prudent to remove the following trees:

_____

☐ Additionally, we need to prune trees on your property to provide clearance of at least 10 to 14 feet of the overhead power line and/or from the power line running along the side of the trees:

_____

☐ The trees listed below will be treated with tree growth regulator to reduce the rate at which the tree(s) regrow into overhead power lines and also to reduce the frequency in which the tree(s) need to be pruned by our tree crews:

_____

☐ An herbicide will be applied in low volumes to non-landscape trees and brush stumps to prevent future growth. The herbicide is registered with the U.S. Environmental Protection Agency and will be applied in accordance with label requirements and federal, state and local regulations.

We hope you understand the reasons for the actions mentioned above and apologize for any inconvenience. **To understand what happens next, please review the steps for this work on the reverse side of this card.**

For more information on electrical safety, tree pruning or planting the right tree in the right place, we invite you to visit **rockymountainpower.net/trees.**

If you have questions please call:

Arborist: _____

Phone: _____ Date: _____

Comments: _____

_____

Para más información, llame al 1-888-225-2611 y podrá hablar con un representante que hable español. ***Este servicio se ofrece sin ningún costo para usted.***

05/13
VMRMP026
yellow

ROCKY MOUNTAIN POWER

boxes for requests to move something (like a car) from under the tree or secure a dog. It also can be used for permission to dive on property and has space for comments.

8.2.1.9 Pole Clearing

The pole clearing door hanger is to notify California customers of upcoming work to comply with California Resource Code 2492 (see Section 5.6)

8.2.2 Other Customer Contact Forms

In addition to door hangers, PacifiCorp has two forms for use in customer communication. The *Property Owner Permission* form has check boxes requesting authorization for tree removal, tree and brush disposal, mowing, notification of herbicide and TGR application. It provides a space for the property owner's signature. Property owner signatures are required for tree removal, but not brush disbursal or herbicide application.

PacifiCorp also has a *Refusal /Complaint Form.* This form should be completed by forest techs, supervisors/GFs, tree crews or foresters whenever a customer has concerns about upcoming or recently completed work. It identifies the property owner, the type of project and the nature of the refusal or complaint. These documents should be kept in a permanent file.

8.2.3 Crew Arrival on Site

When crews arrives for work at a residential site, as a courtesy they should knock at the door to let the home owner or tenant know they are about to begin work. If no one is home, the crew should proceed with the planned tree work.

8.3 Customer and Property Owner Refusal Procedure

The customer refusal process is presented in Figure 8.4. Detailed records must be kept of every conversation, including the date and time it occurred, and summary of the matters discussed. If a vegetation management representative makes a failed attempt to contact a refusal by phone, the date and time of the call should also be noted.

8.3.1 Forest Tech Refusal Procedure

When a property owner refuses to allow the work necessary to satisfy PacifiCorp specifications, the forest tech shall complete a *Property Owner Refusal/Complaint Report* and notify their supervisor/GF, and area forester within two working days and before any work is performed on the property. Forest techs shall not compromise clearances.

8.3.1.1 Easements

After documenting the refusal, the forest tech should research the right-of-way to determine PacifiCorp's property rights for that location. PacifiCorp often owns easements, copies of which are available from PacifiCorp right-of-way services. In addition, states grant prescriptive rights if the line has existed for specified length of time. This time period varies depending on the state (Table 8.1). This information should be provided to the appropriate GF/supervisor.

8.3.2 Crew Leader Refusal Procedure

When a property owner refuses to allow the crew leader to obtain specification clearances, the crew leader shall complete a *Property Owner Refusal/Complaint Report* and notify

their GF/supervisor, forest tech, or area forester within two working days and before any work is performed on the property. Crew leader notification initiates the refusal procedure from the beginning.

8.3.3 General Foreman/Supervisor Procedure

The supervisor/GF should contact the property owner within two weeks of being informed of a refusal to try to resolve the situation. The GF/Supervisor should review the documentation surrounding the refusal before contacting the customer. GF/supervisors should not compromise work below the specification without written authorization from the responsible area forester. If a prescriptive or written easement exists, the supervisor/GF should inform the customer of our rights under those easements. Notwithstanding, the general foreman/supervisor should not have the trees worked without customer consent.

If the general foreman/supervisor cannot resolve the refusal to full specification, he or she shall refer it to their area forester by turning in the *Property Owner Refusal/Complaint Report.*, along with any associated easement information.

8.3.4 Area Forester Procedure

When an area forester receives a refusal that the forest tech and general foreman/supervisor have been unable to resolve, within two weeks he or she shall contact the property owner to attempt to resolve the refusal. The forester may compromise work below the specifications, provided that trees have not grown within work thresholds in tables 5.1 or 6.1 and the agreement will not present unreasonable safety or electric service risks until the next regularly scheduled work This section is not intended to defer judgment to property owners on how much clearance to allow. Neither is it intended to justify clearances outside of specification in order to avoid dealing with an escalated complaint.

If the forester cannot resolve the refusal, the customer shall be to send two letters by the same certified post. One is a description of the legal authority under which the Company is acting and the other letter summarizing the circumstances of the refusal and setting date and time that the tree will be worked. The date shall be at least five business days from the time the letter is postmarked. The letter should reference the applicable written or prescriptive easement if they exist. The forester shall alert the director of vegetation management, transmission and distribution support managing director, as well as the appropriate operations manager, customer and community manager, wires director, and regulatory analyst about the letter. The regulatory analyst will inform the proper regulatory agency about the action. If it appears the media could become involved, the Media Hotline should be notified.

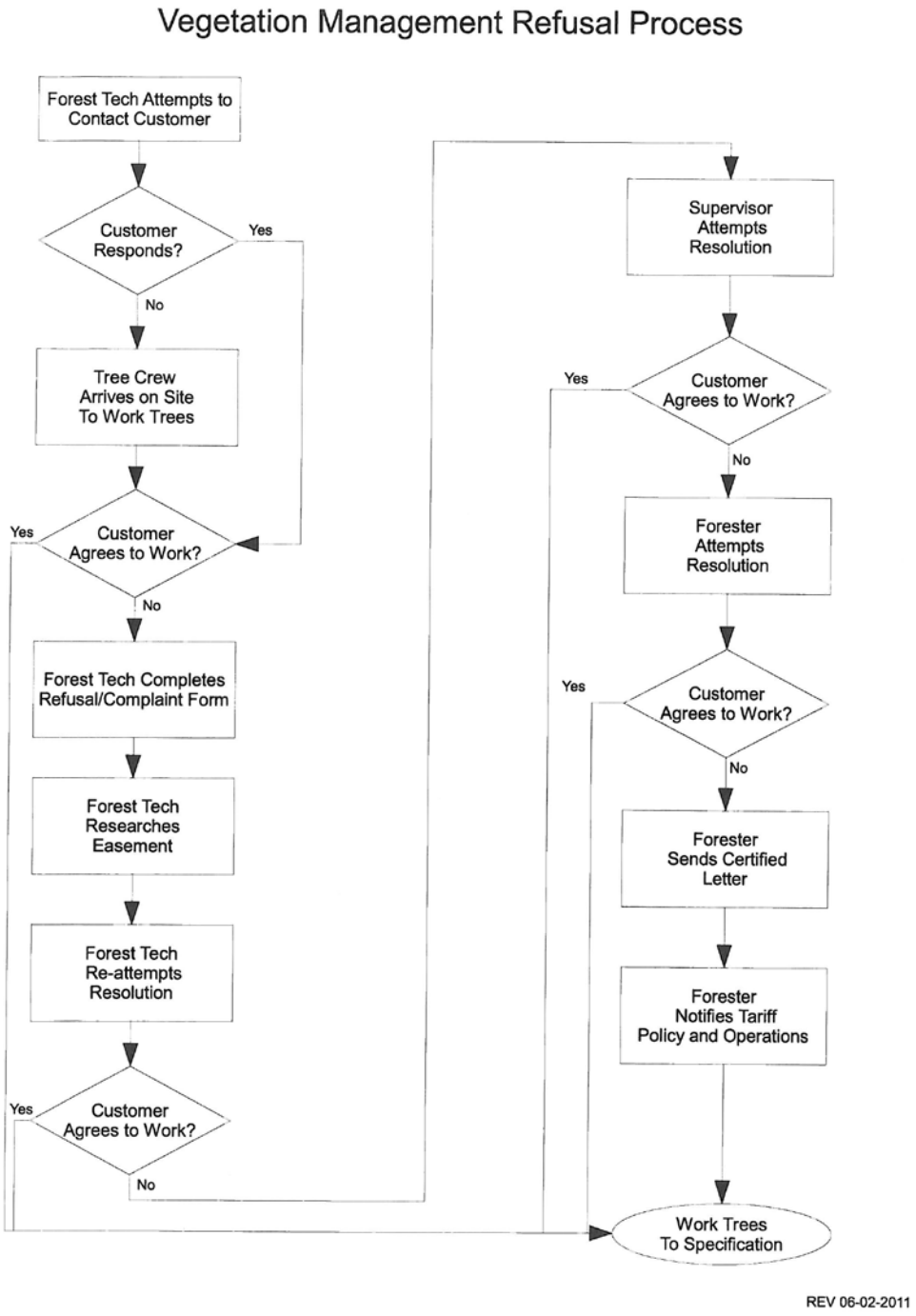
Once the letter is sent, tree crews shall be dispatched to work the site to specifications at the assigned date and time, regardless of whether or not a right-of-way or prescriptive easement exists. The cooperation PacifiCorp's legal department may be needed to file a temporary restraining order in extreme cases. The forester or GF/supervisor should be on site during work. Records shall be kept for use in potential litigation. Before and after photos of the site should be taken.

TABLE 8.1. Prescriptive easement time requirements by state

State	Time
California	5 years
Idaho	20 years
Oregon	10 years
Utah	20 years
Washington	10 years
Wyoming	10 years

Figure 8.3. Information surrounding refusals should be documented and electronically filed with the appropriate project.

Figure 8.4. Refusal process.



8.4 Customer and Property Owner Complaints

Customer and property owner complaints regarding any aspect of the vegetation management program shall be addressed promptly, fairly and professionally. PacifiCorp should be notified of complaints using a *Property Owner Refusal/ Complaint Report.* Customers will be contacted within 48 hours of receipt of the complaint. Documentation surrounding the refusal should be digitally filed to be accessed with other information from the specific project for use the next time through.

8.5 Commission Complaints

Commission responses should go through tariff policy with assistance from the vegetation management service coordinator. It is important to provide timelines with appropriate summaries of vegetation management's interaction with the subject party. Response for data request should be provided within 24 hours if at all possible, but no later than 72 hours.

8.6 Customer Survey

PacifiCorp has Pacific Power and Rocky Mountain Power customer surveys. Surveys are vitally important for quality control, and for giving customer's a voice regarding vegetation management's performance.

The survey asks customers to rate from 1 (lowest) to 5 (highest) Vegetation Management's performance relative to five questions:

- Our notification clearly explained the work we would be doing.
- The workers were friendly and courteous.
- The work was completed as you understood it would be.
- The property was left neat and orderly.
- Overall, I am satisfied with how the work was handled.
- It also allows space for comments and for the customer to identify him/herself.

Tree crews should leave customer surveys on each property on which utility tree work is performed. For work on municipal or other government agency trees, a survey should be provided to the appropriate management authority. The area forester should also see that surveys are left on properties where they conduct crew audits. The survey is self addressed and postage paid for the respondent's convenience.

9. DEFINITIONS

Allelopathy. Production of a chemical by one plant to suppress competing plants of other species.

BMP. Best management practice

Border zone. The Region A right-of-way portion that extends from the right-of-way edge to 10 feet from the outside phases.

Branch bark ridge. Area of raised bark between two stems. The ridge is formed as the two stems grow together, pushing the bark outward. A raised branch bark ridge is often a sign of a strong branch attachment.

Branch collar. Wood formed around a branch attachment. It contains wood from both the branch and parent stem.

Branch core. Area in the trunk of a tree that traces the branch back to its origins as a bud on a twig.

Branch protection zone. Area in the branch core that undergoes chemical change in response to wounding or disease in the branch. The chemicals protect the tree by inhibiting or preventing diseases from passing from the branch to the parent stem.

Caliper. The diameter of a tree six inches off the ground.

Cambium. Area of cell division responsible for stem diameter growth.

Clearance. Line de-energizing for safety purposes. Clearances require 48 hour notices to all customers that will be effected by the outage.

Clearance 1. As defined by the NERC Standard FAC-003-1 (2006) as clearances between trees and transmission lines to be achieved at the time of work on bulk (main grid) transmission lines. They appear in Table 6.1.

Clearance 2. As defined by the NERC Standard FAC-003-1 (2006) as clearances between trees and transmission lines that should never be breached. They correspond to Institute of Electronic and Electrical Engineers Standard 516-2003. They appear in Table 6.1.

Company. PacifiCorp.

Crown reduction. Reduction of the top or sides of the tree by thinning cuts (lateral or branch collar cuts).

Crown Restoration. Restoring a previously headed stem's natural structure by thinning sprouts emanating from the old wound. Crown restoration should be done incrementally over the course of several cycles. The crowns of many third order trees may be so damaged they may never be restored.

Cycle buster. Fast-growing tree species that will not hold for a complete cycle.

DBH. Diameter at breast height.

Danger tree. A tree on or off the right-of-way that may contact electric facilities either through growth or if it should fall.

Decurrent form. Trees lacking a strong central leader, resulting in a spreading crown (for example, American elm [*Ulmus americana]*).

Distribution line. Lines energized between 600 and 45,000 volts.

Drip line. The horizontal extent of the crown out to the branch tips.

Drop-crotch. Archaic term for lateral cut.

Excurrent form. Tree with a strong central leader (for example, Ponderosa pine [*Pinus ponderosa]*).

Fast -growing species. Tree species that vertically grows more than three feet per year.

Flush cut. A final pruning cut flush with the parent stem (the trunk, for example) that cuts into or removes the branch collar. Flush cuts are damaging and inappropriate.

GF. General foreman.

Hazard tree. Dead, dying, diseased, deformed, or unstable trees which have a high probability of falling and contacting a substation, distribution or transmission conductors, structure, guys or other Company electric facility.

Heading cut. Internodal cut on a stem, or a cut made to an inappropriate lateral.

Hold. Deactivating the automatic re-closers and the line. Holds are issued to a Journeyman lineman who, in the event of an outage, is responsible for ensuring that it is save to re-energize the line.

Included bark. Bark included in the juncture between two stems. It is a structural defect that can lead to stem failure.

Integrated Vegetation Management (IVM). Integrated vegetation management is a system of managing vegetation in which undesirable vegetation is identified, action thresholds are considered, all possible control options are evaluated, and selected control(s) are implemented (ANSI 2012a).

Interim Work. Scheduled work in the interim half way between cycles. For example, most of Oregon is on a four years cycle. Two years after completing cycle work, most feeders will be scheduled for a systematic pass to work trees that will not hold for the rest of the cycle.

ISA. International Society of Arboriculture.

kV. One thousand volts.

Lateral cut. A cut that shortens a branch to a lateral no less than one-third the diameter of the original stem and removing no more than one-half the lead's foliage.

Lead. An upright trunk or major limb with a dominant role in the tree crown, and a lateral is a branch off a parent stem

Low-growing tree species. Trees with a potential mature height under 25 feet.

Merchantable timber. Trees with a DBH of 6 inches or more, which are recoverable and have a market in the area.

Moderate-growing species. Tree species that can be expected to vertically grow between one and three feet per year under normal conditions.

MVCD. Minimum vegetation clearance distance. Maximum flash distance established by FAC-003.

Natural target. Proper final pruning cut location at a strong point in a tree's disease defense system. They are branch collars and proper laterals.

Pruning. Scientifically-based arboricultural practice of removing tree parts.

Readily climbable tree. Readily climbable trees have low limbs that are accessible from the ground and sufficiently close together so that the tree can be climbed by a child or average person without using a ladder or special equipment. Vehicles do not render trees climbable. Climbable trees should have a main stem or major branch that would support a child or average person either within arm's reach of an uninsulated energized electric line or within such proximity to the electric line that the climber could be injured by direct or indirect contact. They are located near homes, schools, parks, businesses or other locations where people (particularly children) frequent.

Refusal. A case where a property owner does not allow trees to be cleared from PacifiCorp facilities to specification.

Region A. The area in transmission rights-of-way where the wire is less than 50 feet off the ground.

Region B. The area in transmission rights-of-way where the wire is between 50 feet and 100 feet off the ground.

Region C. The area in transmission rights-of-way where the wire is more than 100 feet off the ground.

Round over. A traditional line clearing technique that lowers a tree to a specified clearance distance and sculpts it into a ball. Round overs are a damaging practice that expressly violate PacifiCorp specifications.

Sapling. Young tree under four inches in diameter.

Secondary line. Wire energized to less than 600 volts.

Service line. A secondary line that runs between the electric supply and the customer.

Shall. A mandatory requirement.

Short-growing tree. A tree with a potential mature height of 25 feet or less.

Should. An advisory recommendation.

Slash. Brush and stems under 6 inches in diameter removed from trees during vegetation management operations.

Slow-growing species. Tree species that can be expected to vertically grow less than one foot per year.

Subordination. Removing the terminal, typically upright or end portion of a parent branch or stem to slow the growth rate so other portions of the tree grow faster (Gilman 2002).

Tall-growing species. Tree species that grow to 25 feet or more at maturity.

TGR. Tree Growth Regulator. In the context of these specifications, TGR refers to chemicals that slow growth of some tree species.

Third order pruning. Utility lateral pruning on trees that have received many cycles of roundovers.

Transmission lines. Wire energized over 45 kV

Trimming. Reducing the length of toenails, hair, the amount of budgets and other things, Christmas tree decoration and unskilled removal of tree parts.

Volunteer. A naturally seeded, non-landscape tree.

Wetland. Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface (EPA 2004) http://www.epa.gov/owow/wetlands/vital/what.html.

Whorl. A node in a pine tree where three or more limbs commonly originate.

Wire zone. Right-of-way portion that is directly under the wires and within 10 feet to the field side of the outside phases (Bramble et al. 2001).

Work threshold. Distance from conductors inside of which trees should be pruned or removed during cycle work.

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Appendix C
Wildlife, Habitat, and Rare Species Survey Report

Report

McNary – Walla Walla 230-kV Transmission Line

Wildlife, Habitat, and Rare Species Survey

Prepared for

PACIFIC POWER
A DIVISION OF PACIFICORP

March 2009

CH2MHILL

Printed on Recycled and Recyclable Paper

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C Survey Results on Public Lands
D GIS Tabular Data Set for Project Area
E Breeding Bird and WGS Field Survey Sheets for Project Area

Acronyms and Abbreviations

AG	Agricultural Irrigated Cropland or Agricultural Non-irrigated Cropland
APLIC	Avian Power Line Interaction Committee
BFD	bird flight diverter
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
CRP	Conservation Reserve Program
CTUIR	Confederated Tribes of the Indian Reservation
DE	Developed
DS	Upland Deciduous Shrubs
DT	Upland Deciduous Trees
ESU	Evolutionarily Significant Unit
GN	Upland Grassland Native
GNN	Upland Grassland Non-native
GPS	geographic positioning system
HGM	hydrogeomorphic wetland assessment approach
kV	kilovolt
MBTA	Migratory Bird Treaty Act
MP	milepost
MSWRA	McNary State Wildlife Refuge Area
OAR	Oregon Administrative Rule
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ONHP	Oregon Natural Heritage Program
OSU	Oregon State University
PA	Upland Pasturelands

PEM	palustrine emergent
PFO	palustrine forested
PHS	Priority Habitats and Species
PR	Upland Prairie-steppe Complex
PSS	palustrine scrub-shrub
ROW	right-of-way
RP	Riparian Forested or Riparian Non-forested
Sand	Upland Sand
SLWP	Stateline Wind Project
SoC	Species of Concern
SR	State Route
SS	Upland Shrub-steppe
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WGS	Washington ground squirrel (*Spermophilus washingtoni*)
WP	Surface Water Ponds
WPS	Washington Priority Species
WRDA	Water Resources Department Act

SECTION 1

Introduction

Pacific Power proposes to construct a 230-kilovolt (kV) transmission line from the Bonneville Power Administration's (BPA's) McNary substation near Umatilla, Oregon, to Pacific Power's Wallula substation near Wallula, Washington, and from the Wallula substation to Pacific Power's Walla Walla substation at Walla Walla, Washington. The total line length is 54.5 miles, of which 22.4 miles are in Umatilla County, Oregon, and 32.1 miles are in Walla Walla County, Washington.

1.1 Federal Lands Crossed by Proposed Project

In Oregon, 3.01 miles of the proposed transmission line are on federal lands. The federal lands for Oregon are as specified in Table 1 (provided by milepost [MP] identification):

TABLE 1
Federal Lands in Oregon Crossed by Proposed Project

MP Start	MP End	Total Segment Miles	Landowner	Note
0.15	0.25	0.10	BPA	Fee title
0.37	0.38	0.01	Department of Interior	Canal right-of-way (ROW)
0.51	0.58	0.07	U.S. Army Corps of Engineers (USACE)	Fee title
2.56	3.08	0.52	Bureau of Land Management (BLM)	BPA rights for substation development
3.08	5.11	2.03	BPA/Confederated Tribes of the Indian Reservation (CTUIR)/Bureau of Indian Affairs (BIA)	BPA, transfer in progress
9.69	9.72	0.03	Department of Interior	Canal ROW
11.74	11.99	0.25	USACE	Fee title

In Washington, 0.12 mile of the proposed transmission line is on federal lands (Table 2). This parcel has been transferred from the U.S. Army Corps of Engineers (USACE) to the U.S. Fish and Wildlife Service (USFWS):

TABLE 2
Federal Lands in Washington Crossed by Proposed Project

MP Start	MP End	Total Segment Miles	Landowner	Note
28.30	28.42	0.12	USFWS	Transfer from USACE to USFWS under the Water Resources Department Act (WRDA) 2007. Fee title.

1.2 Purpose and Objectives

The purpose of this report is to describe the result of studies that were conducted to identify vegetation, wildlife, and wildlife habitat present within and near the project area on all lands (private and federal). It also discusses expected direct and indirect impacts of project construction and operation on these resources.

The overall objective of the field survey was to collect data on vegetation and wildlife necessary to support project permitting. The specific objectives of these studies were to:

- Identify natural resource management agency concerns regarding the proposed project, especially as they relate to rare species and habitats
- Design and conduct appropriate field studies to gather data required to address these concerns
- Assess direct and indirect impacts of the project
- Identify mitigation measures, as appropriate

Note that the general term "rare species" as used throughout the report is intended to be inclusive of all rare wildlife, plant, and aquatic species. Rare species included Endangered Species Act listed, proposed, and candidate species; Oregon or Washington rare species; Oregon Conservation Strategy Species; and Washington Priority Species. (Oregon Strategy Species and Washington Priority Species have small or declining populations or are otherwise at risk.) These lists include species identified by either state as being of concern because of population declines, habitat loss, or other factors. The official status of each rare species at both the federal and state levels is noted in tables within the report.

SECTION 2

Methods

2.1 Agency Consultation and Literature Review

Meetings and telephone interviews were held with state and federal agency biologists to identify biological issues and concerns related to the proposed transmission line project. Agencies consulted include the Oregon Department of Fish and Wildlife (ODFW), the Washington State Department of Fish and Wildlife (WDFW), and the USFWS. State and federal resource agency Web sites were reviewed to determine which rare wildlife and plant species might occur within or near the project area. Specific agency Web sites and literature are listed in the following subsections, as appropriate.

2.1.1 Field Survey Corridor

The width of the survey corridor varied, depending on the resource being addressed, as follows:

- The wildlife and vegetation (plant communities) survey corridor was 300 feet wide (150 feet on each side of the proposed centerline).
- In areas where Washington ground squirrel (*Spermophilus washingtoni;* WGS) may be present, the survey corridor was increased to 2,000 feet (1,000 feet on each side of the proposed centerline).
- Searches for raptor nests were conducted within 2 miles of the proposed transmission line corridor.

2.1.2 Field Protocol

Field surveys were conducted to identify plant communities and wildlife that occur within and near the right-of-way (ROW) (125-feet) of Pacific Power's proposed 230-kV transmission line corridor. Wildlife studies focused on rare species and their habitats. Plant communities were later assessed in terms of their wildlife habitat functions (see Subsection 2.1.3). Rare plant surveys were conducted, including surveys for Laurence's milkvetch (*Astragalus collinus* var. *laurentii*), along all segments surveyed for wildlife (see Subsection 2.1.2.2).

2.1.2.1 Plant Communities

Plant communities within the 300-foot-wide survey corridor were initially identified and mapped based on aerial photographic interpretation. Field crews used these maps to verify the plant-community types and boundaries. Corrections were made in the field to the aerial photographs for desktop redigitizing.

The minimum mapping unit for upland habitats is 10,000 square feet, or an area of approximately 100 feet by 100 feet. Areas smaller than the minimum mapping-unit size

were considered for vegetation-community mapping only if they were identified as wetland areas. Plant species composition was recorded for each of the plant-community polygons for later use in assessing the wildlife habitat value of the communities.

The locations of wildlife observations were identified and mapped with geographic positioning system (GPS) units and linked to transmission line MPs and plant-community types. Post-field analysis was used to categorize and rate these vegetation communities in Oregon and Washington based on each state's respective habitat classification system.

2.1.2.2 Rare Plants

There are no federally listed plant species protected by the Endangered Species Act for either Umatilla County, Oregon, or Walla Walla County, Washington. However, USFWS considers seven plant species to be Species of Concern (SoC). The SoC status is an unofficial status indicating that the species appears to be in jeopardy but there is insufficient information to support listing. Plant surveys along the proposed alignment were completed at the same time as pedestrian surveys for breeding birds and WGSs.[1]

Surveys for Laurence's milkvetch, which is listed by the Oregon Department of Agriculture (ODA) as threatened in Oregon and is listed by the Bureau of Land Management (BLM) as sensitive, are required on federal lands in Oregon. All parcels, including federal lands, were surveyed for this species. Laurence's milkvetch blooms from May to July. Its habitat is grassland slopes, in areas with loess deposits, or sometimes on sandy or rocky substrates. It is typically found in bluebunch wheatgrass-Idaho fescus (*Agropyron spicatum-Festuca idahoensis*) palouse grassland or canyon communities (Oregon State University [OSU] 2009). The majority of known occurrences are in roadsides adjacent to wheat lands and on canyon slopes above the streams and below farmlands. Known populations are typically found with bluebunch wheatgrass, Sandberg's bluegrass (*Poa secunda*), yarrow (*Achillea millifolium*), and long-leaf phlox (*Phlox longifolia*) (OSU 2009). No Laurence's milkvetch plants were found within the survey corridors.

No other state-listed rare plants were found within the survey corridors. Had state-listed rare plants been found, information on each occurrence would have been obtained. This protocol would have included collecting data on the site, location, number, phenology, and habitat of the occurrence.

2.1.2.3 Wildlife

Wildlife surveys focused on nontilled, nonurban land. Surveys were not conducted on actively farmed land or on fallowed lands that did not support vegetation. Fallow land is defined as tilled land that was not planted in 2008. If land was fallow but untilled and had stubble left in place from the year before, it was surveyed. If the land had been turned and left with stubble partially or wholly underground, it was not surveyed. No surveys were conducted on these lands because they have little value to native wildlife production and operation of the transmission line is expected to have few wildlife-related effects. Fallowed lands with little vegetative cover were crossed en route to other survey areas and almost no

[1] The only parcel of land not surveyed for rare plants, wildlife, and wildlife habitat was a segment inaccessible between MP 17.8 and MP 18.1.

wildlife use was observed on fallowed lands. The only noteworthy exception was the presence of a badger den in a recently plowed field that supported no vegetation.

Regardless of land use, the potential for avian collisions with power lines still exists. This potential is expected to be higher in segments that cross higher value habitats than those that cross active farmland.

Wildlife surveys included morning breeding bird counts to determine the species' richness and use of areas, focused WGS surveys, and raptor nest surveys. These surveys addressed a variety of species of concern, including long-billed curlews, sage sparrows, and grasshopper sparrows. General wildlife observations or observations of use were also recorded. Except as noted subsequently, wildlife surveys were conducted May 12–16 and May 26–30, 2008.

Bird Count Survey Protocol. Starting in the early morning, each two-person field crew walked the day's segment of the 300-foot-wide survey corridor. The observers walked approximately 75 feet on either side of the proposed centerline in straight lines parallel to the centerline (150 feet from each other, with the proposed centerline between them). They stopped every ¼ mile and completed a breeding bird point count, which includes stationary observation of birds by sight and song for 10 minutes. This protocol requires that surveys be completed in the morning between dawn and 11:00 a.m. Active survey time consisted of 10 minutes per count station. All birds heard and seen within the 10-minute period every ¼ mile were recorded as to time, distance from the observer, and activity. Singing birds were assumed to be male. Bird detections were recorded immediately upon arrival at the ¼-mile point count survey area, and new detections were recorded for 10 minutes. Birds that were heard within 75 feet of the point were recorded separately from birds heard outside 75 feet of the point. Birds flushed from the point when approaching were recorded separately from birds heard within the first 4 minutes, and birds heard within the last 6 minutes were also recorded separately. Birds observed flying over were recorded in a separate category to indicate that they were not seen in the actual point count area. However, birds that flushed from within the 75-foot-radius circle upon the observers' arrival were recorded as "inside" the detection circle. GPS coordinates for each point surveyed were collected. Map books (Appendix A) were revised after the survey to show only those species with conservation status in Oregon or Washington. Appendix B provides survey results from early raptor nest surveys with additional observations from later surveys and incidental observations. Appendix C provides results of surveys on the BLM parcel and the Wanaket Wildlife Area. Appendix D provides the tabular data set with GPS coordinates for all survey points. Appendix E provides field survey sheets for breeding bird and WGS surveys as well as incidental observations.

Protocol Consistency. CH2M HILL biologists met with Mark Kirsch, ODFW, on March 13, 2008. He provided a list of species of special concern, told us how wide various survey corridors would need to be, and explained the Oregon habitat prioritization system. Mr. Kirsch provided us with a copy of *Survey Methodologies for Sensitive, Threatened, and Endangered Species of Oregon*, the January 1994 document produced by the Habitat Conservation Division of the ODFW. ODFW uses this document to determine timing and protocol for species-by-species inventories. The Survey Methodologies document (ODFW 1994) lists the following two preferred survey periods for long-billed curlews:

- March 15 to May 1 (the courtship period)
- May 15 to June 30 (the brood-rearing period and the best time for getting female counts)

Surveys were conducted during the later period to find nesting locations. Although the objective was not to conduct a census of bird numbers or counting production numbers for curlews, there was interest in finding areas of use, particularly breeding and nesting use, because these areas are important for the long-term viability of the species. Once curlews start nesting, they have a 32-day nesting period (4 days of egg laying and 28 days of incubation). The male curlew typically calls excessively when people come within a certain distance to the nest site.

Long-billed curlews were very vocal on several occasions and at several locations during the May 12–16 and May 28 - 30, 2008, periods. Several nest sites for curlews were found and the locations were documented based on the calling. Although long-billed curlews were not observed during surveys on the Wanaket Wildlife Area, they were previously documented as nesting there (Jenny Barnette/Biologist CTUIR, personal communication, February 12, 2009). Four curlews were observed incidentally on the parcel adjacent to the Wanaket Wildlife Area on the west. They did not appear to be nesting there.

Washington Ground Squirrel Survey Protocol. At 11:00 a.m., when the last bird point count was completed for the day, each two-person crew walked back toward its starting point, surveying for WGS in an expanded 2,000-foot-wide survey corridor (1,000 feet on each side of the proposed centerline) by walking in a meandering zigzag fashion. The observers searched for indications of WGS and stopped at intervals to listen for calling WGSs, which have a distinctive call. If burrows were found but no WGSs could be seen, the crew searched for signs of fresh digging or fecal material to determine whether burrows were active. The survey took place within the survey period identified by ODFW (February 15 to May 30).

Bat Surveys. During wildlife surveys, no areas that could serve as suitable bat natal colonies within the survey corridor were identified. Therefore, nighttime bat-foraging surveys were not conducted and there is no plan to conduct any research or surveys related to bat habitat, migratory corridors, or use of the lands adjacent to the power line.

Raptor Nest Survey Protocol. Preliminary raptor nest surveys were conducted the week of April 14, 2008, for locations between 1,000 feet and 2 miles from the proposed centerline. Nests located during this survey period, where species could *not* be determined, were revisited during wildlife surveys to try to establish the species of raptor using the nest. Raptor nest surveys within 1,000 feet of the proposed centerline were conducted during the WGS survey (May 12–16 and May 26–30, 2008). The same protocol for surveys completed the week of April 14 was used, except that they were primarily pedestrian surveys. The April survey protocol involved a combination of driving and walking public access routes that were primarily between ¼ mile and 2 miles of the proposed centerline. All likely nest structures were searched with binoculars and/or a spotting scope for active raptor nests. The species of raptor using the nest was recorded if the bird was observed. Other information (including height of nest, tree species or other nest substrate, time of day, and activity) was also recorded. In addition to raptor nests, all raptors seen perched or flying anywhere along these routes were recorded. All inactive nest structures were revisited at least once to determine whether any were used later in the season.

2.1.3 Data Analysis

The following steps were undertaken to analyze field data collected within the survey corridor:

- Vegetation-type boundaries were digitized and vegetation types were mapped along the entire length of the 300-foot-wide survey corridor.
- Avian point count locations and all observations of rare wildlife species were plotted on the vegetation base maps. Rare species included Endangered Species Act listed, proposed, and candidate species; Oregon or Washington rare species; Oregon Conservation Strategy Species; and Washington Priority Species. (Oregon Strategy Species and Washington Priority Species have small or declining populations or are otherwise at risk.) These lists include species identified by either state as being of concern because of population declines, habitat loss, or other factors. The official status of each rare species at both the federal and state levels is noted in tables within the report.
- Habitat categorization was conducted following Oregon state requirements. ODFW established Habitat Categories and Mitigation Standards for use in assessing project impacts and mitigation needs (see Subsection 3.1.1). Oregon Administrative Rule (OAR) 635-415-0025 establishes six habitat categories and provides mitigation goals and implementation standards for each category; these are discussed in Subsection 3.1.1. Vegetation types within Oregon were assigned to one of the six habitat categories based on the ODFW definitions and observations of Strategy Species during field surveys. The *Oregon Conservation Strategy* (ODFW 2006) defines Strategy Species as follows:

  > "Strategy Species are identified because they are 'low and declining' or are otherwise at-risk. The purpose is to prevent these species from declining further and, where possible, to restore their populations. In some cases, these Strategy Species also indicate the diversity and health of other wildlife associated with the same habitat, but they were not chosen for that reason. As an example, greater sage-grouse are indicative of healthy sagebrush habitats, and may indicate the status of other sagebrush-associated animals such as pygmy rabbits and northern sagebrush lizards."

- Priority habitats were defined following Washington state requirements, as necessary. WDFW publishes a Priority Habitats and Species (PHS) list and a Species of Concern list (http://wdfw.wa.gov/hab/phslist.htm). The publication was updated on August 1, 2008 (WDFW 2008). WDFW describes the PHS list as follows:

  > "The PHS List is a catalog of habitats and species considered to be priorities for conservation and management. Priority species require protective measures for their perpetuation due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance."

  The Washington PHS system is discussed in Subsection 3.2.1. It was determined that certain vegetation types within Washington qualified as Priority Habitats if they met the general criteria described by WDFW or if one or more Priority Species were observed within a particular area.

SECTION 3

Findings

This section describes the plant communities, wildlife, and wildlife habitat occurring within the proposed transmission line corridor. The descriptions are separated by state because each state has its own laws, statutes, and system for rating and evaluating wildlife species and habitats, including rare species. Habitat importance or value ratings are based on species or habitat value, rarity, and need for protective measures, with each state having its own list of protected species and high value habitats.

The proposed transmission line will not cross any lands that have not been affected by human activities to some degree for 100 years or more. However, the degree of impact varies considerably, with most of the variability attributed to land use and topography. Generally, much of the land, especially in Washington, is flat enough to be farmed and has been cleared of native vegetation, plowed, and farmed at one time. Much of the land is still actively farmed. Lands that are actively farmed have little, if any, permanent cover and very low or no habitat value for wildlife. Much, though not all, of the remaining flat lands that are not currently farmed are either occupied by a variety of exotic weedy species, with only limited value for wildlife, or are enrolled in the Conservation Reserve Program (CRP).[2]

Cheatgrass brome is a dominant plant in many weedy areas. CRP lands have permanent cover and are of substantially higher value for wildlife than are farmed lands or weedy fields. The species composition of relatively flat lands that have not been plowed and farmed but have been grazed by cows or sheep has been altered. Most of these lands are in Oregon. Some native shrubs remain in these areas and the ground cover includes a few native bunch grasses and forbs, as well as cheatgrass and other weedy species. Lands within the 300-foot-wide survey corridor that are too steep to farm have also been grazed. However, these lands have retained more native plant species, especially grasses and forbs, than other grazed lands in the survey corridor.

ODFW has developed a habitat category rating system based on wildlife habitat value. These categories are described in the following subsection. Habitat Category ratings are based on the overall habitat value of an area and on the presence of rare species. For instance, a given area might have a Habitat Category 3 rating based on overall habitat value. However, if one or more rare species were observed to be using the area, the habitat value ratings would increase.

WDFW has identified habitats and species considered to be priorities for conservation and management because they require protective measures for their perpetuation. A few sites within the survey corridor in Washington are considered to be Priority Habitats even though they have been degraded by livestock grazing because they support Washington Priority Species or remnant habitats. Specifics are discussed in Section 4.2.

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[2] The CRP provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program provides assistance to farmers and ranchers in complying with federal, state, and tribal environmental laws, and encourages environmental enhancement (U.S. Department of Agriculture Natural Resources Conservation Service, 2008).

3.1 Oregon Wildlife, Habitats, and Rare Species

3.1.1 ODFW Habitat Categories and Mitigation Standards

OAR 635-415-0025 establishes six habitat categories and provides mitigation goals and implementation standards for each category. The six categories and their respective mitigation goals and implementation standards are as follows:

- **Habitat Category 1** is irreplaceable, essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population, or unique assemblage. The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality. The implementation standard recommends or requires either avoidance of impacts through alternatives to the proposed development action or no authorization of the proposed development action if impacts cannot be avoided.
- **Habitat Category 2** is essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population, or unique assemblage. The mitigation goal, if impacts are unavoidable, is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality. The implementation standard recommends or requires avoidance of impacts through alternatives to the proposed development action; or mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss of either pre-development habitat quantity or quality. In addition, a net benefit of habitat quantity or quality must be provided. Progress toward achieving the mitigation goals and standards will be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures will be implemented and completed either before or concurrent with the development action. If this cannot be achieved, ODFW will recommend against or will not authorize the proposed development action.
- **Habitat Category 3** is essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited on either a physiographic province or site-specific basis, depending on the individual species or population. The mitigation goal is no net loss of either habitat quantity or quality. The implementation standard recommends or requires avoidance of impacts through alternatives to the proposed development action; or mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress toward achieving the mitigation goals and standards will be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures will be implemented and completed either before or concurrent with the development action. If this cannot be achieved, ODFW will recommend against or will not authorize the proposed development action.
- **Habitat Category 4** is important habitat for fish and wildlife species. The mitigation goal is no net loss in either existing habitat quantity or quality. The implementation standard recommends or requires avoidance of impacts through alternatives to the proposed development action; or mitigation of impacts, if unavoidable, through reliable in-kind or

out-of-kind, in-proximity or off-proximity, habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress toward achieving the mitigation goals and standards will be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures will be implemented and completed either before or concurrent with the development action. If this cannot be achieved, ODFW will recommend against or will not authorize the proposed development action.

- **Habitat Category 5** is fish and wildlife habitat that has high potential to become either essential or important habitat. The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality. The implementation standard recommends or requires avoidance of impacts through alternatives to the proposed development action; or mitigation of impacts, if unavoidable, through actions that contribute to essential or important habitat. If this cannot be achieved, ODFW will recommend against or will not authorize the proposed development action.
- **Habitat Category 6** is habitat that has low potential to become essential or important habitat for fish and wildlife. The mitigation goal is to minimize impacts. The implementation standard recommends or requires actions that minimize direct habitat loss and avoid impacts to offsite habitat.

Table 3 summarizes the habitat category ratings for the habitat types that occur within the Oregon portion of the survey corridor.

TABLE 3
Oregon Habitat Types and Categories in the Oregon Portion of the Survey Corridor

Habitat Type	Habitat Subtype	Mapping Code	Habitat Category Rating
Agricultural	Non-irrigated Cropland	AG	6- Currently farmed croplands with low potential to become essential or important habitat.
Agricultural	Irrigated Cropland	AG	6- Irrigated pasture and row crops currently farmed with low potential to become essential or important habitat.
Agricultural	Upland Pasturelands	PA	4- Currently grazed pasture or recently abandoned pastureland that provides important wildlife habitat.
			5- Currently grazed pastureland with some wildlife habitat components. Land is typically heavily grazed and has low plant diversity and few habitat structures.
Riparian	Riparian Forested (Trees)	RP	2- Provides essential, limited habitat for wildlife (documented nest/roost habitat).
Riparian	Riparian Non-forested (Shrubs)	RP	2- Provides essential, limited habitat for wildlife (documented food/cover/nest habitat).
Upland	Deciduous Trees	DT	1- Provides irreplaceable, essential habitat for wildlife that is limited (documented food/cover/nest habitat).
			2- Provides essential, limited habitat for wildlife (documented food/cover/nest habitat).
			4- Important habitat for wildlife that is limited. Composed of patches of deciduous trees in developed areas, along roadsides, and by residences.

TABLE 3
Oregon Habitat Types and Categories in the Oregon Portion of the Survey Corridor

Habitat Type	Habitat Subtype	Mapping Code	Habitat Category Rating
Upland	Deciduous Shrubs	DS	1- Provides irreplaceable, essential habitat for wildlife that is limited (documented food/cover/nest habitat).
Upland	Prairie-steppe Complex	PR	1- Irreplaceable, essential, and limited wildlife habitat (e.g., potential WGS habitat). Native grassland dominated by prairie-steppe species. Not disturbed by grazing or farming activities. Located on steep slopes leading down to Juniper Canyon.
Upland	Sand	Sand	6- Areas devoid of vegetation and dominated by bare, exposed sand. Low potential to become important or essential wildlife habitat in the future.
Upland	Shrub-steppe	SS	1- Irreplaceable, essential, and limited habitat for wildlife (e.g., potential WGS habitat; not weedy).
			2- Essential, limited wildlife habitat (e.g., potential WGS habitat; lightly grazed and weedy).
			3- Essential or important wildlife habitat that is limited (e.g., relatively undisturbed or lightly disturbed habitat).
			4- Important wildlife habitat (e.g., moderately grazed/weedy habitat).
			5- Important wildlife habitat that is not limited in the landscape. Land has the potential to become important or essential wildlife habitat in the future.
Upland	Grassland Native	GN	3- Essential or important wildlife habitat that is limited (e.g., relatively undisturbed or lightly grazed habitat). Non-native grasses are intermixed, but natives have 25 to 50% coverage.
			4- Important wildlife habitat (e.g., moderately grazed/weedy habitat). Non-natives are dominant, with native coverage below 25%.
Upland	Grassland Non-native	GNN	2- Essential, limited wildlife habitat (e.g., potential WGS habitat; lightly grazed and weedy). Some native species and/or shrub overstory present.
			3- Essential or important wildlife habitat that is limited (e.g., relatively undisturbed habitat). Non-native grasses are intermixed with native grasses. Non-native grasses have from 50 to 75% coverage.
			4- Moderate- to low-quality wildlife habitat (e.g., moderately grazed/weedy habitat). Non-natives are dominant, with 75% or more coverage.
			5- Low-quality wildlife habitat (e.g., heavily grazed/weedy habitat). Non-natives are dominant. Land has the potential to become important or essential wildlife habitat in the future.
Developed	Man-made Structures, including Roads and Buildings	DE	6- Nonessential wildlife habitat with limited potential to become important or essential in the foreseeable future. Includes man-made structures (e.g., roads, farms, grain elevators, industrial or commercial facilities, gravel quarries).

TABLE 3
Oregon Habitat Types and Categories in the Oregon Portion of the Survey Corridor

Habitat Type	Habitat Subtype	Mapping Code	Habitat Category Rating
Surface Water	Ponds	WP	1- Irreplaceable, essential, and limited habitat for fish and wildlife.
			2- Essential and limited habitat for fish and wildlife.
Surface Water	Freshwater Wetlands	PSS, PFO, or PEM	1- Irreplaceable, essential, and limited habitat for fish and wildlife. Provides important wildlife habitat and water quality functions.
			2- Provides essential and limited habitat for fish and wildlife.

3.1.2 Status and Occurrence of Oregon Rare and Protected Species within the Survey Corridor

Table 4 summarizes rare plants, fish, and wildlife species that occur or may occur in the survey corridor within Oregon. Potential occurrence is based on the presence of suitable habitat for the species and on inclusion of the survey corridor within the range of the species. Table 4 includes species that occur in Umatilla County that are rated as S1, S2, S3, or S4 by the Oregon Natural Heritage Program (ONHP; 2008) (http://oregonstate.edu/ornhic/ornhp.html). S1, S2, and S3 species are included because they are extremely rare, uncommon, or threatened and are therefore of concern to the State of Oregon. Table 4 also includes Oregon Conservation Strategy Species listed as occurring on the Columbia Plateau, which includes Umatilla County (http://www.dfw.state.or.us/conservationstrategy/contents.asp). A few species rated as ONHP S4 are included only because they are listed as Oregon Conservation Strategy Species. S4 species are not necessarily rare at this time but there is cause for long-term concern because of habitat loss or other factors. The Oregon Conservation Strategy focuses on habitat restoration and maintenance to address the needs of game and nongame species. It provides guidance, to landowners and land managers, in improving conditions for at-risk wildlife so that they do not become threatened or endangered in the future.

A portion of the proposed transmission line is proposed within a few miles of the Stateline Wind Project (SLWP) area, and both projects cross the same types of habitats (Western EcoSystems Technology, Inc., and Northwest Wildlife Consultants, Inc., 2004 and 2007). Extensive, multi-year wildlife studies were conducted before and after construction of the SLWP. The Willow flycatcher (*Empidonax traillii*), which was documented during SLWP studies, is likely to occur in the survey corridor.

TABLE 4
Known or Expected Occurrences of Rare Species in the Oregon Portion of the Survey Corridor

Common and Scientific Name	Federal Status	ODFW/ ODA Status	ONHP Status	Documented or Potential Occurrence in the Survey Corridor
Mammals				
Townsend's big-eared bat *Corynorhinus townsendii*	SoC	Cons. Strategy Species	S3	**Not documented.** Unlikely to occur because of extremely arid desert habitat; typically found in desert scrub, pinion-juniper, and pine forests; very sensitive to disturbance.
Small-footed myotis *Myotis ciliolabrum*	SoC	SU	S3	**Not documented**. Potentially occurs in arid rangelands.
Long-legged myotis *Myotis volans*	SoC	SU	S3	**Not documented**. Unlikely to occur because species is typically found in montane coniferous forests and some desert and riparian areas.
Yuma myotis *Myotis yumanensis*	SoC		S3	**Not documented**. Habitat associations poorly understood in Eastern Oregon/Washington; sensitive to disturbance.
Pallid bat *Antrozous pallidus*	SoC	Cons. Strategy Species	S2	**Not documented**. May potentially occur. Associated with Columbia Basin desert and grassland habitats, particularly those with rocky outcrops and water nearby. During hibernation, it uses narrow crevices in caves.
Washington ground squirrel *Spermophilus washingtoni*	C	E	S2	**Not documented.** Field surveys along the entire route during May 2008 did not locate any sign of WGS activity.
Birds				
American white pelican *Pelecanus erythrorhynchos*	MBTA	SV	2B	**Documented to occur**. Reported to be nesting on dredge spoils island in Columbia River. Seen flying over the route on several occasions, flying overhead near MP 2.6 and near the mouth of Juniper Canyon.
Northern goshawk *Accipiter gentilis*	SoC MBTA	SC	S3	**Not documented**. Unlikely during winter or migration because of lack of suitable forest habitats. No nesting because of lack of suitable habitat.
Swainson's hawk *Buteo swainsoni*	MBTA	Cons. Strategy Species	S3B	**Documented to occur**. Recorded during raptor nest surveys and wildlife surveys in the spring of 2008. Breeding/migrating.
Ferruginous hawk *Buteo regalis*	SoC MBTA	Cons. Strategy Species	S3B	**Documented to occur**. Recorded during raptor nest surveys and wildlife surveys in the spring of 2008. Breeding and migration seasons.
Long-billed curlew *Numenius americanus*	MBTA	Cons. Strategy Species	S3B	**Documented to occur**. Observed at several locations during spring 2008 point count surveys; breeding/migrating; occupies grassland habitats.
Western burrowing owl *Athene cunicularia hypugea*	SoC MBTA	Cons. Strategy Species	S3B	**Documented to occur**. Recorded nesting near access road between wind farm turbine strings at the Oregon/Washington border in the spring of 2008. Breeding/migrating; found in open grassland with deep, cohesive loamy soils; coyote or badger holes.
Willow flycatcher *Empidonax traillii*	MBTA	Cons. Strategy Species	S4	**Documented to occur**. (Documented by SLWP.) Not recorded during wildlife surveys in 2008. Breeding/ migrating; riparian areas; tolerates dry conditions.

TABLE 4
Known or Expected Occurrences of Rare Species in the Oregon Portion of the Survey Corridor

Common and Scientific Name	Federal Status	ODFW/ ODA Status	ONHP Status	Documented or Potential Occurrence in the Survey Corridor
Loggerhead shrike *Lanius ludovicianus*	SoC MBTA	SV	S3B/S2	**Documented to occur**. Observed during 2008 wildlife surveys. Year-round; requires semi-open country with lookout posts.
Grasshopper sparrow *Ammodramus savannarum*	MBTA	SV/SP	S2B	**Documented to occur**. Recorded during 2008 wildlife surveys near the Walla Walla River in upland sagebrush habitat. Breeding; peak season: mid-April through July.
Brewer's sparrow *Spizella breweri*	MBTA	Cons. Strategy Species	S4B	**Documented to occur**. Recorded during wildlife surveys in 2008 in sagebrush and rabbitbrush habitat. Requires dry, brushy foothills supporting rabbitbrush (*Chrysothamnus* spp.) and sagebrush (*Artemisia tridentata*).
Sage sparrow *Amphispiza belli*	MBTA	Cons. Strategy Species	S4B	**Documented to occur**. Recorded during wildlife surveys in 2008 in sagebrush and rabbitbrush habitat. Requires dry, brushy foothills supporting rabbitbrush and sagebrush.
Tricolored blackbird *Agelaius tricolor*	SoC MBTA	SP	S2B	**Documented to occur**. Recorded at the Walla Walla River in Washington and at Wanaket Wildlife Area in Oregon during spring 2008 surveys. Breeds in cattail or bulrush marshes and forages in agricultural fields.
Amphibians and Reptiles				
Western toad *Bufo boreas*	None	SV	S3	**Not documented**. Potentially occurs in seasonally wet riparian areas during breeding. Peak season: March through July.
Woodhouse's toad *Bufo woodhousei*	None	SP	S2	**Not documented**. Potentially occurs in riparian areas.
Columbia spotted frog *Rana luteiventris*	None	SU	S2/S3	**Not documented**. Limited suitable habitat (marshy edges of ponds; pools with algae).
Northern leopard frog *Rana pipiens*	SoC	SC	S1/S2	**Not documented**. Potentially occurs in well-vegetated moist meadows, marshes, grassy woodlands.
Western painted turtle *Chrysemys picta*	None	Cons. Strategy Species	S2	**Documented to occur**. Known to occur in ponds on the Wanaket Wildlife Area. Prefers muddy-bottomed ponds or slow streams with aquatic vegetation. Not expected in streams crossed by the ROW.
Northern sagebrush lizard *Sceloporus graciosus graciosus*	SoC	Cons. Strategy Species	S4	**Not documented**. Unlikely because of absence of sandy soils and extensive sagebrush.
Fish				
Margined sculpin *Cottus marginatus*	SoC	SV	S3	No surveys conducted because the project will not affect rivers and streams.
Pacific lamprey *Lampetra tridentata*	SoC	SV	S3	No surveys conducted because the project will not affect rivers and streams.
Interior redband trout *Oncorhynchus mykiss gibbsi*	SoC	SV	S3	No surveys conducted because the project will not affect rivers and streams.

TABLE 4
Known or Expected Occurrences of Rare Species in the Oregon Portion of the Survey Corridor

Common and Scientific Name	Federal Status	ODFW/ ODA Status	ONHP Status	Documented or Potential Occurrence in the Survey Corridor
Plants				
Robinson's onion *Allium robinsonii*	SoC			**Not documented.** Potentially occurs on sand and gravel deposits along bottom and lower benches of Columbia River. Blooms April–May.
Laurence's milkvetch *Astragalus collinus* var. *laurentii*	SoC	T	S1	**Not documented**. Potentially occurs in grasslands and sagebrush slopes; most occurrences are on roadsides adjacent to wheat fields or canyon slopes below farmland; blooms May–July.
Dwarf evening-primrose C*amissonia pygmaea*	SoC			**Not documented**. Potentially occurs on unstable soil or gravel in steep talus, dry washes, banks, and road cuts. Blooms June.
Sessile mousetail *Myosurus sessilis*	SoC			**Not documented**. Limited to vernal pools and the tapering, drying feathered edges of seasonal alkali marshes; blooms March-May.
Douglas' clover *Trifolium douglasii*	SoC			**Not documented.** Potentially occurs in moist to wet meadows and forested wetlands, and stream banks. Sites are often very xeric (dry) late in the season. Large populations occur in meadows with thin soils over basalt. Blooms June-July.

Federal:
under the Endangered Species Act as published in the *Federal Register*:

E = Listed Endangered. In danger of extinction.

T = Listed Threatened. Likely to become endangered.

C = Candidate species. Sufficient information exists to support listing as Endangered or Threatened.

SoC = Species of Concern. An unofficial status, the species appears to be in jeopardy, but insufficient information to support listing.

MBTA = Migratory Bird Treaty Act

Oregon:

T = Threatened

E = Endangered

C = Candidate

SV = Sensitive Vulnerable; listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protective measures and monitoring.

SC = Sensitive Critical; listing as threatened or endangered is pending or may be appropriate if immediate conservation actions are not taken.

SU = Sensitive Status Undetermined; status is unclear, may be susceptible to population decline of sufficient magnitude that the species could qualify for endangered, threatened, critical or vulnerable status. Additional information is required before a determination can be made.

SP = Peripheral or naturally rare; low population due to naturally limiting factors; maintaining status quo for habitats and populations is minimum requirement.

ONHP:

S1 = Critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation, typically with 5 or fewer occurrences.

S2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction, typically with 6-20 occurrences.

S3 = Rare, uncommon, or threatened, but not immediately imperiled, typically with 21-100 occurrences.

S4 = Not rare and apparently secure, but with cause for long-term concern, usually with >100 occurrences.

Ex = Presumed extirpated or extinct.

B = Breeding location (nest or den)

Sources: ODFW 2006, ONHP 2006**,** ONHP 1998.

3.1.3 ODFW Habitat Categories within the Survey Corridor

3.1.3.1 Category 1 Habitat Descriptions

Six terrestrial habitat types found in the survey corridor were rated as Category 1 habitats. Upland Category 1 habitats were relatively undisturbed areas dominated by native vegetation. USFWS and ODFW rare species observed in Category 1 habitats during 2008 wildlife surveys included ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), grasshopper sparrow (*Ammodramus savannarum*), sage sparrow (*Amphispiza belli*), loggerhead shrike (*Lanius ludovicianus*), and tricolored blackbird (*Agelaius tricolor*). Rare species listed as occurring in the area but not observed during wildlife surveys include the western burrowing owl (*Athene cunicularia hypugea*). Burrowing owls were recorded nesting near an access road between wind farm turbine strings at the Oregon/Washington border in the spring of 2008. This location is just outside of the survey corridor.

Upland Deciduous Trees (DT). Category 1 upland trees were found in small groves, usually less than 1.0 acre in size. Most of these groves were located at the Wanaket Wildlife Area and were dominated by Russian olive (*Elaeagnus angustifolia*). While Russian olive is not among the best trees for wildlife, according to the ODFW habitat rating system, upland deciduous tree patches, including Russian olive, provide important and essential habitat for migratory birds and raptors. By providing overstory structure, they serve as nesting, roosting, and perching habitats. Removal of these trees would result in a decrease in habitat structure and complexity. Species associated with upland deciduous tree groves include Swainson's hawk and long-eared owl (*Asio otus*), as well as many migratory birds.

Upland Deciduous Shrubs (DS). Category 1 upland deciduous shrub patches were upland areas dominated by Russian olive and willow saplings and by trees less than 20 feet tall. These patches were usually less than 1.0 acre in size, and they were located within larger upland grassland and sagebrush habitats. The largest concentrations of upland deciduous shrubs were located at the Wanaket Wildlife Area and at the Power City Wildlife Reserve below McNary Dam. All of the shrubs at the Power City Wildlife Reserve have been planted. Other patches were scattered throughout the survey corridor. Upland deciduous shrub patches are rated as Category 1 habitats because they provide nesting, foraging, and cover habitat for rare species and are limited in the landscape.

Upland Prairie-steppe Complex (PR). Category 1 prairie-steppe complex habitats are relatively undisturbed areas dominated by native grasses and forbs. Within the survey corridor, this habitat was confined to the steep hill slopes of Juniper Canyon in Oregon and to Spring Gulch near the Oregon and Washington state boundary. Prairie-steppe complex habitats were listed as Category 1 habitats because of their limited availability in the landscape and their high value as habitat to a number of rare wildlife species. Rare species associated with this habitat include the WGS and Brewer's sparrow (*Spizella breweri*).

Upland Shrub-steppe (SS). Only one Category 1 shrub-steppe habitat type was located in Oregon within the survey corridor. Category 1 shrub-steppe habitats have a herbaceous understory and an overstory consisting of dense, mature sagebrush (*Artemisia tridentata*). Native grasses are present in the understory, but they may not be dominant. The overall level of disturbance is relatively low, as some light cattle grazing may occur. Shrub-steppe habitat is an essential and limited habitat that is used by several rare species for nesting, foraging, and shelter. Rare species observed during 2008 wildlife surveys in shrub-steppe

habitat included loggerhead shrike *(Lanius ludovicianus)* and long-billed curlew (*Numenius americanus*). WGS, sage sparrow, grasshopper sparrow, and Brewer's sparrow are documented as occurring within this habitat type in Oregon. However, no WGSs were documented during 2008 field surveys. One unknown ground squirrel was possibly heard in the only patch of this habitat during wildlife surveys in 2008. A subsequent ground squirrel survey of the area following the established protocol did not locate any ground squirrel species in the area. If a ground squirrel was heard, it is doubtful that it was a WGS because they would have been active above ground during the survey period.

Surface Water Ponds (WP). Category 1 surface water ponds were located at the Wanaket Wildlife Area. Surface water ponds were designated Category 1 habitats because they are irreplaceable, essential, and limited habitat for fish and wildlife. Rare wildlife surveyed at the ponds in 2008 included tricolored blackbirds and a nesting Swainson's hawk.

Surface Freshwater Wetlands (PEM, PSS, PFO). Category 1 surface freshwater wetlands were located at the Wanaket Wildlife Area, other properties to the west of the Wanaket Wildlife Area, and one property some distance to the east. Soil, vegetation, and hydrology were checked to ensure that each site met state and federal wetland criteria. Wetlands found in the survey corridor included palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO) wetlands. Palustrine emergent wetlands had the greatest diversity of vegetation, with *Juncus*, *Carex*, *Scirpus,* and *Typha* species being common. Palustrine scrub-shrub and forested wetlands had less diversity and were dominated by Russian olive, willow, and black cottonwood (*Populus trichocarpa*). All the Category 1 freshwater wetlands in the survey corridor supported dense wildlife concentrations. Rare species documented during 2008 wildlife surveys included tricolored blackbirds and long-billed curlews. In addition to the essential wildlife habitat they provide, freshwater wetlands are designated Category 1 habitats because of their limited occurrence in the landscape and their irreplaceability.

3.1.3.2 Category 2 Habitat Descriptions

Category 2 habitats were the most diverse of the habitats encountered, although they did not cover the most acreage. Grasslands, shrublands, open water habitats, wetlands, and riparian forests and riparian non-forests were all identified as Category 2 habitats. Category 2 habitats typically had some disturbances, either past or present, that disrupted the native species composition. Riparian Category 2 habitats were areas that provided essential, important, and limited habitat cover and structures to wildlife. Russian olive was dominant in all the Category 2 riparian areas. This species provided important overstory habitat along riparian areas and in the Wanaket Wildlife Area, where it was used for cover and nesting. Rare species observed in Category 2 grassland and shrub-steppe habitats included Swainson's hawk, loggerhead shrike, tricolored blackbird, sage sparrow, and grasshopper sparrow.

Riparian Forested (RP). Oregon Category 2 riparian forests were observed along a perennial stream in the survey corridor west of the Power City Wildlife Reserve. Russian olive was the dominant tree and shrub for all the patches, with black locust (*Robinia pseudoacacia*), willow (*Salix* spp.), and cottonwood intermixed. These patches were classified as Category 2 habitats because they provide important wildlife habitat that is limited in the landscape. Although Russian olives are non-native, within the riparian forest patches they provide

important habitat for wildlife, including nesting, forage, and cover. Removal of these trees would remove structural components in the habitat that would take 20 years or more to replace. Rare species observed in riparian forested areas during 2008 surveys included Swainson's hawk and ferruginous hawk. Nesting red-tailed hawks (*Buteo jamaicensis*), barn owls (*Tyto alba*), and long-eared owls were recorded in riparian forested habitats.

Riparian Non-forested (RP). Category 2 riparian non-forested patches are similar to riparian forested patches, except that their dominant species are shrubs or tree saplings 20 feet or less in height. Russian olive and willow were the dominant plant species in these habitats. Oregon Category 2 riparian non-forests were found bordering a perennial stream in the survey corridor west of the Power City Wildlife Reserve. These patches were classified as Category 2 habitats because they provide important wildlife habitat that is limited in the landscape. No rare species were observed in riparian non-forested areas during 2008 surveys. However, migratory birds were found using this habitat during wildlife and wetland field surveys.

Upland Deciduous Trees (DT). Category 2 upland deciduous trees occurred in small groves, 1.0 acre or less in size. Several of these groves were located at the Wanaket Wildlife Area. Others were located in upland shrub-steppe and grass pasturelands to the west of Wanaket Wildlife Area. Despite their small size and fragmented distribution through the survey corridor, upland deciduous tree patches provide important habitat for migratory birds and raptors for nesting, roosting, and foraging. Rare species associated with upland deciduous tree groves include the Swainson's hawk.

Upland Shrub-steppe (SS). Category 2 shrub-steppe habitats have an understory composed of native and/or non-native grasses, with an overstory of mature shrubs, including sagebrush and rabbitbrush (*Chrysothamnus* spp.). The sagebrush are not as dense as those found in Category 1 shrub-steppe habitats. The overall level of disturbance is low to moderate, as some light cattle grazing may occur. All areas have been historically grazed. Shrub-steppe habitat is important and limited habitat used by several rare species for nesting, foraging, and shelter. Rare species observed during 2008 wildlife surveys in Category 2 shrub-steppe habitat included loggerhead shrike, sage sparrow, and long-billed curlew.

Upland Grassland Non-native (GNN). Category 2 non-native grasslands were found in the survey corridor intermixed with shrub-steppe and deciduous tree habitats. Cheatgrass, Medusahead (*Taeniatherum caput-medusae*), and tumble mustard (*Sisymbrium* spp.) are the plant species most often encountered in non-native grassland habitats in the survey corridor. Because of the presence of an overstory and structural diversity, and use of these habitats by rare and migratory species, these habitats were rated important to wildlife. A Category 2 designation was assigned because of the presence of both an overstory and an understory, and the important nesting, roosting, and foraging habitat they provided. Species observed in this habitat type included loggerhead shrike, long-billed curlew, and sage sparrow.

Surface Water Ponds (WP). Category 2 surface water ponds were located at the Wanaket Wildlife Area. These ponds were classified as important but not essential because of the prevalence of non-native grasses and the marginal size of the emergent wetland vegetation. The non-native grasses ringing the ponds reduced the quality of the habitat and the

functions they provided. Non-native grasses included cheatgrass and Medusahead. While habitat quality was reduced, Category 2 ponds still provided key nesting, roosting, and foraging habitat for rare species and migratory birds at Wanaket Wildlife Area.

Surface Freshwater Wetlands (PEM, PSS, PFO). Category 2 surface freshwater wetlands were located at the Power City Wildlife Reserve and at the Wanaket Wildlife Area. Wetlands found in the survey corridor included palustrine emergent, palustrine scrub-shrub, and palustrine forested wetlands. Palustrine emergent wetlands had the greatest diversity of vegetation, with *Juncus*, *Carex*, *Scirpus,* and *Typha latifolia* being common. Palustrine scrub-shrub and forested wetlands had less diversity, and they were dominated by Russian olive, willow, and cottonwood. Category 2 wetlands had more disturbance than Category 1 wetlands, including light livestock grazing at Power City Wildlife Reserve and encroachment by non-native grasses at Wanaket Wildlife Area. However, all the Category 2 freshwater wetlands in the survey corridor supported dense wildlife concentrations. In addition to the important wildlife habitat that they provide, freshwater wetlands are designated Category 2 habitats because of their limited occurrence in the landscape.

3.1.3.3 Category 3 Habitat Descriptions

Category 3 habitats include native grasslands, non-native grasslands, and shrub-steppe habitats. Often, mixes of these three habitat types occurred. During those situations, both habitat types would be recorded, with the dominant habitat type being listed first. In the case of mixed native and non-native grasslands, percent coverage was calculated whenever possible for both habitat types. Rare species observed in Category 3 habitats included the long-billed curlew and Brewer's sparrow.

Upland Shrub-steppe (SS). Category 3 shrub-steppe habitats have an understory dominated by non-native grasses, although remnants of native grasses may be present. The shrub community is not as dense and/or mature as those found in Category 1 and Category 2 shrub-steppe habitats. The habitat is disturbed, often by light to moderate levels of grazing. This habitat is still important to rare wildlife species, as the shrub-steppe community provides essential nesting, roosting, and foraging habitat.

Upland Grassland Native (GN). In the survey corridor, native grassland habitats were found intermixed with non-native grassland habitats. Category 3 native grassland habitats had from 25 to 50 percent coverage of native grasses in the understory. Native grass species were primarily bunchgrasses, including Sandberg bluegrass (*Poa secunda*), bluebunch wheatgrass (*Agropyron spicatum*), and fescue (*Festuca* spp.). Despite being intermixed with non-native grasses, these habitats still provide important foraging and nesting habitat for rare species and migratory birds. Rare species documented in native grasslands during 2008 included grasshopper sparrow.

Upland Grassland Non-native (GNN). Non-native grasslands were found in the survey corridor intermixed with shrub-steppe and native grassland habitats. Category 3 non-native grass cover ranged from 50 to 75 percent in the herbaceous layer. Because of the presence of an overstory and structural diversity, and usage of these habitats by rare and migratory species, these habitats were rated important to wildlife. During these sightings, however, wildlife was observed using primarily the overstory, not the non-native grassland understory. A Category 3 designation was assigned because of the presence of both an overstory and an understory, and the important nesting, roosting, and foraging habitat they provided.

3.1.3.4 Category 4 Habitat Descriptions

Category 4 habitats are mostly mixed habitats with an understory of non-native grasses. In the survey corridor, Category 4 habitats were moderately disturbed and abundant in the landscape. Rare species identified by USFWS or ONHP as possibly occurring in the area, but that were not recorded in Category 4 habitats during 2008 wildlife surveys, included logger-head shrike and foraging Swainson's hawks. Migratory birds may also use these habitats.

Upland Deciduous Trees (DT). Category 4 upland deciduous tree patches were located in developed areas throughout the survey corridor, including along roads, surrounding homes, and within building complexes. The understory was often composed of non-native grasses, and (in a few instances) shrub-steppe habitat. The structures provided by upland deciduous tree patches may provide nesting, foraging, and roosting habitat for migratory birds and a few species of rare wildlife.

Upland Shrub-steppe (SS). In the survey corridor, shrub-steppe classified as Category 4 habitats were disturbed areas with limited scattered shrub coverage. Shrubs were not mature. The understory was a mix of non-native and native grasses, with non-native grasses being dominant. One large stretch of upland shrub-steppe surveyed had been burned within the last 2 years. The habitat was dominated by cheatgrass, with dead sagebrush shrubs scattered through the area. A few live sagebrush less than 12 inches tall were observed. This and other Category 4 shrub-steppe habitats may provide wildlife habitat for rare species such as the long-billed curlew, but their occurrence in the landscape is not limited.

Upland Grassland Native (GN). Native grasslands designated as Category 4 habitats were associated with non-native grasses. Coverage by native grasses was below 25 percent, while non-native grasses had 75 percent or greater coverage in the herbaceous layer. Habitat was provided for rare species, such as the long-billed curlew, in this relatively common vegetation type. Because of the prevalence of non-native plants and disturbance, the value of these native grassland habitats was reduced.

Upland Grassland Non-native (GNN). Category 4 non-native grasslands occurred in multiple places in the survey corridor. In some places, a non-native grass such as cheatgrass was the only plant. In other habitats, non-native grasses were intermixed and dominant over native grasses, or were the only herbaceous species beneath a shrub-steppe or deciduous tree overstory. Cheatgrass was the dominant herbaceous species in this habitat type. Fiddleneck tarweed (*Amsinckia lycopsoides*), tumble mustard, and Medusahead were also present. These habitats were disturbed, but they may provide important wildlife habitat for rare species such as the long-billed curlew.

Upland Pasturelands (PA). Category 4 upland pasturelands was a common vegetation type encountered in the survey corridor during wildlife and habitat surveys. These areas consist of recently and currently grazed lands that provide some wildlife habitat in the landscape. Vegetation found in Category 4 pastures included sagebrush, cheatgrass, and (in a few small sections) assemblages of native bluebunch grasses. Habitat was generally disturbed, with light to moderate grazing occurring. Some rare species may use the habitat for foraging, nesting, and cover. Rare species associated with habitats included in the Category 4 pasturelands classification are grasshopper sparrow, sage sparrow, ferruginous hawk, and loggerhead shrike.

3.1.3.5 Category 5 Habitat Descriptions

Category 5 habitats include habitats with little vegetative diversity or structure. They include non-native grasslands dominated by a single species and heavily disturbed shrub-steppe habitat with a non-native grass understory. No rare species were observed in Category 5 habitats. Although these habitats have the potential to become important and/or essential wildlife habitats, that is unlikely because all three habitat types are actively managed for moderate to heavy cattle grazing.

Upland Shrub-steppe (SS). In the survey corridor, Category 5 shrub-steppe included habitat that was heavily grazed. Shrubs were not mature and were scattered through the habitat. The understory was primarily cheatgrass, with Medusahead and other non-native grasses intermixed in small aggregations. There was little to no structure, and the plant composition was made up of two to three dominant non-native species.

Upland Grassland Non-native (GNN). Habitats that are dominated by one or two species of non-native grass were classified as Category 4 non-native grasslands. Two occurrences of this category were found in the survey corridor, both located in heavily disturbed areas. One was solid cheatgrass surrounding planted fields of winter wheat (*Triticum aestivum*). The second was in an area heavily grazed by cattle.

Upland Pasturelands (PA). Category 5 upland pasturelands were moderately to heavily grazed habitats that offered marginal wildlife habitat. Vegetation found in Category 5 pastures included sparse and scattered rabbitbrush, with a thick understory of cheatgrass and non-native grasses and forbs. No rare species were observed in Category 5 pastures. It is unlikely that this habitat type is used by rare species because of the lack of suitable and available structure and the high level of habitat disturbance.

3.1.3.6 Category 6 Habitat Descriptions

Category 6 habitats are limited to habitats with little to no native vegetation or wildlife value. These habitats include agricultural fields, sandy patches, and developed areas. Agricultural fields include both irrigated and non-irrigated croplands. Developed areas encompass buildings, and both paved and gravel roads.

Agricultural Irrigated Cropland (AG). Category 6 irrigated cropland was located to the east of Wanaket Wildlife Area, with scattered patches extending toward the Washington/Oregon border. These habitats were heavily disturbed, managed areas where, in most cases, native vegetation had been removed and its presence was restricted to the outskirts of the fields. Consequently, wildlife use was limited in these areas.

Agricultural Non-irrigated Cropland (AG). Category 6 non-irrigated cropland was also found in the survey corridor. The primary dry crop planted was winter wheat. Valuable wildlife habitat was very limited or nonexistent in this habitat, resulting in a Category 6 designation.

Upland Sand (Sand). Two small patches of sand were found in the survey corridor. Both patches were bare of vegetation and in a heavily grazed portion of the corridor.

Developed (DE). Category 6 developed areas offered no wildlife habitat in the survey corridor. They were not important to wildlife or limited in the landscape. Developed areas included paved and gravel roads, buildings, and other man-made structures. Native

vegetation in developed areas had been removed or disturbed. Existing vegetation was either planted non-native species or remnant native species.

3.2 Washington Wildlife, Habitats, and Rare Species

3.2.1 WDFW Priority Habitats and Species

The WDFW publishes a Priority Habitats and Species (PHS) list (http://wdfw.wa.gov/hab/phslist.htm), which it describes as follows:

> "The PHS List is a catalog of habitats and species considered to be priorities for conservation and management. Priority species require protective measures for their perpetuation due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance. Priority species include State Endangered, Threatened, Sensitive, and Candidate species; animal aggregations considered vulnerable; and those species of recreational, commercial, or tribal importance that are vulnerable. Priority habitats are those habitat types or elements with unique or significant value to a diverse assemblage of species. A priority habitat may consist of a unique vegetation type or dominant plant species, a described successional stage, or a specific structural element."

WDFW defines Priority Habitat as a habitat type with unique or significant value to many species. An area identified and mapped as Priority Habitat has one or more of the following attributes:

- Comparatively high fish and wildlife density
- Comparatively high fish and wildlife species diversity
- Important fish and wildlife breeding habitat
- Important fish and wildlife seasonal ranges
- Important fish and wildlife movement corridors
- Limited availability
- High vulnerability to habitat alteration
- Unique or dependent species

WDFW describes Priority Habitats as follows:

> "A priority habitat may be described by a unique vegetation type or by a dominant plant species that is of primary importance to fish and wildlife (e.g., oak woodlands, eelgrass meadows). A priority habitat may also be described by a successional stage (e.g., old growth and mature forests). Alternatively, a priority habitat may consist of a specific habitat element (e.g., consolidated marine/estuarine shorelines, talus slopes, caves, snags) of key value to fish and wildlife."

WDFW defines priority species as fish and wildlife species requiring protective measures and/or management guidelines to ensure their perpetuation.

Five Washington Priority Habitats occur within and adjacent to the survey corridor. These include freshwater wetlands, riparian areas, and instream habitats associated with streams and rivers; prairie-steppe habitat; and shrub-steppe habitat. The following list provides

WDFW descriptions of these Priority Habitats and information about such habitats in the Washington portion of the Survey Corridor.

- Freshwater Wetlands. These are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have one or more of the following attributes: the land supports, at least periodically, predominantly hydrophytic plants; substrate is predominantly undrained hydric soils; and/or the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year. WDFW criteria for defining wetlands as a Priority Habitat type include comparatively high fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important fish and wildlife seasonal ranges, limited availability, and high vulnerability to habitat alteration.

  The corridor crosses two small riverine flow-through wetlands. A 0.16-acre wetland is located within the corridor along the southwestern bank of the Touchet River approximately 600 feet west of Touchet Road. A 1.2-acre riverine flow-through wetland exists within the proposed route corridor along the eastern and western banks of Dry Creek, approximately 1,500 feet west of Sudbury Road. It extends outside the survey corridor to the northeast and southwest along a vegetated shelf that exists above the ordinary high water elevation of Dry Creek. Both wetlands support typical herbaceous wetland plants, and the overstory of the Dry Creek wetland is dominated by black cottonwood. Classification of the Touchet River wetland is riverine scrub/shrub (Cowardin et al. 1979). Functionally, it is a riverine flow-through wetland according to the hydrogeomorphic wetland assessment approach (HGM) as described in Brinson et al. (1995). Classification of the Dry Creek wetland is riverine emergent (Cowardin et al. 1979) and riverine flow-through HGM. Detailed wetland information is located in the *Wetland Delineation Report* (CH2M HILL, 2008).

- Riparian. Riparian describes the area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems, which mutually influence each other. In riparian systems, the vegetation, water tables, soils, microclimate, and wildlife inhabitants of terrestrial ecosystems are influenced by perennial or intermittent water. Simultaneously, the biological and physical properties of the aquatic ecosystems are influenced by adjacent vegetation, nutrient and sediment loading, and terrestrial wildlife, as well as by organic and inorganic debris. Riparian habitat encompasses the area beginning at the ordinary high water elevation and includes that portion of the terrestrial landscape that is influenced by, or that directly influences, the aquatic ecosystem. Riparian habitat includes the entire extent of the floodplain and riparian areas of wetlands that are directly connected to stream courses. WDFW criteria for defining riparian areas as a Priority Habitat include high fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important wildlife seasonal ranges, important fish and wildlife movement corridors, high vulnerability to habitat alteration, and unique or dependent species. Riparian corridors within the Washington portion of the survey corridor exist along the Touchet River, Lower Dry Creek, Spring Gulch, Mud Creek, and the Walla Walla River.

- Instream. Instream describes the combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for

instream fish and wildlife resources. WDFW criteria for defining instream areas as a Priority Habitat type include comparatively high fish and wildlife density and species diversity, important fish and wildlife seasonal ranges, limited availability, high vulnerability to habitat alteration, and dependent species. There are relatively small instream habitats associated with the Touchet River, Lower Dry Creek, and Mud Creek. The largest instream habitat area is associated with the Walla Walla River.

- Prairie-steppe. Prairie-steppe describes relatively undisturbed areas (as indicated by the dominance of native plants) where grasses and/or forbs form the natural climax plant community. WDFW criteria for defining prairie-steppe areas as a Priority Habitat include comparatively high fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important fish and wildlife seasonal ranges, limited and declining availability, high vulnerability to habitat alteration, and unique and dependent species. Prairie-steppe areas occur on a few slopes that are too steep for farming and that have never been plowed, such as from MP 0.5 to MP 2.6. Although all prairie-steppe areas have been degraded to varying degrees by livestock grazing, WDFW priority species observed in the area include a nesting ferruginous hawk. Two long-billed curlews and several grasshopper sparrows were also observed.

- Shrub-steppe. Shrub–steppe describes small tracts of land (less than 259 hectares [640 acres]) with a habitat type consisting of plant communities with one or more layers of perennial grasses and a conspicuous but discontinuous layer of shrubs. Although smaller in size and possibly more isolated from other tracts of shrub-steppe, these areas are still important to shrub-steppe obligate and other state-listed wildlife species. Another important component is habitat quality based on the degree to which a tract resembles a site potential natural community, which may include factors such as soil condition and degree of erosion; and distribution, coverage, and vigor of native shrubs, forbs, grasses, and cryptogams.

  WDFW criteria for defining shrub-steppe areas as a Priority Habitat include comparatively high fish and wildlife density and species diversity, important fish and wildlife breeding habitat and seasonal ranges, limited availability, high vulnerability to habitat alteration, and unique and dependent species. A relatively large area of shrub-steppe occurs in Washington from MP 3.3 to MP 3.7 near the Walla Walla River. The shrubs in this area consist mostly of sagebrush or rabbitbrush. The understory grasses include Sandberg bluegrass, a native bunchgrass, and annual grasses. Table 5 summarizes the habitat category ratings for the habitat types that occur within the Washington portion of the survey corridor.

TABLE 5
Washington Habitat Types and Categories in the Washington Portion of the Survey Corridor

Habitat Type	Habitat Subtype	Mapping Code	Habitat Description
Agricultural	Non-irrigated Cropland	AG	Includes current croplands or recently abandoned cropland, which may or may not provide wildlife habitat. Habitat is not limited and is typically marginal.
Agricultural	Irrigated Cropland	AG	Includes current croplands or recently abandoned cropland, which may or may not provide wildlife habitat. Habitat is not limited and is typically marginal.
Agricultural	Grazed pasture	PA	Currently grazed pastureland with some wildlife habitat components. Land is typically heavily grazed and has low plant diversity and few habitat structures.
Agricultural	Conservation Reserve Program lands	CRP	Former croplands planted to grassland in the CRP program that provide important wildlife habitat that is limited. May contain some native grass or shrub species, but non-native grasses are dominant.
Riparian	Riparian Forested (Trees)	RP	Washington State Priority Habitat. Provides irreplaceable, essential, and important habitat for wildlife that is limited. Documented use by rare species for nesting, roosting, and cover. Deciduous trees, primarily Russian olive (*Elaeagnus angustifolia*), are dominant. Riparian forested habitat is found at four locations in the study corridor—the Walla Walla River, Lower Dry Creek, the Touchet River, and Mud Creek.
Upland	Deciduous Trees	DT	Provides irreplaceable and/or essential/important habitat for wildlife that is limited. Documented use by rare species for nesting, roosting, and cover. Deciduous trees, primarily Russian olive, are dominant. Found in fragmented patches throughout the corridor. Occurs in grasslands, shrub-steppe, pasturelands, and residential areas.
Upland	Prairie-steppe	PR	Washington State Priority Habitat. Dominated by native prairie-steppe species, including Sandberg bluegrass (*Poa secunda*), bluebunch wheatgrass (*Agropyron spicatum*), and fescue (*Festuca* spp.). Potential WGS habitat. Not disturbed by grazing or agriculture. Prairie-steppe areas occur on a few slopes that are too steep for farming and that have never been plowed, such as from MP 0.5 to MP 2.6.
Upland	Sand	Sand	Areas devoid of vegetation and dominated by bare, exposed sand. Low potential to become important or essential wildlife habitat in the future.
Upland	Shrub-steppe	SS	Washington State Priority Habitat. Provides irreplaceable and/or essential/important habitat for wildlife that is limited. Documented use by rare species for nesting, roosting, and cover. Associated with an understory of native and non-native grasslands. Common near the Walla Walla River, becomes less common farther west.
Upland	Grassland Native	GN	Washington State Priority Habitat. Provides irreplaceable and/or essential/important habitat for wildlife that is limited. Documented use by rare species for nesting, foraging, and cover. Bluebunch species most common, including Sandberg bluegrass, bluebunch wheatgrass, and fescue. Non-native cheatgrass (*Bromus tectorum*) often intermixed.

TABLE 5
Washington Habitat Types and Categories in the Washington Portion of the Survey Corridor

Habitat Type	Habitat Subtype	Mapping Code	Habitat Description
Non-native Grassland	Grassland Non-native	GNN	Found throughout the study corridor in varying densities and coverage. Often intermixed with native grasses, including Sandberg bluegrass, bluebunch wheatgrass, and fescue. Usually found as the dominant herbaceous species in shrub-steppe habitats. Species include cheatgrass, Medusahead, and fiddleneck tarweed.
Developed	Developed Structures, including Roads and Buildings	DE	Non-essential wildlife habitat with limited potential to become important or essential in the foreseeable future. Includes man-made structures (e.g., roads, farms, grain elevators, industrial or commercial facilities, gravel quarries).
Surface Water	Ponds	WP	Provides irreplaceable and/or essential/important habitat for wildlife that is limited. Documented use by rare species for nesting, foraging, and roosting. Open water habitats ringed by emergent and woody vegetation. Cattails (*Typha latifolia*), bulrush (*Scirpus* spp.), Russian olive, and willows (*Salix* spp.) are common on the banks. Does not meet all the criteria to qualify as a wetland.
Surface Water	Freshwater Wetlands	PSS, PFO, or PEM	Washington State Priority Habitat. Provides irreplaceable and/or essential/important habitat for wildlife that is limited. Documented use by rare species for nesting, roosting, and foraging. Meets the hydric soil, vegetation, and hydrology criteria to qualify as a wetland. Includes palustrine emergent, scrub-shrub, and forested wetlands located at Wanaket Wildlife Area and at Power City Wildlife Reserve.
Surface Water	Instream Habitats	IS	The largest instream habitat area is associated with the Walla Walla River. Others include the Touchet River, Lower Dry Creek, and Mud Creek. None will be directly impacted by the project.
Surface Water	Intermittent Streams	WS	Provides irreplaceable and/or essential/important habitat for wildlife that is limited. Documented use by rare species. Water present during part of the year for a long enough period of time to provide habitat for wildlife.

3.2.2 Status and Occurrence of Washington Rare and Protected Species within the Survey Corridor

Table 6 includes Washington Priority Species that may occur within or near the survey corridor. Table 6 was developed from the WDFW catalog of priority species (WDFW 2008) available at (http://wdfw.wa.gov/hab/phs/phs_list_2008.pdf). Table 6 includes only Washington Priority Species that meet WDFW Criterion 1 or Criterion 2, the definitions of which follow:

- **Criterion 1**. **State-listed and Candidate Species**. State-listed species are native fish and wildlife species legally designated as Endangered (Washington Administrative Code [WAC] 232-12-014), Threatened (WAC 232-12-011), or Sensitive (WAC 232-12-011). State Candidate species are fish and wildlife species that will be reviewed by the department (WDFW) (POL-M-6001) for possible listing as Endangered, Threatened, or Sensitive according to the process and criteria defined in WAC-232-12-297.

- **Criterion 2**. **Vulnerable Aggregations**. Vulnerable aggregations include species or groups of animals susceptible to significant population declines, within a specific area or statewide, by virtue of their inclination to aggregate. Examples include heron rookeries, seabird concentrations, marine mammal haul-outs, shellfish beds, and fish spawning and rearing areas.

TABLE 6
Known or Expected Occurrences of Rare Species in the Washington Portion of the Survey Corridor

Common and Scientific Name	Federal Status	State Status	WPS Criterion (Animals) or Heritage Program Rank (Plants)	Documented or Potential Occurrence in the Survey Corridor
Mammals				
Merriam's shrew *Sorex merriami*	None	C	1	**Not documented**. Not known to occur in the southern portion of Walla Walla County.
Preble's shrew *Sorex preblei*	SoC	C	1	**Not documented.** Suitable habitat may occur in remnant prairie-steppe and shrub-steppe habitats.
Townsend's big-eared bat *Corynorhinus townsendii*	SoC	C	1, 2	**Not documented**. This is a cave bat that is known to prefer moist conifer forest habitats and is less often found in dry shrub grasslands.
Washington ground squirrel *Spermophilus washingtoni*	C	C	1	**Not documented**. CH2M HILL biologists conducted surveys in spring 2008 and did not detect the WGS. This species is known to occur in the vicinity of the proposed project area.
White-tailed jackrabbit *Lepus townsendii*	None	C	1, 3	**Not documented**. Some habitat for these rabbits is present in the survey corridor. Jackrabbit sign was noted by CH2M HILL biologists during spring 2008 avian point count surveys. A jackrabbit was observed during avian point count surveys, but the species could not be identified.
Black-tailed jackrabbit *Lepus californicus*	None	C	1, 3	**Not documented**. Some habitat for these rabbits is present in the survey corridor. Jackrabbit sign was noted by CH2M HILL biologists during spring 2008 avian point count surveys. A jackrabbit was observed during avian point count surveys, but the species could not be identified.
Birds				
American white pelican *Pelecanus erythrorhynchos*	MBTA	E	1, 2	**Documented to occur**. Several were observed flying low over the survey corridor in Oregon during avian point count surveys conducted by CH2M HILL biologists in May 2008. No nesting or foraging habitat within or near the survey corridor.
Black-crowned night heron *Nycticorax nycticorax*	None	None	2	**Not Documented.** Potential foraging areas in wetland habitats along the proposed transmission line route. No rookeries present within or near the survey corridor. Documented on the Wanaket Wildlife Area in Oregon, but not in found on the Washington segment.

TABLE 6
Known or Expected Occurrences of Rare Species in the Washington Portion of the Survey Corridor

Common and Scientific Name	Federal Status	State Status	WPS Criterion (Animals) or Heritage Program Rank (Plants)	Documented or Potential Occurrence in the Survey Corridor
Great blue heron *Ardea herodias*	None	None	2	**Not Documented.** Potential foraging areas in wetland habitats along the proposed transmission line route. No rookeries present within or near the survey corridor.
Sharp-tailed grouse *Tympanuchus phasianellus*	SoC MBTA	T	S1	**Not documented.** Unlikely to occur. Does not appear on the U.S. Geological Survey (USGS) list for Walla Walla County.
Greater sage-grouse *Centrocercus urophasianus*	C MBTA	T	S1	**Not documented**. Not expected because of lack of suitable habitat. Does not appear on the USGS list for Walla Walla County.
Northern goshawk *Accipiter gentilis*	SoC MBTA	C	S1	**Not documented**. Very low potential to occur in the survey corridor. Possible use of the riparian vegetation along the Walla Walla River during winter or migration. Does not breed in or near the survey corridor.
Bald eagle *Haliaeetus leucocephalus*	SoC MBTA	S	1	**Not documented**. Potential to occur in survey corridor. WDFW does not list any nesting territories near the survey corridor.
Ferruginous hawk *Buteo regalis*	SoC MBTA	T	1	**Documented to occur**. Observed to be nesting near the survey corridor during avian point count surveys conducted by CH2M HILL biologists in spring 2008.
Golden eagle *Aquila chrysaetos*	MBTA	C	1	**Not documented.** Suitable nesting habitat exists along the Columbia River, and foraging may occur in the survey corridor.
Peregrine falcon *Falco peregrinus*	SoC MBTA	S	1	**Not documented.** Unlikely to occur in survey corridor. This falcon rarely occurs in Walla Walla County.
Upland sandpiper *Bartramia longicauda*	MBTA	E	1	**Not documented.** May breed and/or migrate through area; uses grassy prairies, open meadows, and fields.
Yellow-billed cuckoo *Coccyzus americanus*	C MBTA	C	1	**Not documented.** Very unlikely to occur. Not documented in Washington since the 1930s. No suitable breeding habitat.
Western burrowing owl *Athene cunicularia hypugea*	SoC MBTA	C	1	**Documented to occur**. Recorded nesting near access road between wind farm turbine strings at the Oregon/Washington border (CH2M HILL 2008). Breeding/migrating; found in open grassland with deep, cohesive loamy soils; coyote or badger holes.
Vaux's swift *Chaetura vauxi*	MBTA	C	1	**Not documented.** Potential to occur in survey corridor.
Loggerhead shrike *Lanius ludovicianus*	SoC MBTA	C	1	**Documented to occur**. Observed during avian point count surveys conducted by CH2M HILL biologists in spring 2008.

TABLE 6
Known or Expected Occurrences of Rare Species in the Washington Portion of the Survey Corridor

Common and Scientific Name	Federal Status	State Status	WPS Criterion (Animals) or Heritage Program Rank (Plants)	Documented or Potential Occurrence in the Survey Corridor
Sage sparrow *Amphispiza belli*	MBTA	C	1	**Not documented.** Unlikely to occur in the Washington portion of the survey corridor due to the lack of intact sagebrush stands in Washington. Sage sparrows observed in the Oregon portion of the survey corridor.
Sage thrasher *Oreoscoptes montanus*	MBTA	C	1	**Not documented.** Unlikely to occur in the Washington portion of the survey corridor due to the lack of intact sagebrush stands in Washington.
Amphibians and Reptiles				
Rocky mountain tailed frog *Ascaphus montanus*	SoC	C	1	**Not documented.** Unlikely to occur as it prefers clear, cold, swift-moving mountain streams with coarse substrate; primarily in older forested areas.
Western toad *Bufo boreas*	C	C	1	**Not documented**. Potentially occurs in seasonally wet riparian areas during breeding. Peak season: March through July.
Columbia spotted frog *Rana luteiventris*	None	C	1	**Not documented**. Unlikely due to limited suitable habitat. Requires deep pools and abundant herbaceous vegetation and algae, including marshy edges of ponds and pools with algae.
Northern leopard frog *Rana pipiens*	SoC	E	1	**Not documented**. Potentially occurs in well-vegetated wet meadows, marshes, grassy woodlands, and riparian areas. Found along the Columbia River in Walla Walla County.
Striped whipsnake *Masticophis taeniatus*	None	C	1	**Not documented.** Potentially occurs in shrub-steppe habitat. Found in Walla Walla County along Columbia River. Rare in Washington; inhabits relatively undisturbed native grasslands, sagebrush plats, and dry rocky canyons.
Northern sagebrush lizard *Sceloporus graciosus graciosus*	SoC	C	1	**Not documented**. Unlikely due to absence of sandy soils and extensive sagebrush. Mostly avoids communities dominated by rabbitbrush and cheatgrass.
Fish				
Bull trout—Columbia River population *Salvelinus confluentus*	T	C	1, 2, 3	According to WDFW, bull trout occur in the Walla Walla River. No surveys conducted because the project will not affect rivers and streams.
Steelhead—lower Columbia River ESU *Oncorhyncus mykiss*	T	C	1, 3	No surveys conducted because the project will not affect rivers and streams.
Steelhead—middle Columbia River ESU *O. mykiss*	T	C	1, 3	According to WDFW, steelhead occur in the Walla Walla River. No surveys conducted because the project will not affect rivers and streams.
Steelhead—Snake River ESU *O. mykiss*	T	C	1, 3	No surveys conducted because the project will not affect rivers and streams.

TABLE 6
Known or Expected Occurrences of Rare Species in the Washington Portion of the Survey Corridor

Common and Scientific Name	Federal Status	State Status	WPS Criterion (Animals) or Heritage Program Rank (Plants)	Documented or Potential Occurrence in the Survey Corridor
Margined sculpin *Cottus marginatus*	SoC	S	1	No surveys conducted because the project will not affect rivers and streams.
Plants				
Bristly sedge *Carex comosa*	None	S	S2	**Not documented.** Restricted to wet habitats: wet meadows, lake margins, ditches. Last documented in Walla Walla County prior to 1977. Blooms July-August.
Plumed clover *Trifolium plumosum* var. *plumosum*	None	T	S1	**Not documented.** Grows on dry hillsides and meadows with ponderosa pine. Only known occurrences in Washington are in Walla Walla County on private land. Blooms June-July.
Prairie lupine *Lupinus cusickii*	SoC	R2	S1	**Not documented.** Unlikely to occur. Found on eroding tuffaceous (decomposed lava) soils on hillsides in the Blue Mountains of Oregon. Blooms in July.
Sabin's lupine *Lupinus sabinianus*	None	E	S1	**Not documented.** Unlikely to occur as habitat does not occur in survey corridor. Occurs in coniferous forest or transition grasslands on recently disturbed soils or road cuts in the Blue Mountains. Blooms late May-Early June.
Snake Canyon desert parsley *Lomatium serpentium*	None	S	S2	**Not documented.** Unlikely to occur as regional endemic found along the Snake River and its tributaries. Washington occurrences are in shady areas on old floodplains with either granite or basalt substrate. Grows mostly within rock crevices or clefts on steep slopes. Last documented in Walla Walla County prior to 1977. Blooms April-July.
Beaked cryptantha *Cryptantha rostellata*	None	T	S2	**Not documented.** Prefers open, dry drainages with coarse substrate. Last documented in Walla Walla County prior to 1977. Blooms late April to mid-June.
Gray cryptantha *Cryptantha leucophaea*	SoC	S	S2S3	**Not documented**. Unlikely to occur due to lack of suitable habitat. Found on sandy substrates, especially sand dunes that are not completely stabilized. Dependent on strong winds and the availability of open sand. Blooms May-June.
Pulsifer's monkeyflower *Mimulus pulsiferae*	None	S	S2	**Not documented**. Unlikely to occur due to lack of suitable habitat. Found in seasonally wet, open areas on exposed mineral soils, in grass/forb-dominated openings in conifer forests. Last documented in Walla Walla County prior to 1977.

TABLE 6
Known or Expected Occurrences of Rare Species in the Washington Portion of the Survey Corridor

Common and Scientific Name	Federal Status	State Status	WPS Criterion (Animals) or Heritage Program Rank (Plants)	Documented or Potential Occurrence in the Survey Corridor
Federal Status: under the Endangered Species Act as published in the *Federal Register*: E = Listed Endangered. In danger of extinction. T = Listed Threatened. Likely to become endangered. C = Candidate species. Sufficient information exists to support listing as Endangered or Threatened. SoC = Species of Concern. An unofficial status, the species appears to be in jeopardy, but insufficient information to support listing. MBTA = Migratory Bird Treaty Act.		**State Status**: is determined by the Washington Natural Heritage Program, Washington State Department of Fish and Wildlife, and National Marine Fisheries Service. Factors considered include abundance, occurrence patterns, vulnerability, threats, existing protection, and taxonomic distinctness. Values include: E = Endangered. In danger of becoming extinct or extirpated from Washington. T = Threatened. Likely to become Endangered in Washington. S = Sensitive. Vulnerable or declining and could become Endangered or Threatened in the state. R1 = Review group 1. Of potential concern but needs more field work to assign another rank. R2 = Review group 2. Of potential concern but with unresolved taxonomic questions.		**Washington Priority Habitats and Species Criterion for Animals** Criterion 1. State-Listed and Candidate Species: State-listed species are native fish and wildlife species legally designated as Endangered (WAC 232-12-014), Threatened (WAC 232-12-011), or Sensitive (WAC 232-12-011). State Candidate species are fish and wildlife species that will be reviewed by the department (WDFW) (POL-M-6001) for possible listing as Endangered, Threatened, or Sensitive according to the process and criteria defined in WAC- 232-12-297. Criterion 2. Vulnerable Aggregations: Vulnerable aggregations include species or groups of animals susceptible to significant population declines, within a specific area or statewide, by virtue of their inclination to aggregate. Examples include heron rookeries, seabird concentrations, marine mammal haulouts, shellfish beds, and fish spawning and rearing areas. **Natural Heritage Program Rank for plants**: characterizes the relative rarity or endangerment within the state of Washington. Two codes (e.g., S1S2) represent an intermediate rank. S1 = Critically imperiled (5 or fewer occurrences). S2 = Imperiled (6 to 20 occurrences), very vulnerable to extirpation. S3 = Rare or uncommon (21 to 100 occurrences). SN = Regularly occurring, usually migratory, nonbreeding animals. SNR = Not yet ranked.

ESU = Evolutionarily Significant Unit

WPS = Washington Priority Species

Sources:
WDFW 2008, Western EcoSystems Technology, Inc., and Northwest Wildlife Consultants, Inc. 2004, and multiple Web references listed in Section 5, References.

The Washington Priority Species list includes several species that occur only in other parts of eastern Washington but that do not occur within or near the project area. For instance, woodland caribou, Canada lynx, and grizzly bears occur in extreme northeastern Washington but do not occur anywhere near the project area. Species such as these, for which there is no possibility of occurrence in the vicinity of the project area, are not included in Table 6. In addition, there are several waterfowl species listed as Washington Priority Species.

The McNary State Wildlife Refuge Area (MSWRA) provides habitat for many species of wildlife, especially as a resting and feeding area for migrating waterfowl. The most common species are Canada geese and mallards; large concentrations can be seen from November through February. The MSWRA is located on USFWS lands just north of State Route (SR) 12 and east of Wallula junction, along the Columbia and Walla Walla rivers. The proposed transmission line will cross a small corner section of these lands consisting of upland shrub-steppe habitat that extends south across SR 12 between MP 28.3 and MP 28.4. No construction or placement of transmission towers will occur on these lands; therefore, impacts will be limited to an 800-foot span across the southeastern-most corner of these lands. The nearest wetlands within the MSWRA are located about 800 feet north of the proposed centerline, and there are no wetlands within the survey corridor. Very little waterfowl habitat exists within the survey corridor in Washington, and none of the habitat will be directly or indirectly affected by the project. Therefore, waterfowl that are listed as Washington Priority Species are not included in Table 6. Potential impacts from waterfowl collisions with the transmission line are discussed in the impact analysis (see Section 4.2).

Table 7 lists fish species present in the Walla Walla River and its tributaries (Dry Creek, Mud Creek, and the Touchet River).

TABLE 7
Fish Species Present in the Walla Walla River and its Tributaries

Common Name	Scientific Name	Origin[a]	Occurrence	Federal Listing
Bull trout	*Salvelinus confluentus*	N	Common	Threatened
Spring chinook	*Oncorhynchus tshawytscha*	H	Rare	
Fall chinook	*Oncorhynchus tshawytscha*	H	Rare	
Summer steelhead	*Oncorhynchus mykiss*	N	Common	Threatened
Redband trout	*Oncorhynchus mykiss*	N	Common	
Mountain whitefish	*Prosopium williamsoni*	N	Rare	
Brown trout	*Salmo trutta*	E	Rare	
Lamprey	*Petromyzontidae*	N	Uncommon	
Longnose dace	*Rhinichthys cataractae*	N	Rare/Insufficient data	
Speckled dace	*Rhinichthys osculus*	N	Abundant	
Umatilla dace	*Rhinichthys Umatilla*	N	Insufficient data	
Leopard dace	*Rhinichthys falcatus*	N	Insufficient data	
Chiselmouth	*Acrocheilus alutaceus*	N	Common	
Peamouth	*Mylocheilus caurinus*	N	Insufficient data	
Redside shiner	*Richardsonius balteatus*	N	Common	
Northern pikeminnow	*Ptychocheilus oregonensis*	N	Common	

TABLE 7
Fish Species Present in the Walla Walla River and its Tributaries

Common Name	Scientific Name	Origin[a]	Occurrence	Federal Listing
Sucker	*Catostomidae*	N	Common	
Carp	*Cyprinus carpio*	E	Rare/Insufficient data	
Bullhead catfish	*Ameiurus nebulosus*	E	Rare/Insufficient data	
Tadpole madtom	*Notorus gyrinus*	E	Rare/Insufficient data	
Channel catfish	*Ictalurus natalis*	E	Common/Insufficient data	
Smallmouth bass	*Micropterus dolomieu*	E	Common/Insufficient data	
Largemouth bass	*Micropterus salmoides*	E	Rare/Insufficient data	
Pumpkinseed	*Lepomis gibbosus*	E	Insufficient data	
Bluegill	*Lepomis macrochirus*	E	Rare/Insufficient data	
White crappie	*Pomoxis annularis*	E	Common/Insufficient data	
Black crappie	*Pomoxis nigromaculatus*	E	Common/Insufficient data	
Warmouth	*Lepomis gulosus*	E	Insufficient data	
Yellow perch	*Perca flavescens*	E	Insufficient data	
Paiute sculpin	*Cottus beldingi*	N	Common	
Margin sculpin	*Cottus marginatus*	N	Common	
Torrent sculpin	*Cottus rhotheus*	N	Rare	
3-spine stickleback	*Gasterosteus anculeatus*	E	Rare/Insufficient data	
Sandroller	*Percopsis transmontana*	N	Insufficient data	

[a] Origin: N = native stock, E = exotic, H = hatchery reintroduction

[b] Occurrence based on average number of fish per 100 square meters—abundant, common, rare, uncommon, and insufficient data

Sources:

G. Mendel, WDFW, in Saul et al. 2001.

Walla Walla Critical Area Ordinance 2008 Update, 2008.

3.3 Raptor Survey Findings

Table 8 provides details of raptor survey results. Appendix B provides the mapped points of the raptor survey results. These maps include both occupied and unoccupied nest sites and individual bird sightings with no nest sites. Survey points for nests are almost never directly under the nest tree. Points were taken at a distance to minimize stress on nesting pairs or young.

Ten species of raptors (85 individuals) were observed during raptor and breeding bird surveys. Eight species of raptors were observed along the Oregon portion of the 2-mile-wide survey corridor and seven species along the Washington portion of the corridor. Species observed on the Oregon portion included ferruginous hawk, red-tailed hawk, Swainson's hawk, sharp-shinned hawk, osprey, great-horned owl, long-eared owl, barn owl, and American kestrel. Species observed along the Washington portion included ferruginous hawk, red-tailed hawk, Swainson's hawk, northern harrier, great-horned owl, prairie falcon, and American kestrel.

Twenty-two raptor nests were found. Eighteen of these nests had active nesting occurring when observed. Three species were observed nesting along the Oregon portion—red-tailed hawk, ferruginous hawk, and long-eared owl. Four species were observed nesting along the Washington portion—red-tailed hawk, Swainson's hawk, ferruginous hawk, and great-horned owl.

3.4 Rare Plants

No rare plants were found during any of the plant surveys.

3.5 Summary of Findings

No WGSs were found within the survey corridor during two weeks of field surveys conducted during May 2008. Several rare and protected wildlife species were identified within the survey corridor in both Oregon and Washington (Tables 4 and 6). Eighteen of 22 raptor nests located during surveys were active during the 2008 nesting season. The ROW crosses several high priority habitat types in both Oregon and Washington. The majority of lands that the proposed line would cross have either been substantially degraded from pre-settlement conditions or completely transformed for agricultural uses. The least degraded habitats include the Wanaket Wildlife Area (MP 3.08 to MP 5.11), remnant shrub communities, and slopes that are too steep to farm. The Wanaket Wildlife Area includes created wetlands that provide very high value wildlife habitat for a wide range of species. Several weedy species are among the most prominent plants in upland areas that are not actively farmed. No rare plants were found during any of the plant surveys.

TABLE 8
Raptor Species Identification and Observation

Map ID	State	Species Identification	Scientific Name	Number	Sex[a]	Nest Observation	Age[b]	Activity	Habitat	Habitat	Lat	Long
1	OR	Unknown		0		Yes			Farmstead tree	Nest in farmstead setting	45.8808161500	-119.1822645200
2	OR	Ferruginous hawk	*Buteo regalis*	1	Unk	No	A	Soaring overhead	Farmstead tree	Heavily treed farmland	45.8813732100	-119.1822371100
3	**OR**	**Red-tailed hawk**	*Buteo jamaicensis*	2	1M & 1F	Yes	A	Nesting	Farmstead tree	Heavily treed farmland	45.9023723900	-119.2235941700
4	OR	Ferruginous hawk	*Buteo regalis*	1	Unk	No	A	Flying overhead	Riparian tree	Grassland with stringers of shrubs, trees, and ponds.	45.9005329000	-119.2447724800
5	OR	Unknown		0	Unk	Yes		Unoccupied nest	Riparian tree	Grassland with stringers of shrubs, trees, and ponds.	45.8935786000	-119.2660679600
6	OR	Red-tailed hawk	*Buteo jamaicensis*	1	Unk	No	A	Flying	Grassland	Cheatgrass	45.9020778500	-119.1373263700
7	OR	Unknown		0		Yes		Unoccupied nest	Riparian tree	Nest in large willow tree, appears unoccupied	45.8936797700	-119.2898744900
8	OR	Ferruginous hawk	*Buteo regalis*	1	Unk	No	A	Flying overhead	Riparian tree	Grass with trees.	45.9274896000	-119.3052965200
9	OR	Ferruginous hawk	*Buteo regalis*	1	Unk	No	A	Flying overhead	Upland tree	Juniper canyon mouth with wetland and upland veg.	45.9557512000	-119.0358113800
10	**OR**	**Red-tailed hawk**	*Buteo jamaicensis*	1	Unk	Yes	A	Nesting	Grassland	Nest on Pole 270 cheatgrass	45.9020154900	-119.1394520200
11	**OR**	**Red-tailed hawk**	*Buteo jamaicensis*	4	1M, 1F, & 2Unk	Yes	2A, 2Y	Nesting	Shrub steppe	Sagebrush with cheatgrass understory	45.9203665000	-119.1038582700
12	OR	Red-tailed hawk	*Buteo jamaicensis*	2	1M & 1F	No	A	Flying	Grassland	Cheatgrass, recently burned	45.9229702500	-119.0619509300
13	OR	Red-tailed hawk	*Buteo jamaicensis*	2	1M & 1F	No	A	Flying	Grassland	Sandberg's bluegrass, cheatgrass and mustard	45.9441695100	-119.0065396800
14	OR	Swainson's hawk	*Buteo swainsoni*	1	Unk	No	A	Flying overhead	Agricultural	Grassland with trees	45.9102243100	-119.2702272300
15	OR	Swainson's hawk	*Buteo swainsoni*	3	Unk	No	A	Flying overhead	Shrub steppe		45.9106388800	-119.2745516200
16	OR	Sharp-shinned hawk	*Accipiter striatus*	1	Unk	No	A	Flying overhead	Upland tree	Sagebrush, cheatgrass with Russian olive	45.9083181800	-119.2578453900
17	OR	Osprey	*Pandion haliaetus*	1	Unk	No	A	Flying	Grassland / Riparian tree		45.9102223800	-119.2697943800
18	OR	Swainson's hawk	*Buteo swainsoni*	2	1M & 1F	No	A	Flying overhead & calling	Grassland	Grassland with trees	45.9102297600	-119.2702386200
19	WA	American kestrel	*Falco sparverius*	2	1M & 1F	No	A	Courtship	Grassland	Post near US-12 in grassy area near sagebrush	46.0700408800	-118.7669061800
20	OR	Swainson's hawk	*Buteo swainsoni*	2	Unk	No	A	Flying overhead	Shrub steppe	Rabbitbrush and cheatgrass	45.9111257000	-119.2744026700
21	OR	American kestrel	*Falco sparverius*	1	Unk	No	A	Flying	Riparian tree	Marshy with Russian olive	45.9095808300	-119.2595403000
22	OR	Red-tailed hawk	*Buteo jamaicensis*	1	Unk	No	A	Flying	Grassland		45.9084781100	-119.2483038500
23	**OR**	**Long-eared owl**	*Osio otus*	5	1M, 1F, & 3Unk	Yes	2A, 3Y	On nest	Upland tree	Russian olive	45.9057742700	-119.2338745800
24	OR								Upland tree	Russian olive	45.9056990000	-119.2310119900
25	**OR**	**Red-tailed hawk**	*Buteo jamaicensis*	5	Unk	Yes	1A, 4Y	Nesting	Riparian tree	Russian olive and dead cottonwood	45.9050836000	-119.2240323800
26	OR	Great-horned owl	*Bubo virginianus*	2	Unk	No	A	Perched	Riparian tree	Russian olive	45.9034296000	-119.2125081800
27	**OR**	**Ferruginous hawk**	*Buteo regalis*	3		Yes	1A, 2Y	1 on nest with downy young	Grassland	Dead cottonwood in untilled grassy swale.	45.9476045800	-119.0017412000
28	**OR**	**Red-tailed hawk**	*Buteo jamaicensis*	4	1M, 1F, & 2Unk	Yes	2A, 2Y	Nesting	Grassland	Nest on power pole	45.9004978600	-119.2626319600
29	OR	Red-tailed hawk	*Buteo jamaicensis*	1	Unk	No	A	Flying	Riparian tree / Marsh	Cattails, Russian olive, weedy upland	45.9013414200	-119.2723131500
30	**WA**	**Red-tailed hawk**	*Buteo jamaicensis*	5	M & F	Yes	2A, 3Y	2 adults feeding downy young	Riparian tree	Cottonwood tree in agricultural land along Touchet River	46.0488462400	-118.6691028600
31	WA	Nest: occupied, unknown raptor		1	Unk	Yes	A	1 adult on nest	Riparian tree	Cottonwood tree near Touchet River	46.0644583700	-118.6688763800
32	WA	Swainson's hawk	*Buteo swainsoni*	1	Unk	No	A	Flying	Riparian tree	Over Touchet River	46.0675759300	-118.6678027500
33	WA	Swainson's hawk	*Buteo swainsoni*	3	2M & 1F	No	A	Nuptial flying and skirmishing	Riparian tree	Over Touchet River	46.0703281300	-118.6694704900
33	WA	American kestrel	*Falco sparverius*	1	Unk	No	A	Flying	Riparian tree	Over Touchet River	46.0703281300	-118.6694704900
34	WA	Unknown		1	Unk	Yes	A	1 adult on nest	Riparian tree	Cottonwood tree North of Touchet River Rd	46.1122130900	-118.6561239000
35	WA	American kestrel	*Falco sparverius*	1	Unk	No	A	Flying	Riparian tree / Marsh	Walla Walla River	46.0610023400	-118.8607959800
36	WA	Northern harrier	*Circus cyaneus*	2	1M & 1F	No	A	Hunting	Riparian tree / Marsh	Marshes and riparian trees cottonwood Wallula Wildlife Management Unit	46.0680968700	-118.9020213700
36	WA	American kestrel	*Falco sparverius*	1	Unk	No	A	Perched and flying	Riparian tree / Marsh	Marshes and riparian trees cottonwood	46.0680968700	-118.9020213700
37	**WA**	**Red-tailed hawk**	*Buteo jamaicensis*	2	1M & 1F	Yes	A	1 on nest; 1 calling overhead	Upland tree	Locust tree	46.0610068700	-118.8607943900
38	**WA**	**Red-tailed hawk**	*Buteo jamaicensis*	1	Unk	Yes	A	On nest	Riparian tree	Cottonwood tree riparian zone of Walla Walla River	46.0629965600	-118.8872824600
39	WA	Red-tailed hawk	*Buteo jamaicensis*	1	Unk	No	A	Perched	Riparian tree	Cottonwood tree riparian zone of Walla Walla River	46.0676896800	-118.8747944300
40	WA	Unknown		0		Yes			Urban tree	Nest in urban setting: Walla Walla	46.0563152700	-118.3330046400
41	WA	Red-tailed hawk	*Buteo jamaicensis*	1	Unk	No	A	Soaring	Agricultural	Woodward Canyon mostly agriculture	46.1015365600	-118.5821396100
42	**WA**	**Great horned owl**	*Bubo virginianus*	2	Unk	Yes	1A, 1+Y	Young in nest with adult	Agricultural	Woodward Canyon mostly agriculture	46.0751029700	-118.6168715400
43	WA	Nest: occupied, unknown raptor		1	Unk	Yes	A	1 adult on nest	Riparian tree	Dry Creek riparian area	46.0676015800	-118.5362956300
44	WA	Swainson's hawk	*Buteo swainsoni*	1	Unk	No	A	Perched and flying	Riparian tree	Dry Creek riparian and agriculture	46.0687774800	-118.5304737300
45	WA	Swainson's hawk	*Buteo swainsoni*	1	Unk	No	A	Perched	Riparian tree	Dry Creek riparian and agriculture	46.0720755100	-118.5205613700
46	**WA**	**Red-tailed hawk**	*Buteo jamaicensis*	1	Unk	Yes	A	1 on nest	Riparian tree	Dry Creek riparian area	46.0943456400	-118.4898869600
47	WA	Prairie falcon	*Falco mexicanus*	1	Unk	No	A	Flying	Agricultural		46.0317344100	-118.9131388700
48	WA	Northern harrier	*Circus cyaneus*	1	M	No	A	Flying	Grassland	CRP grasslands	46.0370388200	-118.8872159100
49	WA	Red-tailed hawk	*Buteo jamaicensis*	2	Unk	No	A	Flying-calling	Grassland	CRP grasslands	46.0370657200	-118.9039700800
50	WA	Red-tailed hawk	*Buteo jamaicensis*	1	Unk	No	A	Flying	Shrub steppe	Rabbitbrush and cheatgrass	46.0626564300	-118.7984473600
51	**WA**	**Ferruginous hawk**	*Buteo regalis*	1	M	Yes	A	Flying female on nest at map id #53	Shrub steppe	Near nest on platform with #6	46.0596811000	-118.8234377600
52	**WA**	**Ferruginous hawk**	*Buteo regalis*	1	F	Yes	A, ?Y	1 on nest; 1 calling overhead	Shrub steppe	Nest on platform with #6.	46.0597277900	-118.8232972800
53	**WA**	**Swainson's hawk**	*Buteo swainsoni*	2	1M & 1F	Yes	A	Nesting	Grassland	Nest in telephone pole 500' south of Touchet	46.0887885200	-118.6593218500

[a] M = male; F = female; Unk = unknown
[b] A = adult; Y = young

Bold-faced type indicates active raptor nests. The species of nesting raptor could not be identified in three instances. Therefore, only 15 occurrences in this table are in bold-faced type.

SECTION 4

Project Impacts and Mitigation Measures

4.1 Impact Assumptions

The discussion of direct and indirect project impacts is based on the following assumptions related to vegetation clearing and revegetation of disturbed areas. If any of these assumptions are not entirely correct, then the stated project impacts will not be accurate.

- Vegetation will be removed during construction and controlled during operation in two zones within the ROW. The "wire" zone is a minimum of 20 feet wider than the distance between the two outside conductors. The "border" zone includes the remaining ROW width. During construction, vegetation in the wire zone will be removed/trimmed to create a minimum 25-foot clearance. After construction, vegetation inspections will be performed and vegetation growth will be allowed to the point of a 15-foot clearance from the conductors, at which time the vegetation will be trimmed.
- The minimum height of the conductors above the ground will be 30 feet over all upland areas. Upland shrubs, including sagebrush and rabbitbrush, are typically less than 5 feet tall. Therefore, native sagebrush and rabbitbrush that are less than 5 feet tall will not be removed within the wire zone to create the minimum 25-foot clearance for construction or operation.
- The minimum height of the conductors over streams, rivers, and riparian areas will be higher than over uplands. This will avoid or reduce impacts to riparian vegetation. Topography and pole placement are expected to provide enough ground clearance to avoid the need for removal of riparian vegetation along the Walla Walla River. Removal of riparian vegetation along the Touchet River, Dry Creek, and other riparian areas may also be avoided because of favorable topography and pole placement. However, if it were determined during project design that some riparian vegetation would need to be removed, Pacific Power would work with WDFW to implement suitable mitigation measures. These measures are described in Section 4.3.
- Vegetation removal and disturbance during construction will be restricted to the 35-by-55-foot area at each tower, the access roads, and the tensioning and lay-down areas. Areas for the assembly of the transmission line structures (structure lay-down areas) will also be required at each structure location. Vegetation will not be cleared from these areas, but will be driven over to reduce soil disturbance. Structure lay-down areas located in high value habitats will be revegetated as described for other high value habitats in Section 4.3.
- Except as needed for structure placement, vehicles will not drive in riparian areas during construction and no sediment will be allowed to enter streams or rivers. Therefore, there will be no impacts on river or stream aquatic species including fish, amphibians, mollusks, or western painted turtles.

- Any impacts to wetlands will be permitted through the USACE and state agencies (Oregon Department of State Lands and Washington Department of Ecology). Mitigation for impacts to wetlands will be consistent with agency requirements. Direct impacts to wetlands located within the Wanaket Wildlife Area would be avoided.
- All vegetation removal for construction would take place outside of the migratory bird breeding season, which extends from April 1 through August 15. The timing of this activity would avoid the direct take of migratory birds. Construction may occur at any time.
- It is expected that staging areas would be existing yard areas with fencing, lighting, and security. The construction contractor would make these arrangements. No impacts are expected from this use as these are developed areas.
- The transmission line would be designed and constructed as described in Avian Power Line Interaction Committee (2005 and 2006) so that raptors and other large birds cannot be electrocuted.

4.2 Direct and Indirect Impacts

Direct impacts would include both short- to medium-term and permanent effects. Short- to medium-term effects would persist for a few years to up to 10 years following revegetation. The shorter duration would occur in areas where there are no native shrubs to be replaced. The longer duration would occur where trees and shrubs are affected and replaced. Permanent losses would occur where project features are maintained for the duration of the project. These project features are mostly access roads.

Because of the nature of the vegetation along the proposed transmission line route, little vegetation control is anticipated. Except near streams and wetlands, the vegetation is typically less than 10 feet high and will not grow taller. In the few instances where a native-species tree might be removed or trimmed, mitigation planting of new trees outside the ROW would be negotiated with the landowner. It is currently anticipated that no trees would be removed from federal property.

The proposed transmission line would not cross riparian habitat in Oregon. The proposed transmission line would cross riparian habitat in the following three locations in Washington, which are all on private land.

- **Walla Walla River crossing**. No tree trimming or removal would be needed where the line would cross the Walla Walla River because the line would be higher than the treetops.
- **Touchet River crossing**. No tree trimming is anticipated where the line would cross the Touchet River.
- **Dry Creek crossing**. One or two trees might need to be removed where the line would cross Dry Creek.

During construction, some vegetation would be removed when placing pole structures and developing access roads. Because most of the line would be across agricultural land, the permanent loss of shrub-steppe vegetation would be minimal.

4.2.1 Habitat Impacts

Vegetation would be removed for access and construction roads at each structure, at line tensioning sites, and at materials lay-down areas. Within the areas that are not required for permanent project features, the loss of vegetation would eliminate wildlife habitat and use of the affected areas until the affected vegetation is replaced, as described in the mitigation section (Section 4.3). The estimated loss of high value habitats within areas classified as ODFW Category 1, 2, 3, or 4 and WDFW Priority Habitats is presented in Tables 9 through 12 and summarized in Table 13. About 84.8 acres of ODFW Category 1, 2, 3, or 4 and WDFW Priority Habitats would be impacted for a short to medium duration (Table 13). About 57 acres of these high value habitats would be permanently impacted by the project (Table 13).

Other vegetation classifications such as ODFW Category 5 and Category 6 lands were determined to be of only very limited or no value to wildlife or rare plants. Project activities within these lands are not expected to have any effects on wildlife or rare plants.

A tree or two along Dry Creek may need to be trimmed or removed. Riparian shrubs would not be removed from these areas because they are not tall enough to interfere with project construction or operation. Mitigation for the loss of these trees is discussed in Section 4.3. Rare species occurrences and densities in the high value habitats are low. Important habitat features typically include native shrubs for upland species and riparian trees and shrubs for a wide range of species. The loss of native upland shrubs and riparian trees and shrubs would affect the wildlife species that depend on them because of direct habitat loss and disturbance during construction.

4.2.2 Raptors

Twelve active raptor nests were located within ½ mile of the proposed route. These nests are indicated in bold-faced type on Table 8 and the locations are shown on the map set of Appendix B. These nests included eight red-tailed hawks, one long-eared owl, two ferruginous hawks, and one Swainson's hawk. There is a relatively high likelihood that raptors nesting this close to the proposed line would abandon their nests if the line were being constructed nearby, especially early in the nesting season. This is especially true for ferruginous hawks, which are particularly sensitive to disturbance during the nesting season, which extends from March 15 through August 1, and regularly abandon nests when they are disturbed.

4.2.3 Construction Disturbance

General construction activities would disturb and displace wildlife from the vicinity of the construction activity. The distance at which wildlife would be affected varies depending on the species and the nature of the activity. Construction during the migratory bird breeding season (April 1 through August 15) would affect the greatest number of species.

4.2.4 Avian Power Line Collisions

The presence of a new transmission line increases the possibility of avian mortality caused when birds collide with the wires. While this is an issue along the entire line, the Wanaket Wildlife Area is the most problematic area because of the high density of birds in this area. Faanes (1987) observed more than 7,000 bird flights (mostly waterfowl) in the vicinity of a

power line near a wetland. Sixty-eight percent of the birds did not respond to the presence of the power lines. Flaring and climbing over the conductor or overhead ground wire occurred in about 25 percent of the flights. One hundred nine birds in 82 flocks were observed to collide with the overhead ground wire. Of these birds, 87 percent flared to climb over the ground wire before colliding. The overhead ground wire was responsible for most deaths, as 102 of 109 birds collided with it. Birds that collided with wires were observed to fall to the ground and were presumed to have died from their injuries.

Research related to the effects of parallel transmission lines on rates of bird collisions is very limited. Some observations suggest that two adjacent sets of similar-height transmission lines may be easier for birds to see because of the larger number of conductors. Under conditions with normal visibility, clustering lines of similar heights may improve the ability of birds to see the multiple lines (Avian Power Line Interaction Committee [APLIC] 1994). However, the clustered-line configuration does not reduce bird strikes in foggy weather, during high winds, or when flocking birds are flying together in dim light (APLIC 1994).

Placement of the new proposed line adjacent to the existing BPA transmission line may slightly reduce the additive effect of the new line because of the proximity of the two lines. However, the new line would not be as tall as the BPA line, so any potential benefit of clustered lines may be small. Because of the different line heights, birds that flare up to avoid the proposed line would also have to cross the taller existing BPA line, perhaps resulting in higher avian collision rates. The problem of birds flying into conductors is worst during foggy weather and in low-light conditions, when birds are often flying.

To an unknown extent, resident birds have acclimated to the presence of the BPA line, so the effect of a new line located adjacent to an existing line may be lower than if the proposed line were constructed farther from the BPA line. However, migratory birds, which represent the vast majority of birds that use the Wanaket Wildlife Area, must re-acclimate to transmission lines each year. The highest avian mortality rates would be expected in the spring, when migratory birds first return, and in the late summer and early fall, when young waterfowl are first flying.

Many factors affect the risk of bird collisions, including the species, the surrounding environment, and the configuration of the line. The proposed Pacific Power line would have three conductors on one horizontal plane and two smaller overhead shield wires (ground wires) in a second horizontal plane. Small shield wires located above the conductors are apparently difficult for flying birds to see and avoid because these are the wires that are hit most often by birds in flight (APLIC 1994). The shield wires would be fitted with bird flight diverters (BFDs) to make them more visible. This action would increase the visibility of new line shield wires and is expected to reduce, but not eliminate, additional avian collisions. Researchers have found that BFDs are effective for many species, including those with low wing loading, such as swans and ducks (Frost 2008). Research results vary, but studies indicate that BFDs can reduce bird mortality from collisions by 60 percent or more (Janss and Ferrer 1998, Yee 2008).

The net effect of this second line would be an increase in avian mortality compared to current conditions, especially for migratory birds. Avian mortality in the Wanaket Wildlife Area would affect waterfowl as well as other species. American white pelicans (*Pelecanus erythrorhynchos*) were seen flying low over the route near MP 2.6 in Washington. Large, slow-flying birds such as herons, pelicans, and raptors also tend to have a more difficult

time changing flight direction than do smaller, more agile species. This may result in higher collision rates for larger birds. Waterfowl are also considered to be particularly vulnerable to collisions with lines because of their low wing loading.

TABLE 9
Area of ODFW Category 1, 2, 3, and 4 Habitats Disturbed During Construction of Structures in the Oregon Portion of the Survey Corridor

Vegetation Type	Number of Structures	Acres Disturbed (Short- to Medium-term) and ODFW Habitat Category			
		Category 1	Category 2	Category 3	Category 4
DT	1	0.04			
DT	2		0.09		
DT	1			0.04	
DT/SS	2		0.09		
GNN	3				0.13
GNN/GN	10				0.44
GNN/PA	1				0.04
GNN/SS	3			0.13	
PA	2				0.09
PA/DT/SS	1		0.04		
PA/SS/GNN	2			0.09	
PR	5	0.22			
SS	1		0.04		
SS/GNN	15		0.66		
SS/GNN	5			0.22	
SS/GNN	1				0.04
SS/GNN/GN	59		2.61		
SS/GNN/GN	6			0.27	
W	1	0.04			
Total Area (Acres)		**0.31**	**3.54**	**0.75**	**0.75**

Does not include structure lay-down areas.

A total of 0.09 acre would be required for the permanent structure footprints.

See Tables 4 and 6 for vegetation types

TABLE 10
Area of Washington Priority Habitats Disturbed During Construction of Structures in the Washington Portion of the Survey Corridor

WDFW Priority Habitat Type	Number of Structures	Acres Disturbed (Short- to Medium-term)
Freshwater Wetlands	0	0
Riparian	4	0.18
Instream	0	0
Prairie-steppe	28	1.24
Shrub-steppe	13	0.57
Total Area (Acres)		**1.99**

Does not include structure lay-down areas.
A total of 0.03 acres would be required for the permanent structure footprints.
See Tables 4 and 6 for vegetation types

TABLE 11
Areas Impacted by Tensioning and Materials Lay Down

Vegetation Type	ODFW Habitat Category Rating	Acres Affected (Short- to Medium-term)
ODFW Habitat Category Vegetation Type		
DT	2	0.02
DT/SS	2	1.53
GNN	4	0.11
GNN/GN	3	0.20
GNN/GN	4	9.08
PA/DT/SS	2	0.71
PA/SS/GNN	3	1.11
PR	1	2.33
RP	2	0.04
SS/GNN	2	4.06
SS/GNN	3	2.06
SS/GNN/GN	2	13.85
SS/GNN/GN	3	3.90
Oregon Total		**39.00**

TABLE 11
Areas Impacted by Tensioning and Materials Lay Down

Vegetation Type	ODFW Habitat Category Rating	Acres Affected (Short- to Medium-term)
WDFW Priority Habitat		
Freshwater Wetlands		0.00
Riparian		1.79
Instream		0.00
Prairie-steppe		9.91
Shrub-steppe		2.34
Washington Total		**14.04**

Does not include structure lay-down areas.

See Tables 4 and 6 for vegetation types

TABLE 12
Areas Impacted by Access Roads

Vegetation Type	ODFW Habitat Category Rating	Acres Affected (Permanent)	Acres Affected (Short- to Medium-term)
ODFW Habitat Category Vegetation Type			
DT	1	0.08	0.04
DT	2	0.39	0.17
DT	3	0.19	0.08
DT/SS	2	0.13	0.06
GNN	4	0.55	0.23
GNN/GN	4	2.25	0.96
GNN/PA	4	0.26	0.11
GNN/SS	3	1.00	0.43
PA	4	0.41	0.17
PA/DT/SS	2	0.05	0.02
PA/SS/GNN	3	0.36	0.15
PR	1	1.22	0.52
RP	2	0.08	0.04
RP	3	0.01	0.01
SS	2	0.09	0.04
SS	4	0.00	0.00
SS/GNN	2	6.24	2.68
SS/GNN	3	1.27	0.55
SS/GNN	4	0.47	0.20
SS/GNN/GN	2	15.56	6.67

TABLE 12
Areas Impacted by Access Roads

Vegetation Type	ODFW Habitat Category Rating	Acres Affected (Permanent)	Acres Affected (Short- to Medium-term)
SS/GNN/GN	3	2.32	0.99
SSW	1	0.05	0.02
W	1	0.01	0.01
W-DT	1	0.03	0.01
Oregon Total		**33.04**	**14.16**
WDFW Priority Habitat Type			
Freshwater Wetlands		0.00	0.00
Riparian		2.36	1.01
Instream		0.00	0.00
Prairie-steppe		13.04	5.59
Shrub-steppe		8.45	3.62
Washington Total		**23.85**	**10.22**

See Tables 4 and 6 for vegetation types.

TABLE 13
Summary of Impacts to ODFW Category 1, 2, 3, and 4 Habitats and WDFW Priority Habitats

Project Feature	Acres of Permanent Impact	Acres of Short- to Medium-term Impact
Transmission Line Structures		
Oregon	0.09	5.34
Washington	0.03	1.99
Access and Construction Roads		
Oregon	33.04	14.16
Washington	23.85	10.22
Tensioning and Lay-down Areas		
Oregon	0	39.0
Washington	0	14.04
Total	**57.01**	**84.75**

Does not include structure lay-down areas.

4.3 Mitigation Measures

Proposed mitigation measures focus on two areas:

1. Replacing impacted habitat values on ODFW Habitat Category 1, 2, 3, and 4 lands and WDFW Priority Habitats

2. Improving the visibility of the line conductors in the vicinity of the Wanaket Wildlife Area

Mitigation guidelines for high value habitats include the following measures:

- **ODFW Habitat Category 1.** The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality.
- **ODFW Habitat Category 2.** The mitigation goal, if impacts are unavoidable, is no net loss of either habitat quantity or quality and providing a net benefit of habitat quantity or quality.
- **ODFW Habitat Category 3.** The mitigation goal is no net loss of either habitat quantity or quality.
- **ODFW Habitat Category 4.** The mitigation goal is no net loss in either existing habitat quantity or quality.
- **WDFW Priority Habitat.** Management recommendations do not include specific mitigation goals for WDFW Priority Habitats (except for riparian areas). Rather, they are based on individual wildlife species. However, broad management recommendations in the WDFW PHS plan focus on meeting the goal of maintaining or enhancing habitats needed to perpetually support fish and wildlife populations at both the site and landscape levels.

Based on these recommendations, Pacific Power would revegetate disturbed high value areas identified in Tables 9, 10, 11, and 12 that are not required for permanent project features. Except as noted, revegetation of all disturbed ODFW Category 1, 2, 3, and 4 habitats and all Washington Priority Habitats would generally match the pre-construction plant species composition of these areas. If these areas include a substantial non-native species component, this non-native component would not be replaced. Rather, local native grasses and forbs, along with sagebrush, would be used to revegetate the high value habitats. This would avoid a long-term loss of habitat value for all temporarily disturbed sites. Seed mixes would be approved by ODFW and WDFW personnel. Successful revegetation would require weed control and proper seeding, germination, and establishment conditions (i.e., appropriate over-winter moisture following seeding). Revegetation, including seeding and weed control, would be coordinated with each landowner and other state and federal agencies, as appropriate, to improve the chances of success. Herbicides application, if applied, would be consistent with the recommended practices for that herbicide and in consultation with landowners and county weed control service agencies. Pesticide spraying is not planned.

There would be approximately 121 structures within high value habitats in Oregon and 45 within high value habitats in Washington. Each structure location would include a temporary structure lay-down area during construction. Structure lay-down areas within these high value habitats would be revegetated so that they would generally match the pre-construction plant species composition of the areas, as described previously. If these areas include a substantial non-native species component, this non-native component would not be replaced. Rather, local native grasses and forbs, along with sagebrush, would be used to revegetate the high value habitats.

Riparian and upland trees removed during construction would be replaced at a ratio of four replacement plants for each plant that is removed. Because the trees growing in the project area require access to shallow groundwater or surface water, all upland and riparian trees that are removed would be replaced with black cottonwood or Pacific willow (*Salix lucida* ssp. *Lasiandra*), the two local native riparian trees. These species are both of very high value to a wide range of wildlife species. Site investigations would verify that soil moisture conditions are adequate to support cottonwood or Pacific willow prior to planting so that long-term survival rates are high. Riparian shrubs would be replaced with local native species suited to site conditions. Trees and riparian shrubs would be planted outside of the wire zone so that they do not later interfere with project operation. They may also be planted outside of the ROW, subject to landowner agreement. If trees and riparian shrubs cannot be planted in the immediate areas from which they were removed, they would be planted in the Wanaket Wildlife Area or the MSWRA.

Pacific Power would mitigate for the permanent loss of 57 acres of high value habitat by enhancing habitat values in two wildlife management areas. The loss of 33.1 acres of high value habitat in Oregon could be mitigated through habitat enhancement actions on a comparable area in the Wanaket Wildlife Area. Habitat improvements through the control of weeds and replacement with native species would benefit many species of wildlife. However, the CTUIR has indicated that it is not willing to allow additional mitigation credit on the Wanaket Wildlife Area because it is already a mitigation area. Therefore, Pacific Power is willing to negotiate a mutually agreed upon location on which to implement wildlife mitigation measures. The loss of 23.9 acres of high value habitat in Washington would be mitigated through habitat enhancement actions on a comparable area in the MSWRA. These enhancement actions are expected to consist of replacement of non-native species with native grasses, forbs, sagebrush, and low shrubs. The exact actions to be implemented would be determined in consultation with the respective site managers.

The new conductors would create hazards for flying birds, especially where the line is located near the Wanaket Wildlife Area. Bird flight diverters would be added to the line from MP 2.9 to MP 4.6 in the vicinity of the Wanaket Wildlife Area to make the line more visible. This action would not eliminate bird strikes but is expected to reduce the level of this impact.

Pacific Power routinely constructs all transmission lines as “raptor-friendly” in order to avoid electrocutions.

Mitigation for the easement across the Wanaket Wildlife Area would be discussed with the CTUIR Board of Trustees and mitigation for that easement would be agreed upon at a future date.

SECTION 5

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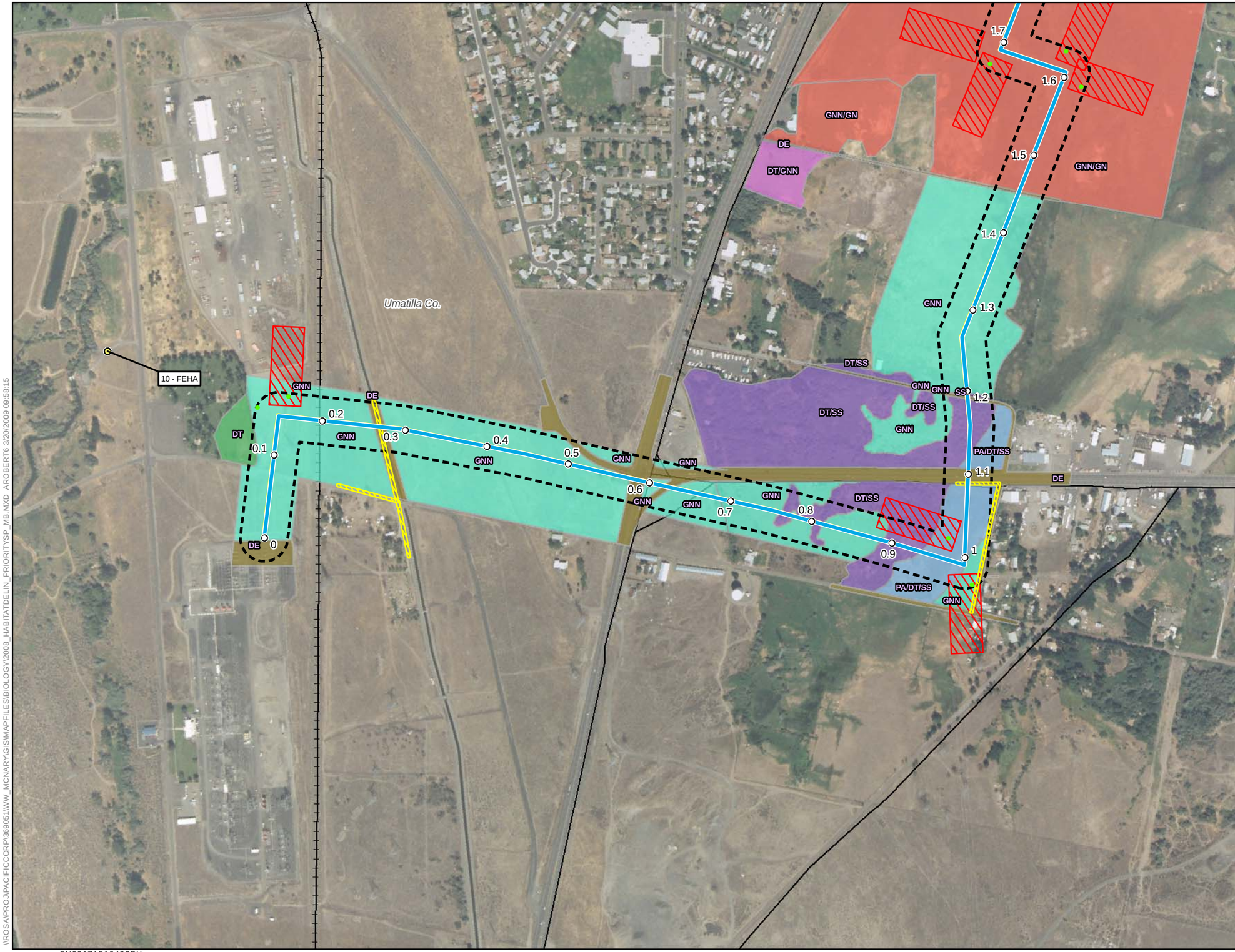
APPENDIX A

Map Book—Habitat Delineation

Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species



Legend

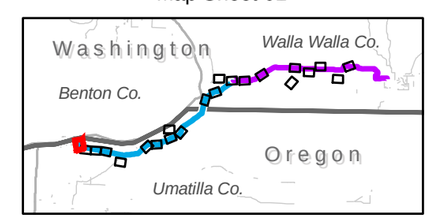
- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

0 150 300 600 Feet

Map Sheet 01



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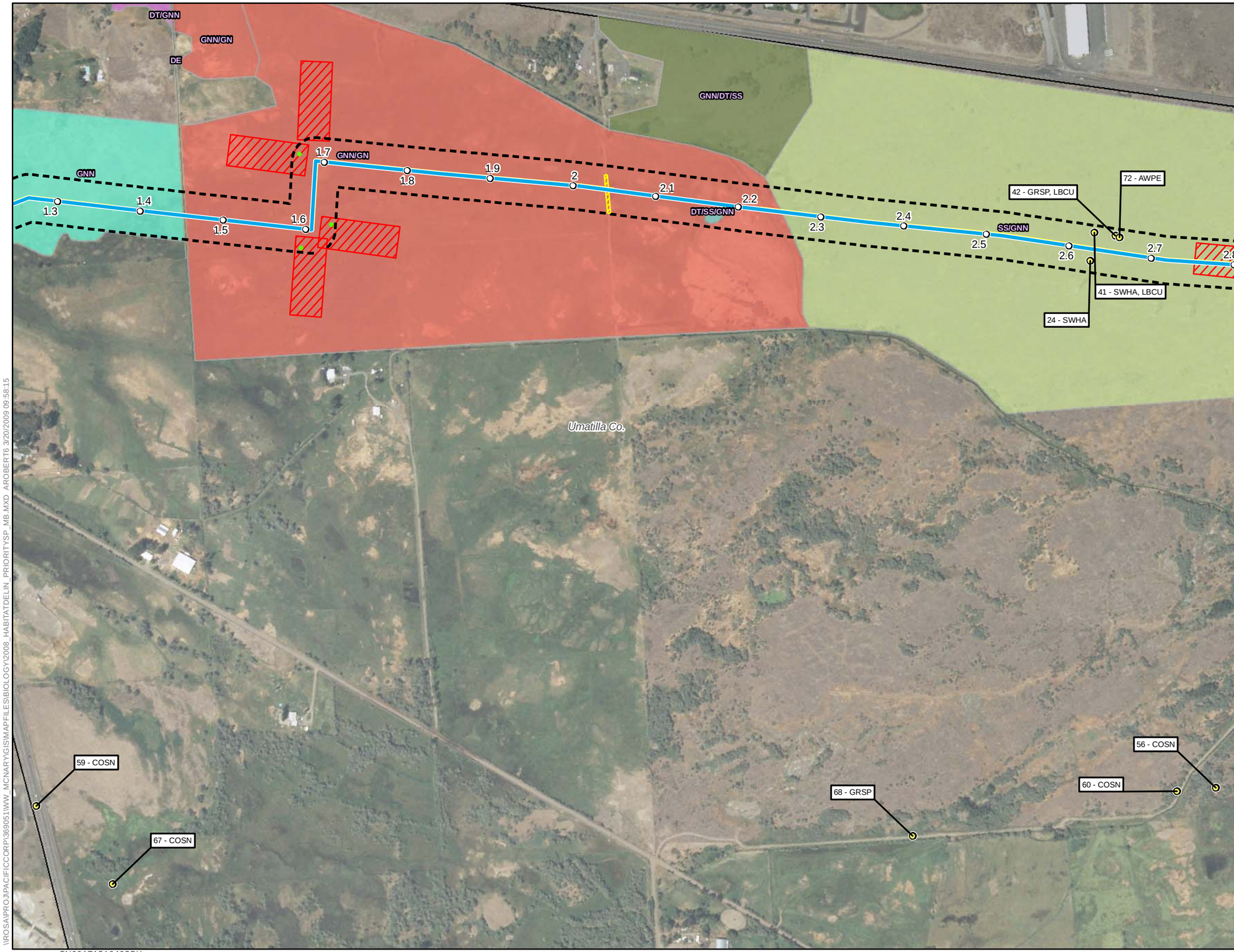

Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

Habitat Delineation

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- AG/GNN/GN
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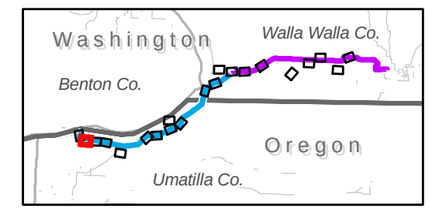
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 02



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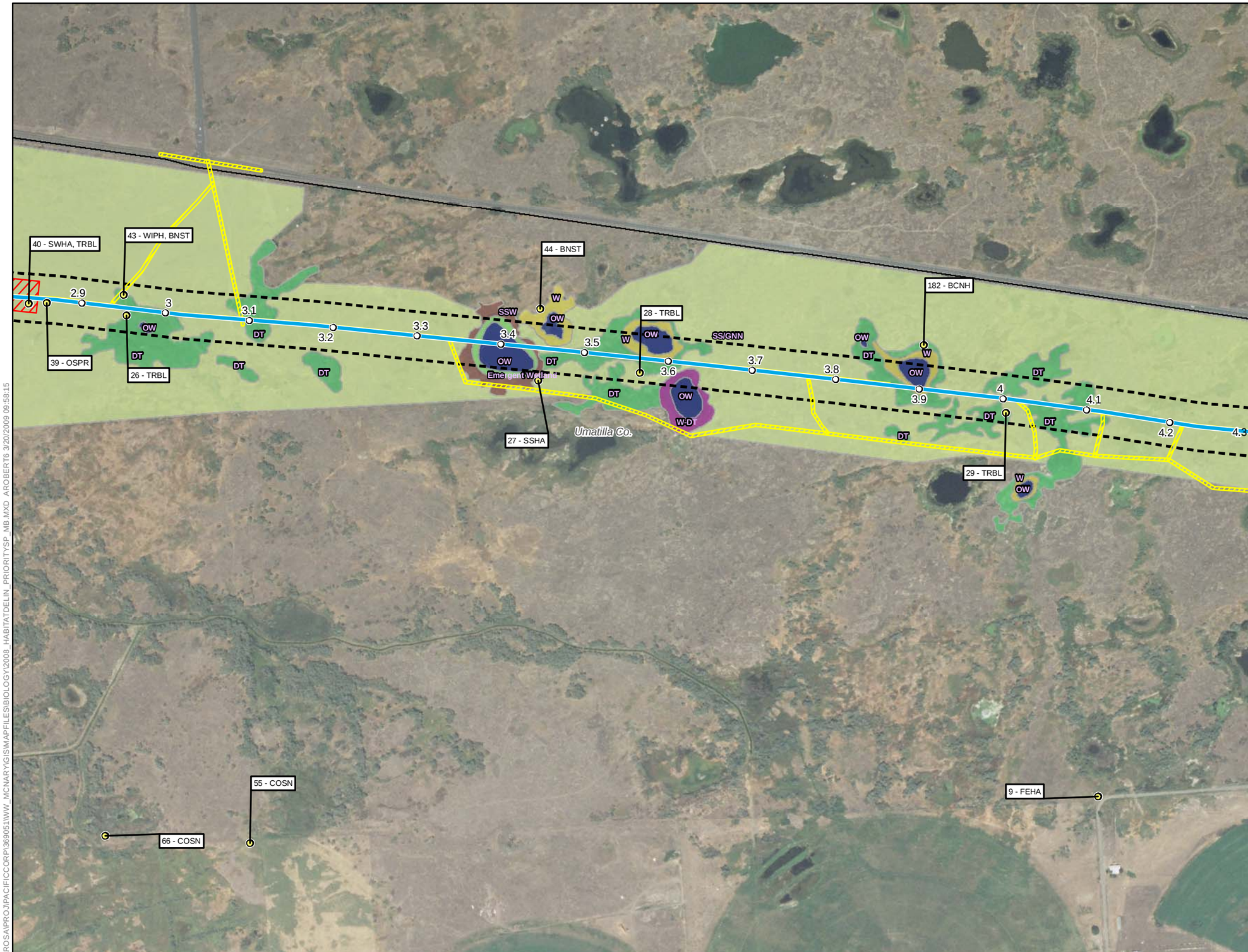
Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species



Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

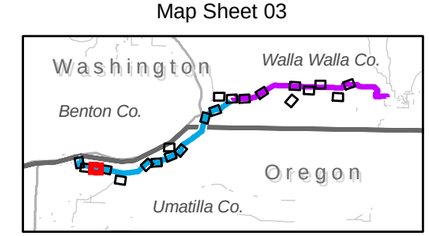
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 03



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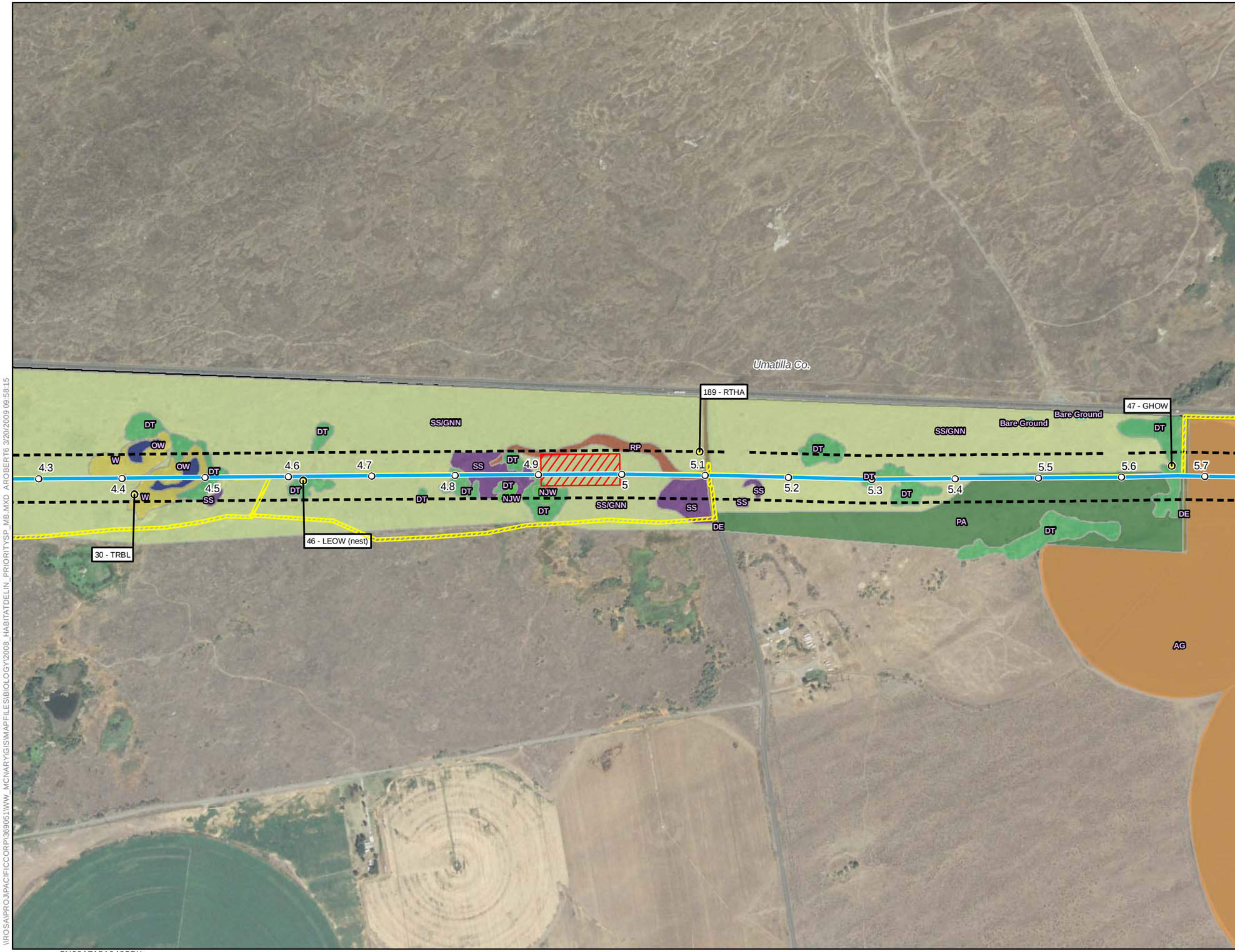


Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

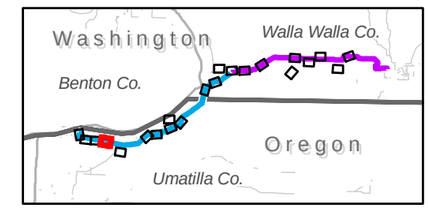
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 04



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Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

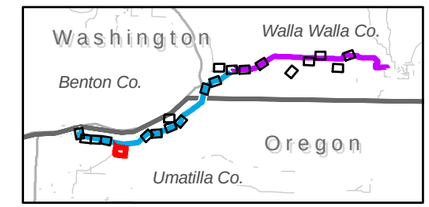
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 05



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Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

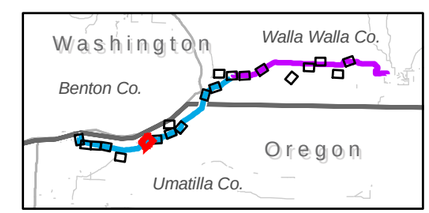
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 06



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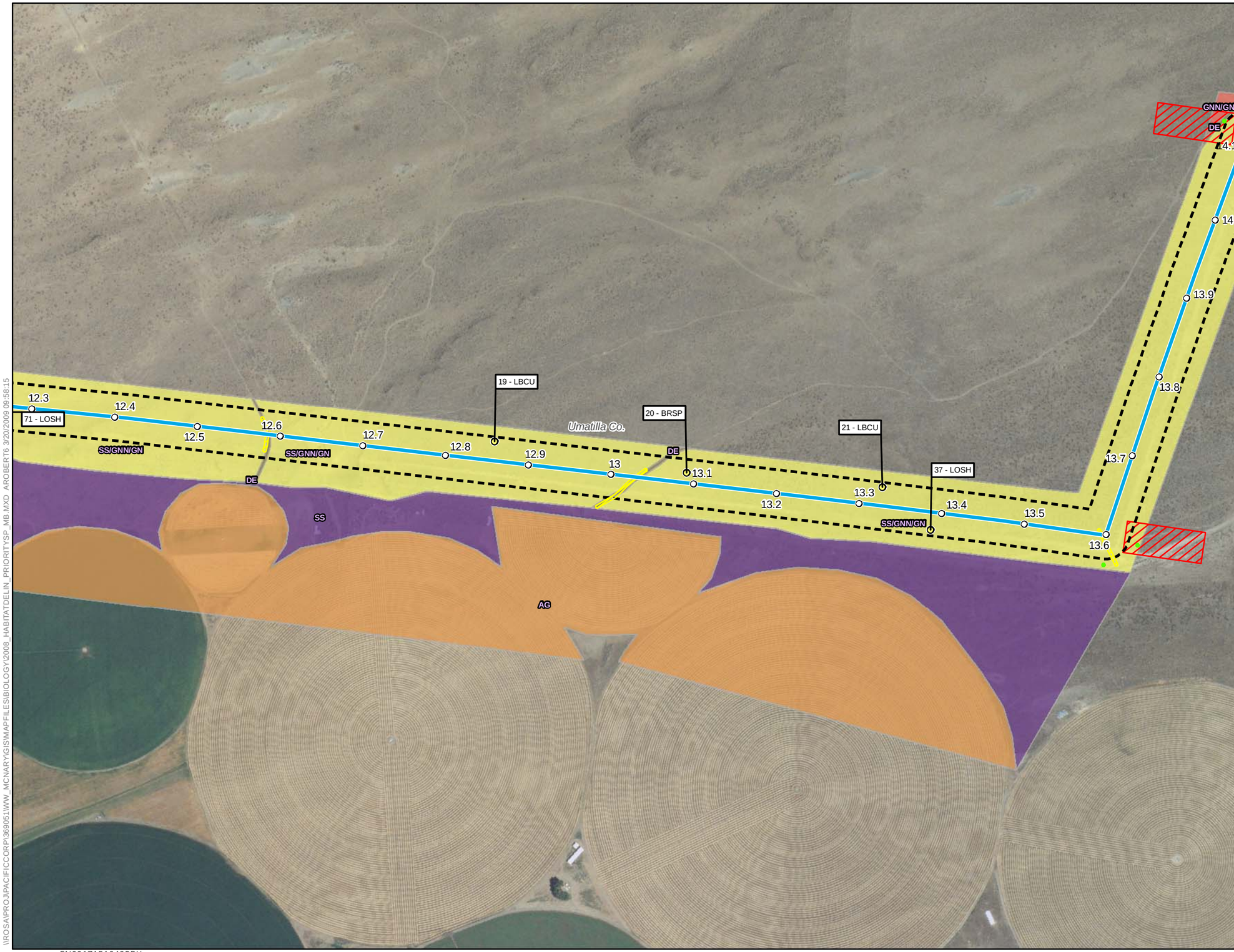


Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

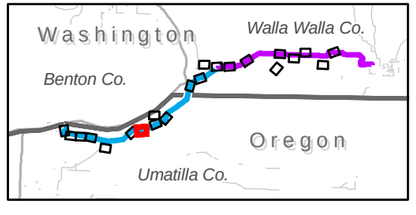
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 07



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Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

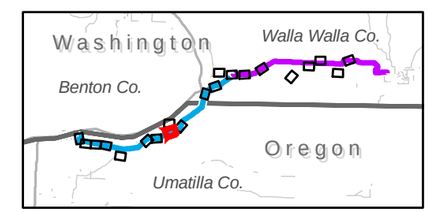
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 08



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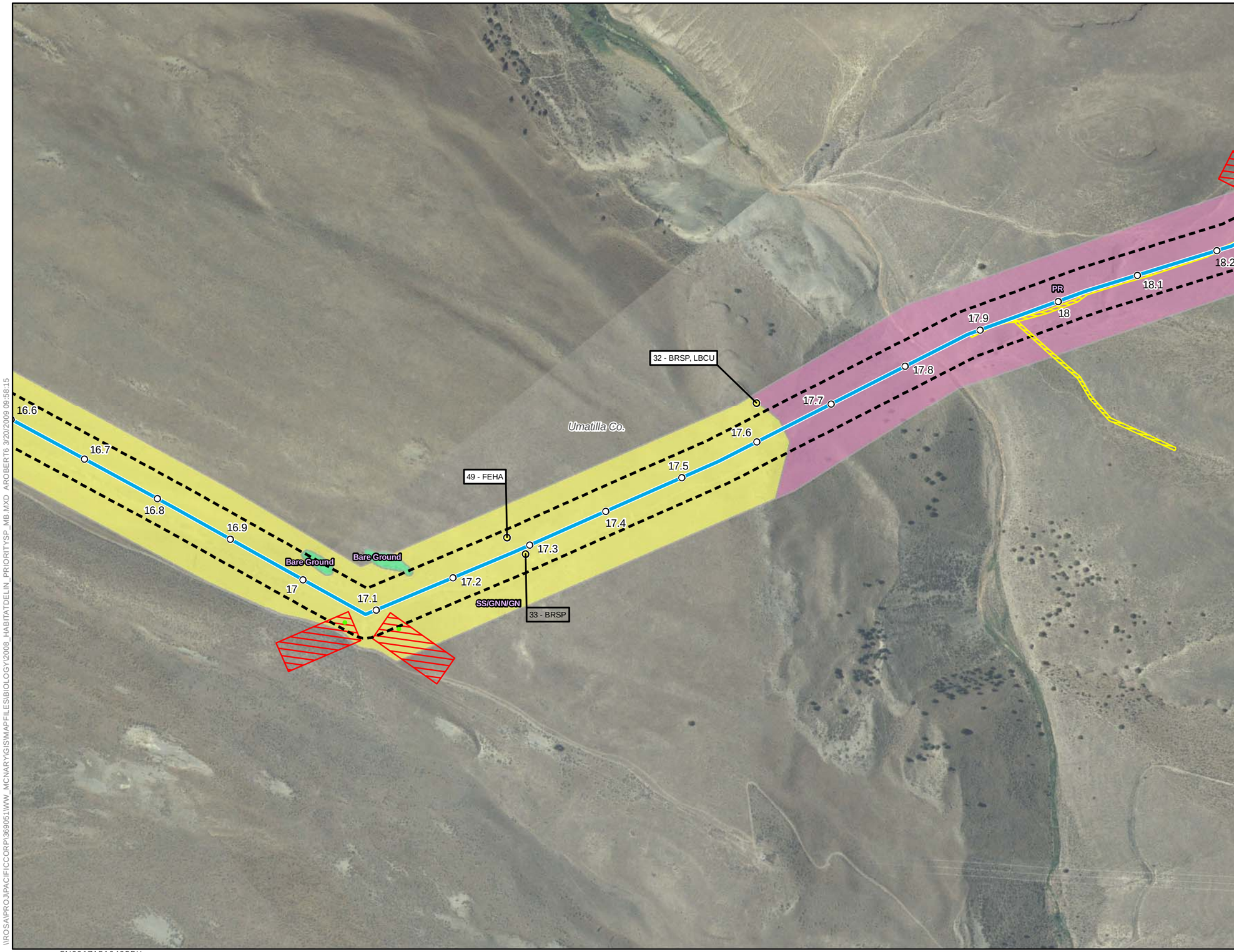


Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

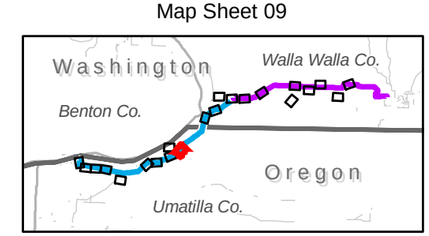
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 09



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Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

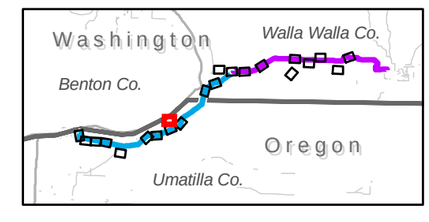
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 10



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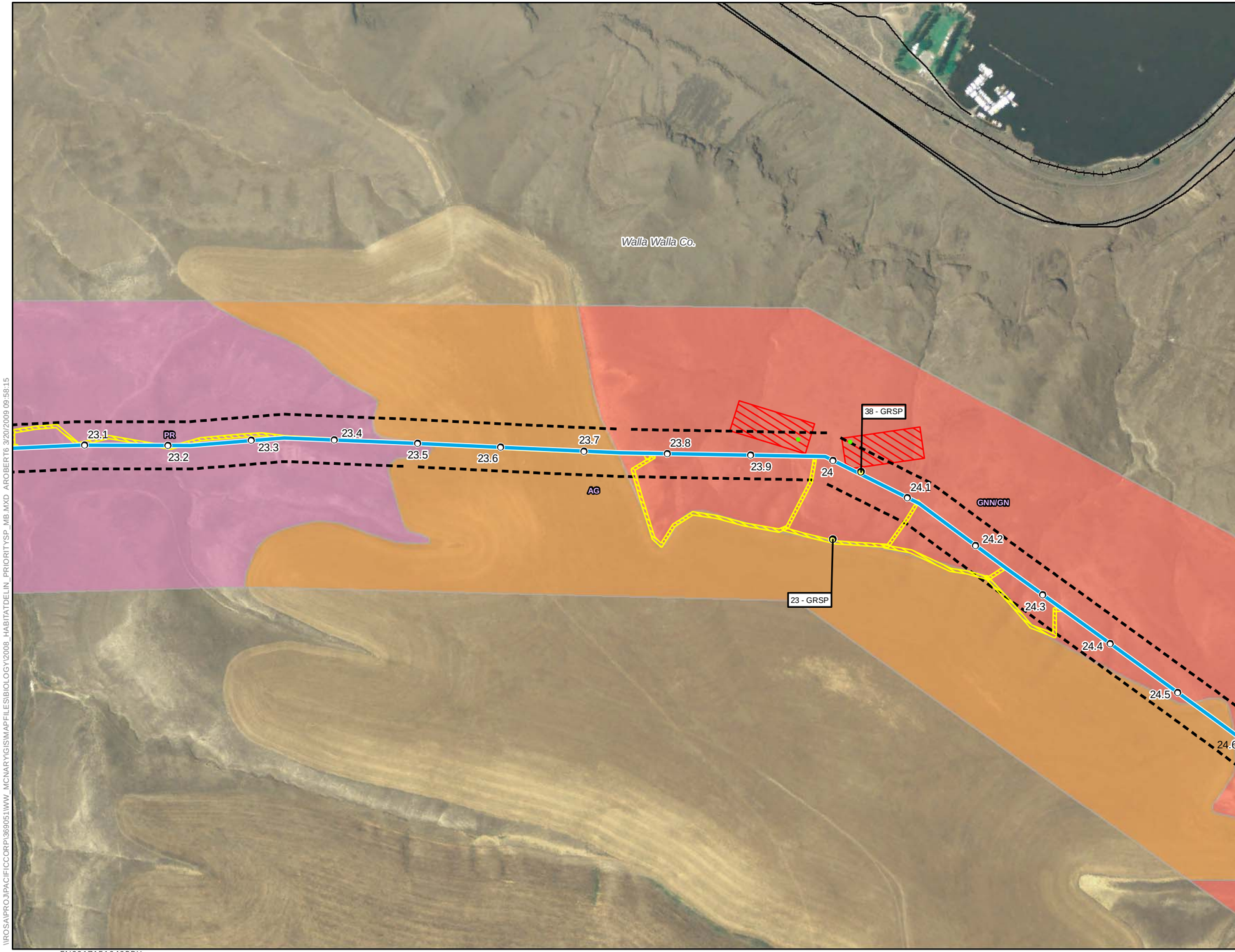
Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species



Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

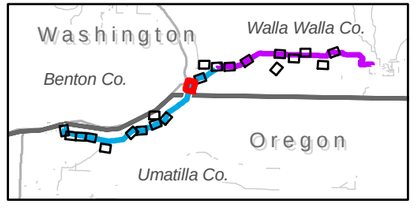
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 11



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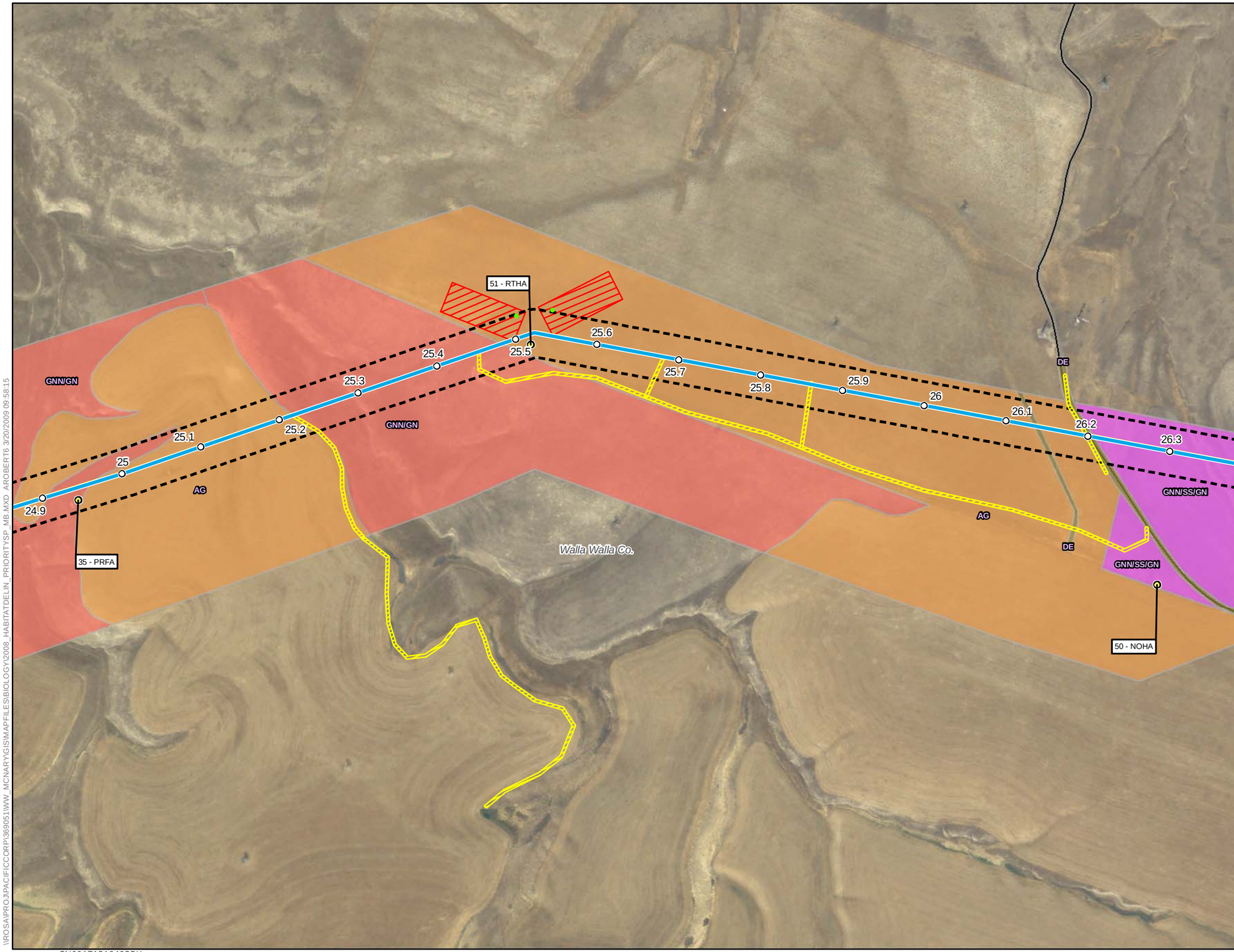


Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

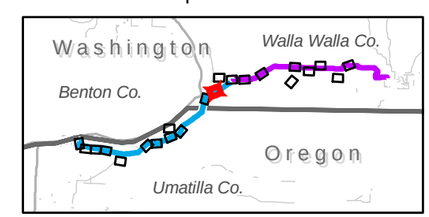
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 12



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Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
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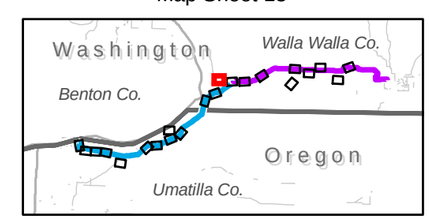
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

0 150 300 600 Feet

Map Sheet 13



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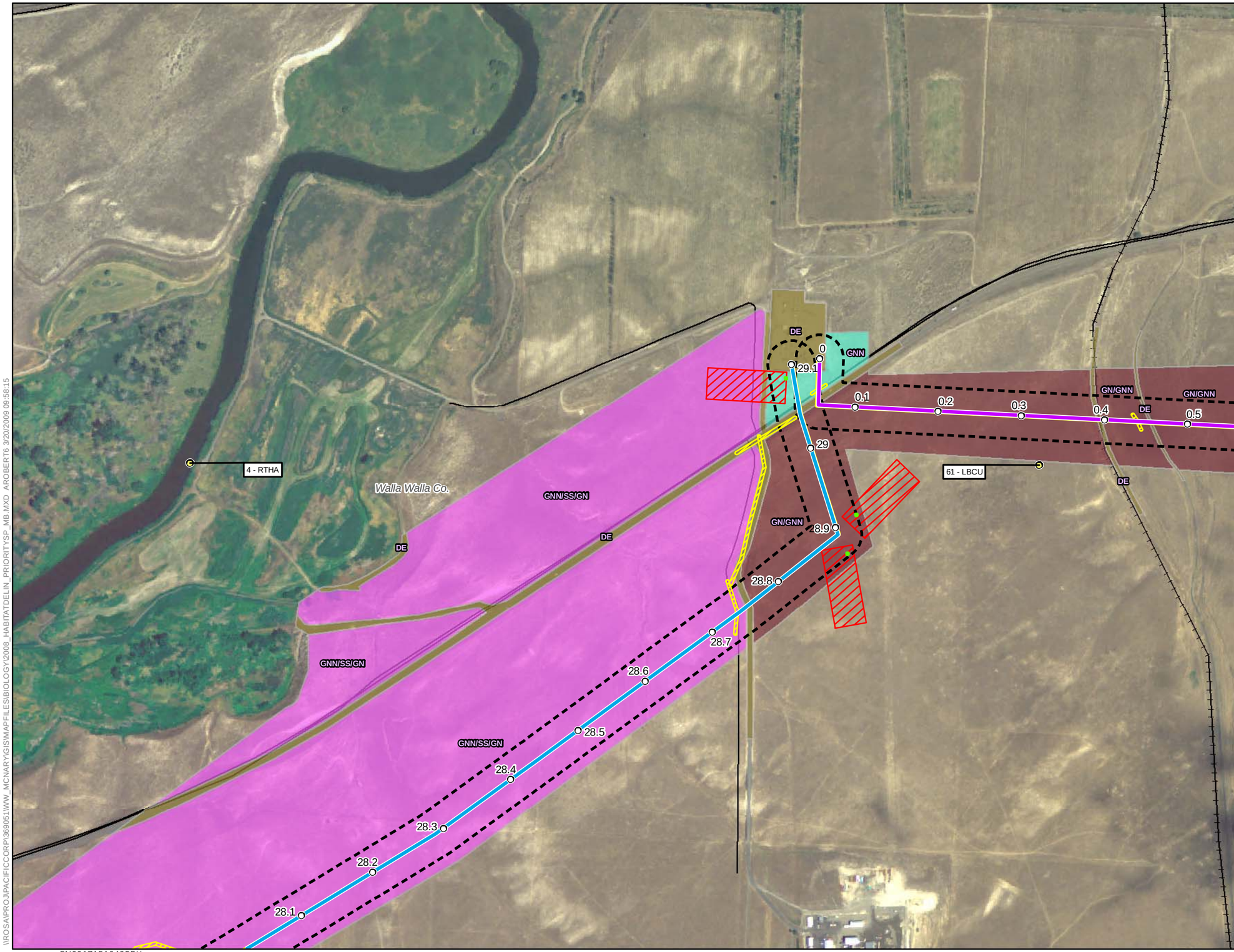

Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
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- Access Roads

Habitat Delineation

- AG
- AG/GNN/GN
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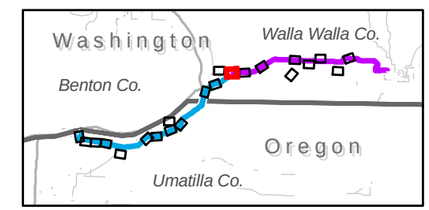
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

0 150 300 600 Feet

Map Sheet 14



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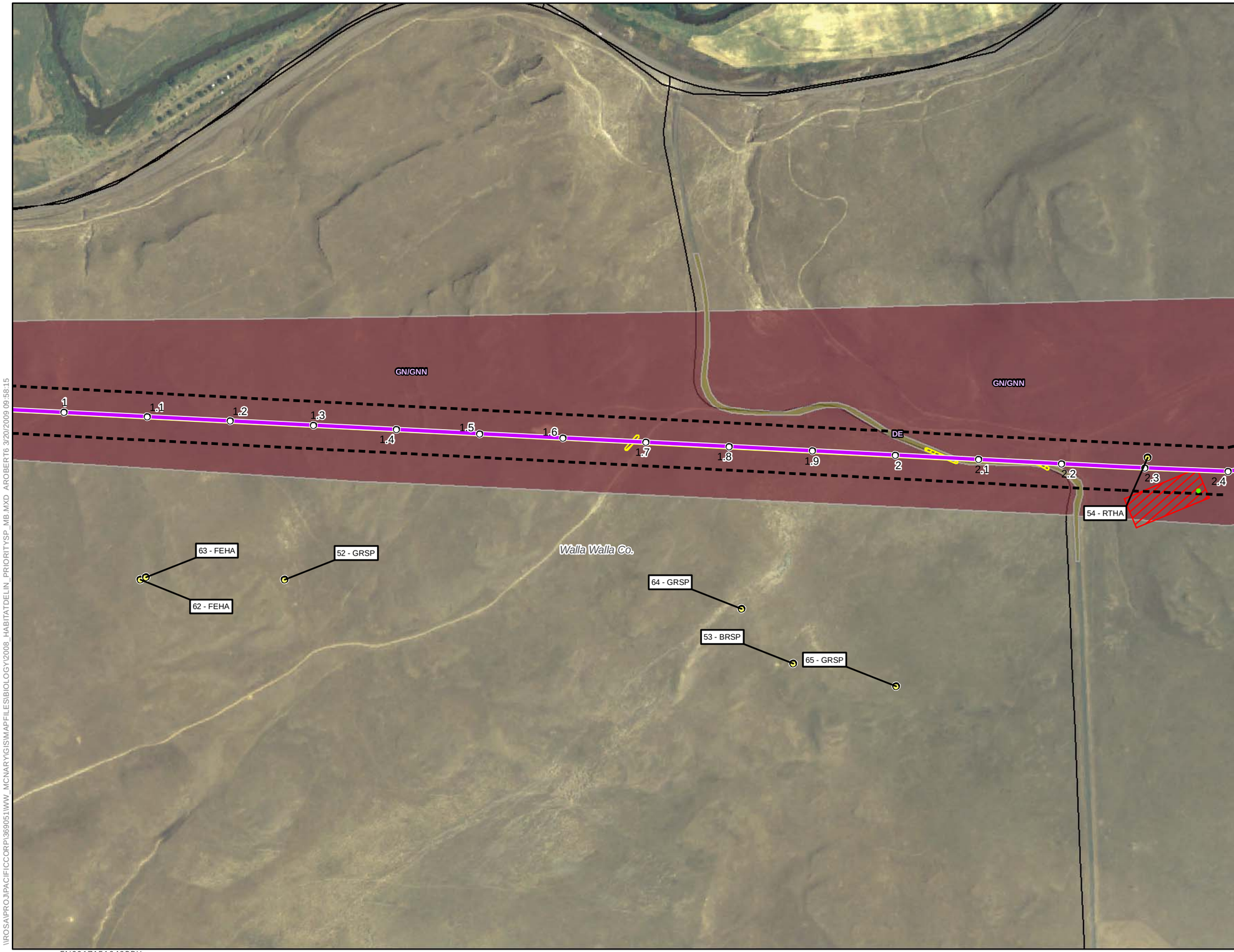


Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

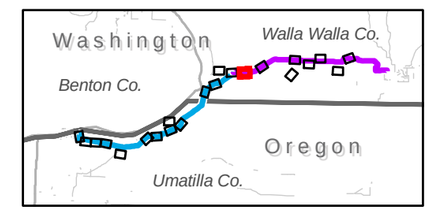
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 15



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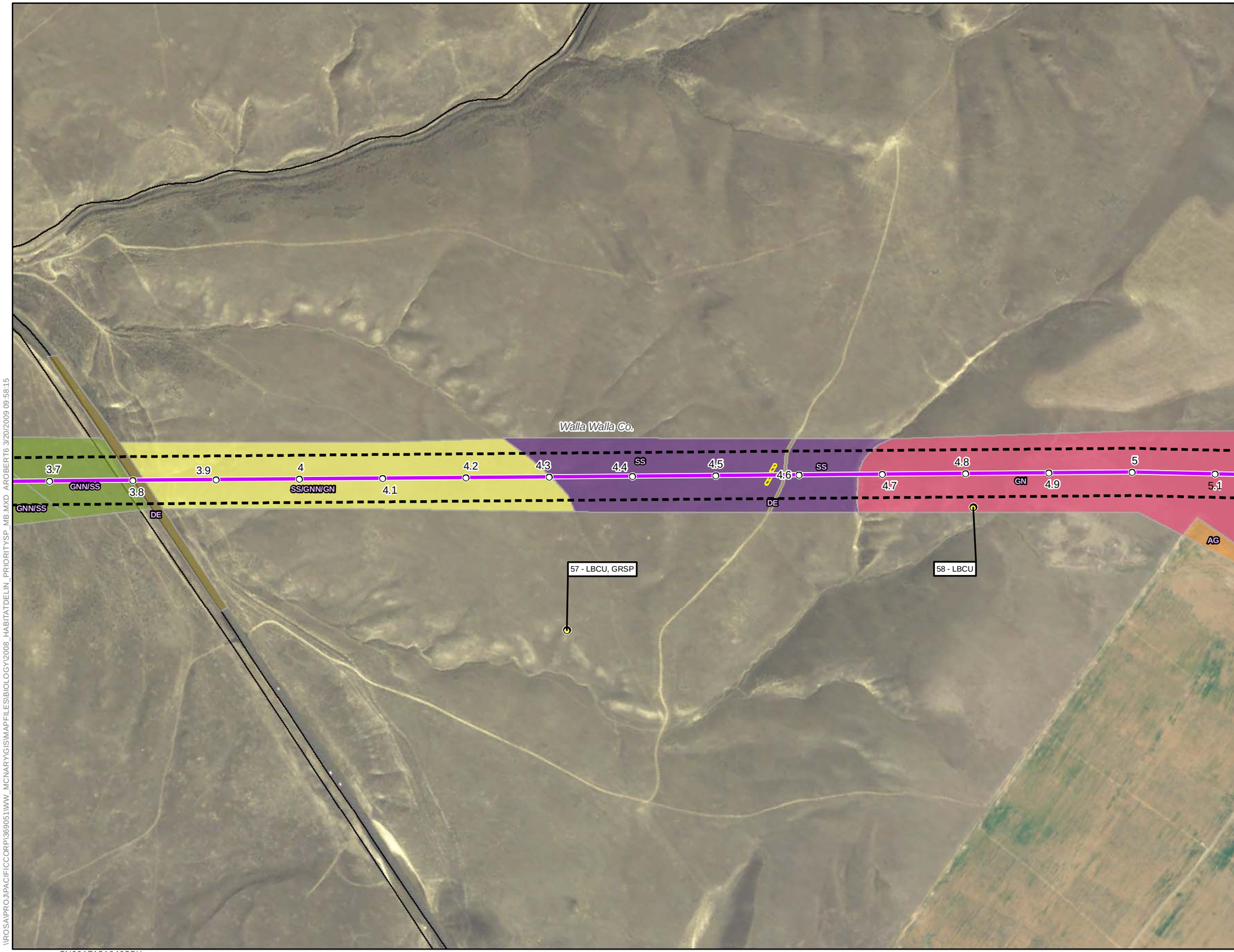


Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

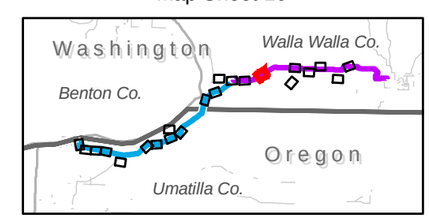
Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 16



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gis@pacificorp.com

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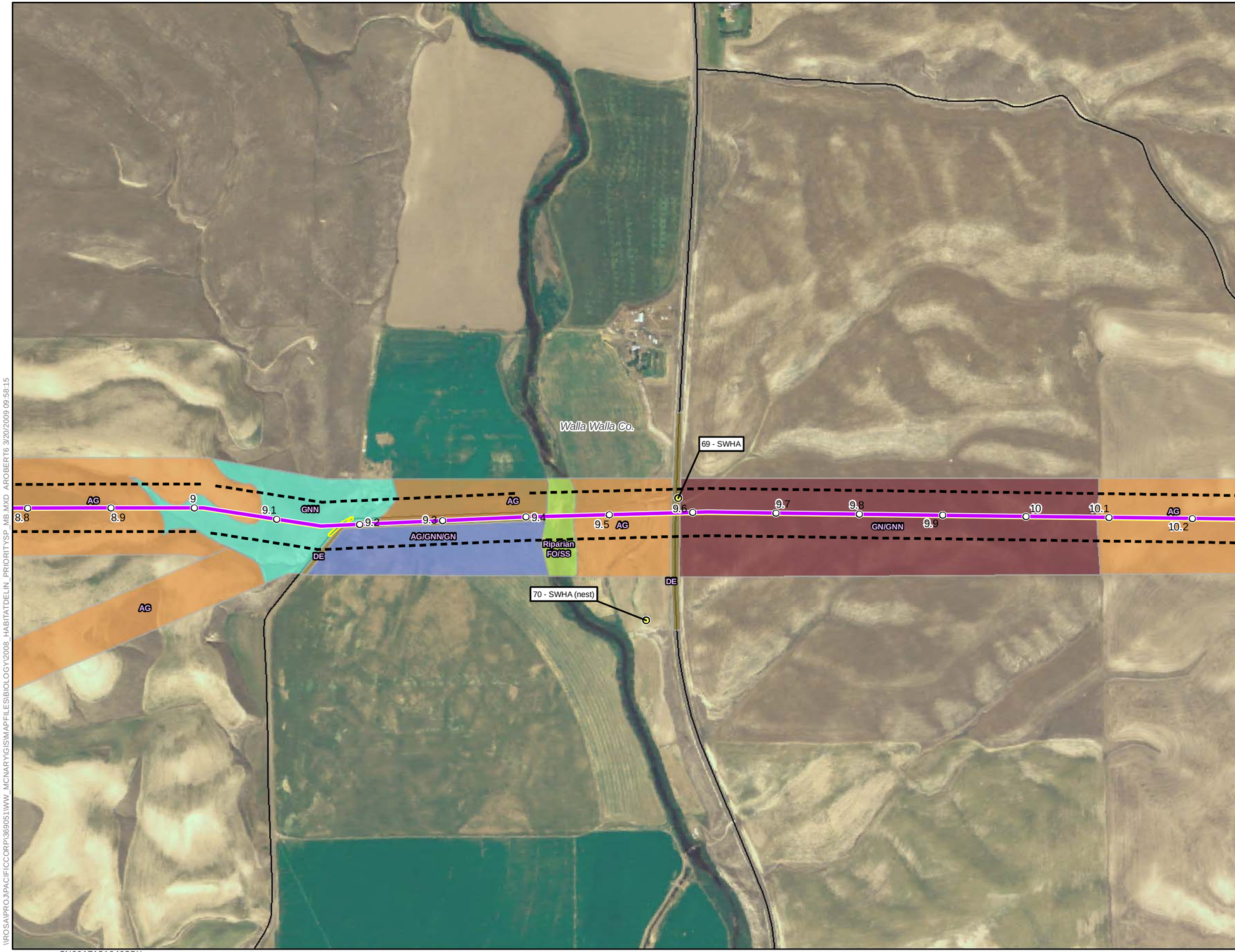

Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
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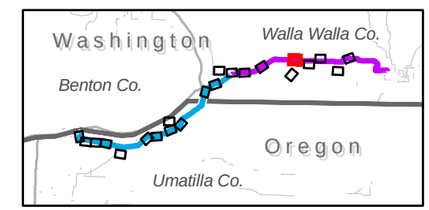
- Workspace
- Access Roads

Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

0 150 300 600 Feet

Map Sheet 17



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Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
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- Access Roads

Habitat Delineation

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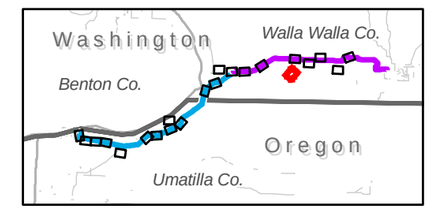
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
- Emergent Wetland
- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

0 150 300 600 Feet

Map Sheet 18



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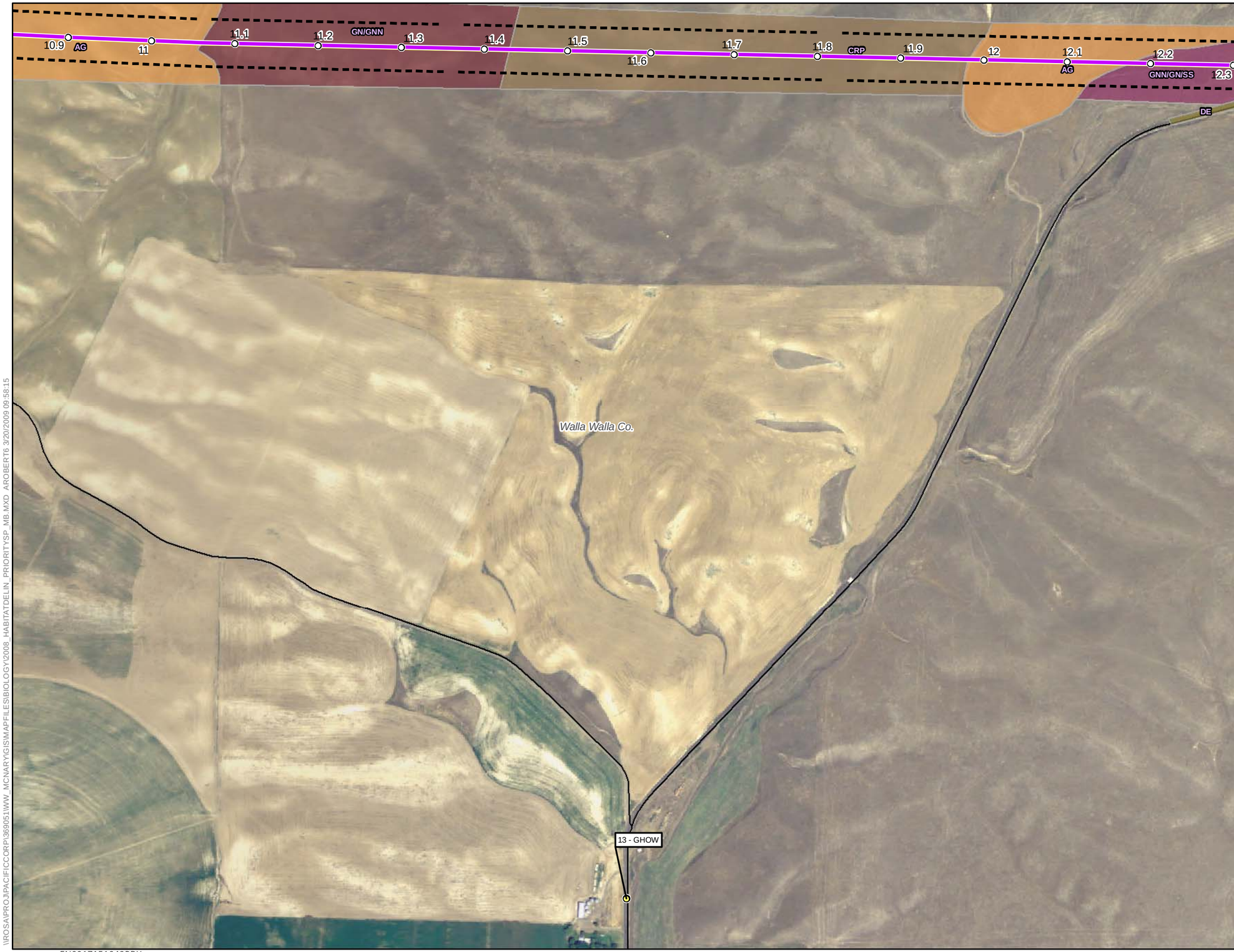

Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
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Habitat Delineation

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- DT/SS
- DT/SS/GNN
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- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
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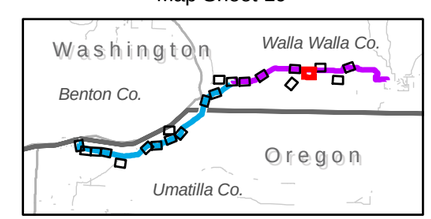
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 19



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Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

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- Mile Post
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- CRP/GNN
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- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
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- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
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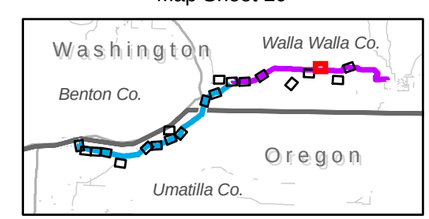
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 20



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Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
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Habitat Delineation

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- AG/GNN/GN
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- CRP/GNN
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- DT
- DT/GNN
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- Emergent Wetland
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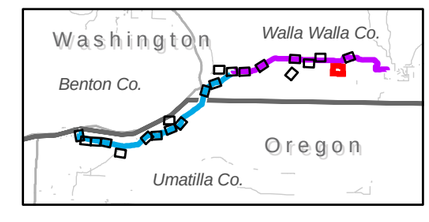
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
- NJW
- OW
- PA
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 21



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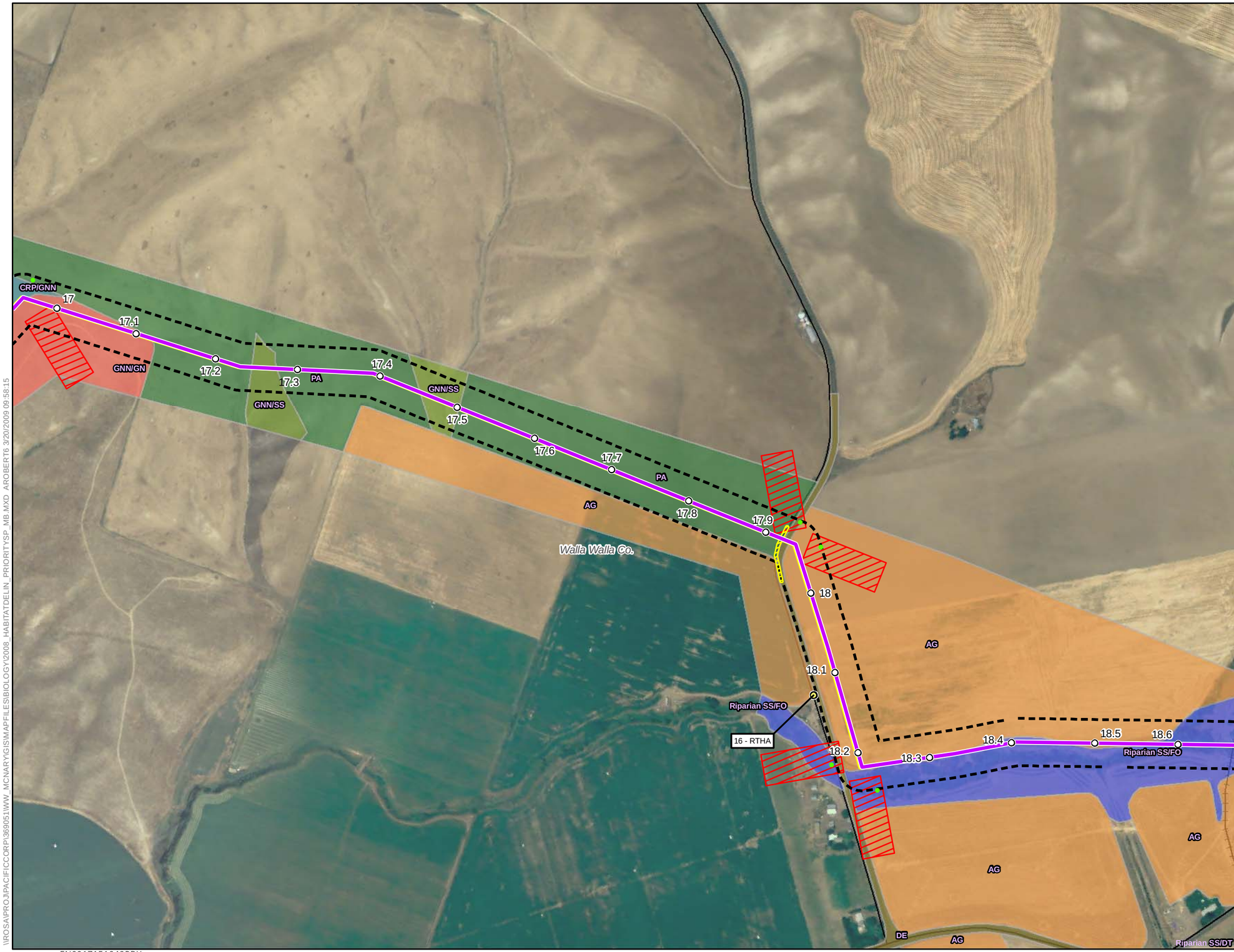

Walla Walla McNary Proposed TLine

Appendix X: Map Book

Priority Species

Legend

- Priority Species
- Temp Poles
- Mile Post
- Wallula-WallaWalla Route
- Road
- Railroad
- McNary-Wallula Route
- 300-ft Wide Study Area
- Workspace
- Access Roads

Habitat Delineation

- AG
- AG/GNN/GN
- Bare Ground
- CRP
- CRP/GNN
- DE
- DT
- DT/GNN
- DT/SS
- DT/SS/GNN
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- GN
- GN/GNN
- GNN
- GNN/DT/SS
- GNN/GN
- GNN/GN/SS
- GNN/PA
- GNN/SS
- GNN/SS/GN
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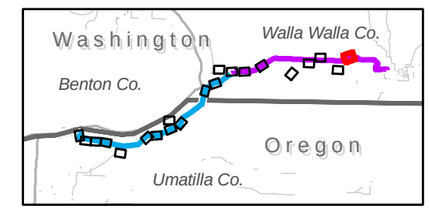
- PA/DT/SS
- PA/GNN
- PA/SS/GNN
- PR
- RP
- Riparian FO/SS
- Riparian SS/DT
- Riparian SS/FO
- SS
- SS/GNN
- SS/GNN/GN
- SSW
- W
- W-DT

N

0 150 300 600 Feet

Map Sheet 22



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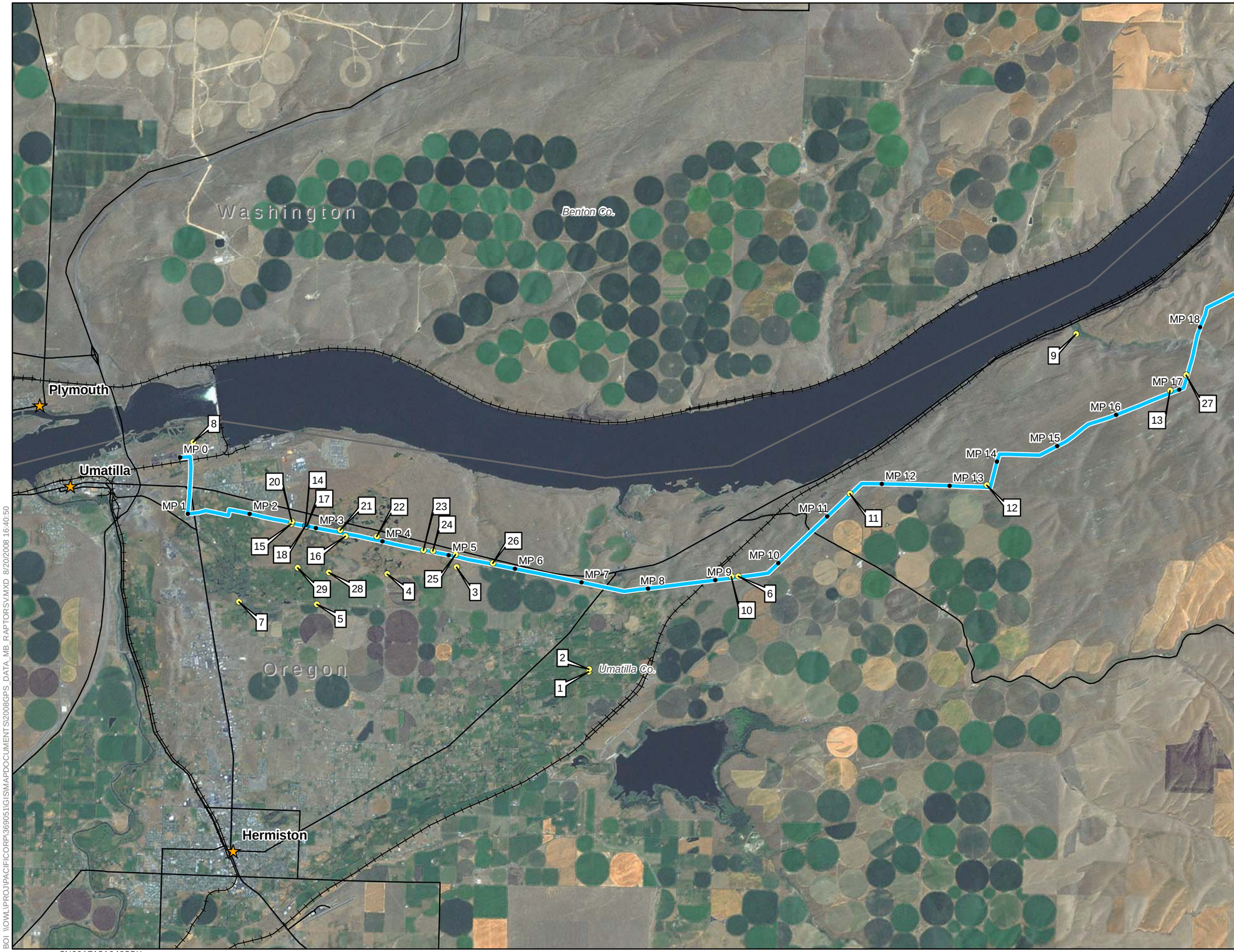
APPENDIX B

Map Book—Raptor Survey Results

Walla Walla McNary Proposed TLine

Appendix B:
Map Book

Raptor Survey Results



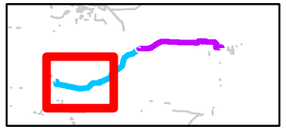
Legend

- Raptor Data Point
- City
- Milepost
- Walla Walla Wallula Proposed TLine
- McNary Wallula Proposed Tline
- Road
- Railroad

N

0 0.5 1 2 Miles

Map Sheet 1



Location Map

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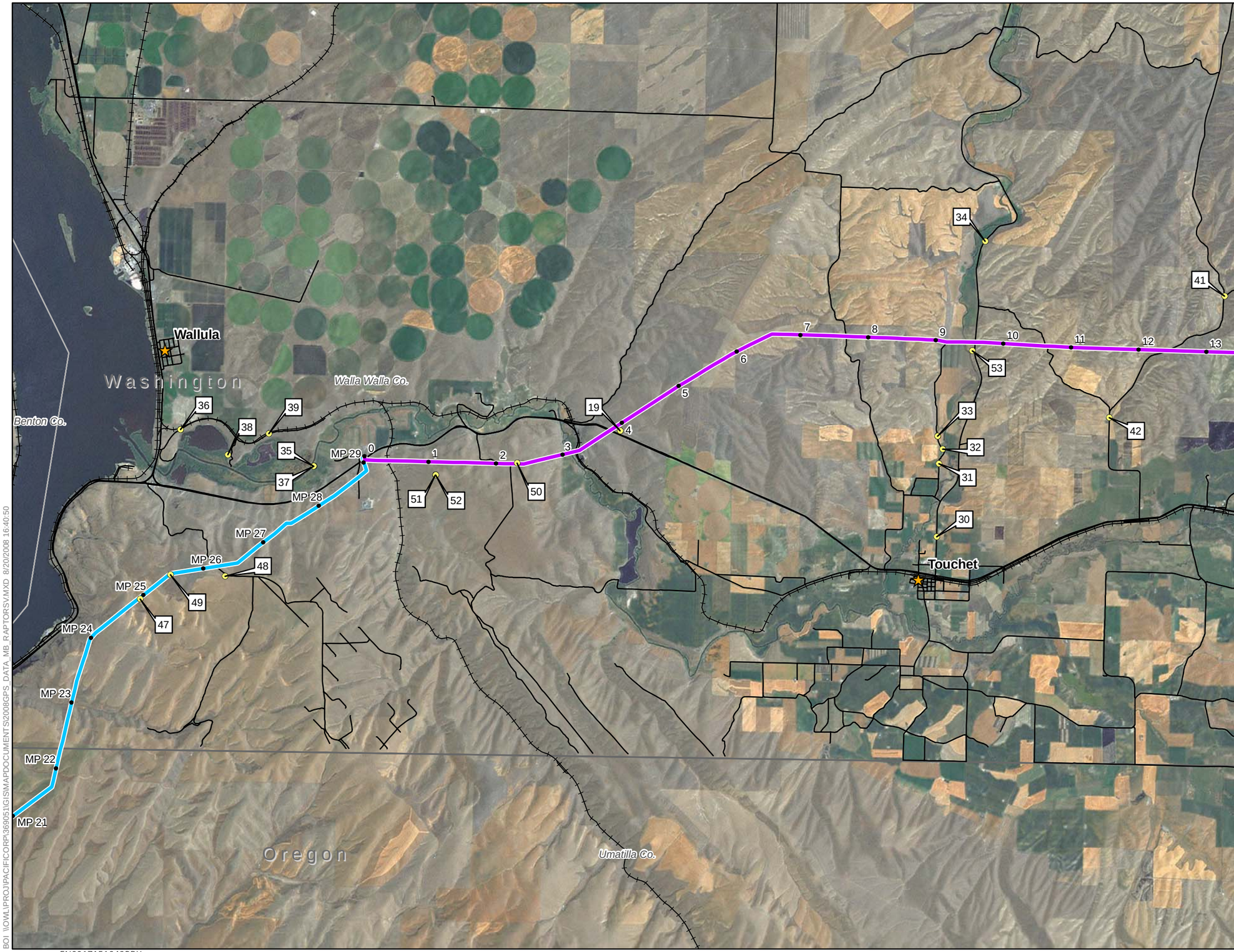
Walla Walla McNary Proposed TLine

Appendix B: Map Book

Raptor Survey Results



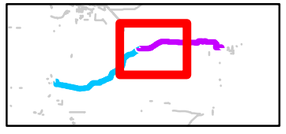
Legend

- Raptor Data Point
- City
- Milepost
- Walla Walla Wallula Proposed TLine
- McNary Wallula Proposed Tline
- Road
- Railroad

N

0 0.5 1 2 Miles

Map Sheet 2



Location Map

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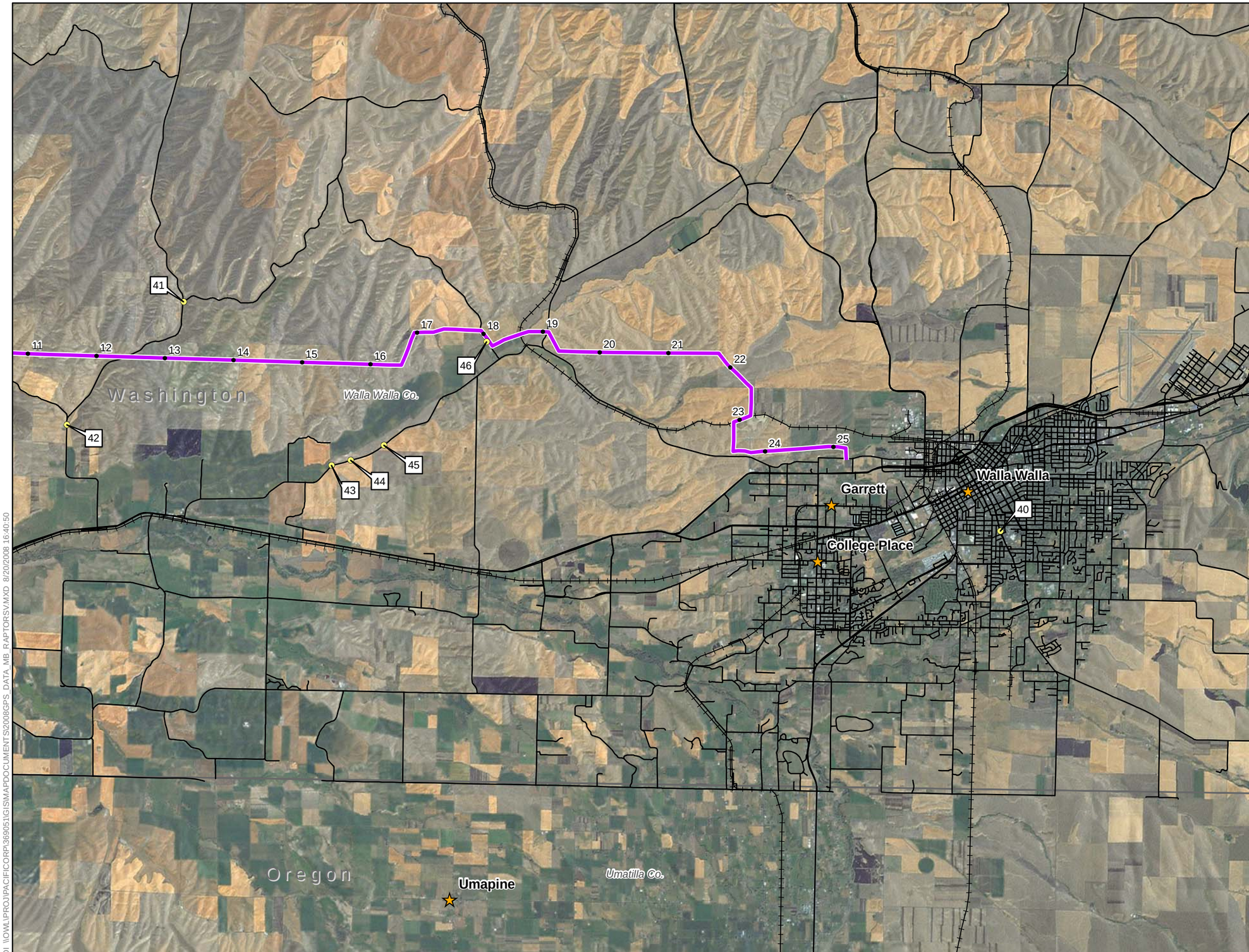
Walla Walla McNary Proposed TLine

Appendix B:
Map Book

Raptor Survey Results



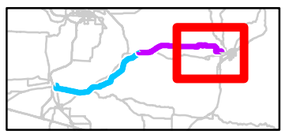
Legend

- Raptor Data Point
- City
- Milepost
- Walla Walla Wallula Proposed TLine
- McNary Wallula Proposed Tline
- Road
- Railroad

N

0 0.5 1 2 Miles

Map Sheet 3



Location Map

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APPENDIX C
Survey Results on Public Lands

PacifiCorps Walla Walla to McNary Transmission Line								
Avian Point Count Results			**Bureau of Land Management Parcel Oregon (Mileposts 2.56 to 3.08)**					
Species Observed (Common Name)	**Number < 50 m**	**Number > 50 m**	**Date**	**Map Point ID**	**Point Count ID***	**Habitat**	**BLM Sensitive Species Vale District**	**ODFW Strategy Species Status**
Swainson's Hawk	3		5/13/2008	24	G2-01	Sagebrush-cheatgrass		yes
Ring-necked Pheasant	2		5/13/2008	24	G2-01	Sagebrush-cheatgrass		
Western Meadowlark	1	1	5/13/2008	24	G2-01	Sagebrush-cheatgrass		
American Robin		1	5/13/2008	24	G2-01	Russian olive		
California Quail		1	5/13/2008	24	G2-01	Russian olive		
American White Pelican		4	5/13/2008	72	G2-026 IN	Sagebrush-cheatgrass	yes	
Red-Winged Blackbird	4		5/13/2008	26	G2-027	PEM		
American Kestrel		1	5/13/2008	26	G2-027	Sagebrush-cheatgrass		
Tricolored Blackbird	2		5/13/2008	26	G2-027	PEM		
Ring-necked Pheasant		1	5/13/2008	26	G2-027	PEM		
European Starling	1		5/13/2008	26	G2-027	PEM edge		
Swainson's Hawk	2		5/13/2008	25	G4-001 IN	Flying over		yes
Osprey	1		5/13/2008	39	G4-001 IN	Flying over		
Western Kingbird	2	1	5/13/2008	NM	G4-02	Cheatgrass-rabbitbrush		

PacifiCorps Walla Walla to McNary Transmission Line								
Avian Point Count Results			**Bureau of Land Management Parcel Oregon (Mileposts 2.56 to 3.08)**					
Species Observed (Common Name)	**Number < 50 m**	**Number > 50 m**	**Date**	**Map Point ID**	**Point Count ID***	**Habitat**	**BLM Sensitive Species Vale District**	**ODFW Strategy Species Status**
Red-winged Blackbird		2	5/13/2008	NM	G4-02	PEM-PSS		
Western Meadowlark		1	5/13/2008	NM	G4-02	Cheatgrass-rabbitbrush		
American Goldfinch		2+	5/13/2008	NM	G4-02	Tree		
California Quail		2	5/13/2008	NM	G4-02	Cheatgrass-rabbitbrush		
Ring-necked Pheasant		2	5/13/2008	NM	G4-02	Cheatgrass-rabbitbrush		
Mallard		1	5/13/2008	NM	G4-02	Flying over from pond		
Swainson's Hawk	2		5/13/2008	41	G4-004 IN	Cheatgrass-rabbitbrush		yes
Long-billed curlew	1		5/13/2008	41	G4-004 IN	Cheatgrass-rabbitbrush		yes
American Robin		2	5/13/2008	NM	G4-04	Russian olive		
Ring-necked Pheasant		1	5/13/2008	NM	G4-04	Unknown		
California Quail		2	5/13/2008	NM	G4-04	Unknown		
Western Meadowlark	1		5/13/2008	NM	G4-04	Cheatgrass-rabbitbrush		
Black-billed Magpie	1		5/13/2008	NM	G4-06	Russian olive with aspen		
Red-Winged Blackbird	2	1	5/13/2008	NM	G4-06	PEM		
Western Wood Pewee	1	1	5/13/2008	NM	G4-06	Russian olive with aspen		
California Quail		1	5/13/2008	NM	G4-06	Unknown		
Ring-necked Pheasant		1	5/13/2008	NM	G4-06	Unknown		
American Robin		1	5/13/2008	NM	G4-06	Russian olive		
Grasshopper Sparrow	1		5/16/2008	42	G4-005 IN	Cheatgrass-rabbitbrush	yes	yes
Long-billed Curlew	4		5/16/2008	42	G4-005 IN	Cheatgrass-rabbitbrush		yes

*IN=incidental observation, not observed during point count time period or station.
NM=datapoint not shown on map, no priority species found at point.

PacifiCorps Walla Walla to McNary Transmission Line								
Avian Point Count Results			**Wanaket Wildlife Management Area Parcel (Project Mileposts 3.08 to 5.11)**					
Species Observed (Common Name)	**Number < 50 m**	**Number > 50 m**	**Date**	**Map Point ID**	**Point Count ID***	**Habitat**	**BLM Sensitive Species Vale District**	**ODFW Conservation Strategy Species Status**
Black-billed Magpie		1	5/13/2008	NM	G2-028	Sagebrush-cheatgrass		
Brown-headed Cowbird	5		5/13/2008	NM	G2-028	Sagebrush-cheatgrass		
Swallow sp.		4	5/13/2008	NM	G2-028	Sagebrush-cheatgrass		
Ring-necked Pheasant		1	5/13/2008	NM	G2-028	PEM with Russian olive		
Mourning Dove		2	5/13/2008	NM	G2-028	PEM with Russian olive		
Red-winged Blackbird		2	5/13/2008	NM	G2-028	PEM		
American Goldfinch		1	5/13/2008	NM	G2-028	PEM with Russian olive		
Red-tailed Hawk		2	5/13/2008	NM	G2-029 IN	Sagebrush-cheatgrass		
American Kestrel		1	5/13/2008	NM	G2-029 IN	Sagebrush-cheatgrass		
Yellow-headed Blackbird	4		5/13/2008	27	G2-030	PEM		
Red-winged Blackbird	4		5/13/2008	27	G2-030	PEM		
Mourning Dove	4		5/13/2008	27	G2-030	PEM		
Killdeer	1		5/13/2008	27	G2-030	Sagebrush-cheatgrass		
Ring-necked Pheasant		2	5/13/2008	27	G2-030	PEM		
Sharp-shinned Hawk		1	5/13/2008	27	G2-030	Sagebrush-cheatgrass		
American Coot		2	5/13/2008	27	G2-030	PEM open water		
Virginia Rail	1		5/13/2008	NM	G2-031 IN	PEM		
Blue-winged Teal	2		5/13/2008	NM	G2-031 IN	PEM		
Red-winged Blackbird	5		5/13/2008	28	G2-032	PEM		
Yellow-headed Blackbird	7		5/13/2008	28	G2-032	PEM		
Tricolored Blackbird	1		5/13/2008	28	G2-032	PEM		yes
Canada Goose	2		5/13/2008	28	G2-032	PEM		
Red-tailed Hawk	1		5/14/2008	29	G2-033	Sagebrush-cheatgrass		
Red-winged Blackbird	4		5/14/2008	29	G2-033	PEM		
Yellow-headed Blackbird	4		5/14/2008	29	G2-033	PEM		
Western Meadowlark	2		5/14/2008	29	G2-033	Sagebrush-cheatgrass		
Mallard	2		5/14/2008	29	G2-033	PEM		
Ring-necked Pheasant	1		5/14/2008	29	G2-033	PEM		

PacifiCorps Walla Walla to McNary Transmission Line								
Avian Point Count Results			**Wanaket Wildlife Management Area Parcel (Project Mileposts 3.08 to 5.11)**					
Species Observed (Common Name)	**Number < 50 m**	**Number > 50 m**	**Date**	**Map Point ID**	**Point Count ID***	**Habitat**	**BLM Sensitive Species Vale District**	**ODFW Conservation Strategy Species Status**
Western Kingbird	2		5/14/2008	29	G2-033	Sagebrush-cheatgrass		
Mourning Dove	2		5/14/2008	29	G2-033	Sagebrush-cheatgrass		
Song Sparrow	1		5/14/2008	29	G2-033	Sagebrush-cheatgrass		
Black-billed Magpie	1	1	5/14/2008	29	G2-033	Sagebrush-cheatgrass		
California Quail		1	5/14/2008	29	G2-033	Sagebrush-cheatgrass		
Tricolored Blackbird	1		5/14/2008	29	G2-033 IN	PEM		yes
Red-winged Blackbird	1		5/14/2008	29	G2-033 IN	PEM		
Killdeer	1		5/14/2008	29	G2-033 IN	PEM		
Brown-headed Cowbird	1		5/14/2008	29	G2-033 IN	Sagebrush-cheatgrass		
Mallard	1		5/14/2008	29	G2-033 IN	PEM		
Ring-necked Pheasant	1		5/14/2008	29	G2-033 IN	PEM		
Western Kingbird	1		5/14/2008	29	G2-033 IN	Sagebrush-cheatgrass		
Gull sp.	1		5/14/2008	29	G2-033 IN	PEM		
Red-winged Blackbird	6		5/14/2008	30	G2-034	PEM		
Yellow-headed Blackbird	3		5/14/2008	30	G2-034	PEM		
Mallard	2		5/14/2008	30	G2-034	PEM open water		
Tricolored Blackbird	2		5/14/2008	30	G2-034	PEM		yes
Western Meadowlark	2		5/14/2008	30	G2-034	Sagebrush-cheatgrass		
Gadwall	2		5/14/2008	30	G2-034	PEM open water		
Ring-necked Pheasant	2		5/14/2008	NM	G2-035	Sagebrush-Russian olive		
Red-winged Blackbird		1	5/14/2008	NM	G2-035	Sagebrush-Russian olive		
Western Meadowlark	5		5/14/2008	NM	G2-035	Sagebrush-Russian olive		
California Quail		1	5/14/2008	NM	G2-035	Sagebrush-Russian olive		
Common Raven		1	5/14/2008	NM	G2-035	Sagebrush-Russian olive		
Ring-necked Pheasant	1	1	5/14/2008	NM	G2-036	Sagebrush-cheatgrass		
Black-billed Magpie	1		5/14/2008	NM	G2-036	Sagebrush-cheatgrass		
Western Meadowlark	2	3	5/14/2008	NM	G2-036	Sagebrush-cheatgrass		
Mourning Dove	3		5/14/2008	NM	G2-037	Sagebrush-cheatgrass-Russian olive		

PacifiCorps Walla Walla to McNary Transmission Line								
Avian Point Count Results			**Wanaket Wildlife Management Area Parcel (Project Mileposts 3.08 to 5.11)**					
Species Observed (Common Name)	**Number < 50 m**	**Number > 50 m**	**Date**	**Map Point ID**	**Point Count ID***	**Habitat**	**BLM Sensitive Species Vale District**	**ODFW Conservation Strategy Species Status**
Black-billed Magpie	4	1	5/14/2008	NM	G2-037	Sagebrush-cheatgrass-Russian olive		
Ring-necked Pheasant	1		5/14/2008	NM	G2-037	Sagebrush-cheatgrass-Russian olive		
Killdeer	1		5/14/2008	NM	G2-037	Sagebrush-cheatgrass-Russian olive		
Northern Harrier		1	5/14/2008	NM	G2-037	Sagebrush-cheatgrass-Russian olive		
Ferruginous Hawk	1		4/17/2008	9	DF-028	Grassland with stringers of shrubs, trees, ponds	yes	yes
California Quail	1		5/13/2008	NM	G4-07	Grass with brush piles		
Ring-necked Pheasant		1	5/13/2008	NM	G4-07	Unknown		
Mourning Dove		2	5/13/2008	NM	G4-07	Grass with brush piles		
Black-billed Magpie	1		5/13/2008	NM	G4-07	Nest in Russian olive		
Badger Hole (Watched for W. Burrowing Owl)	1		5/13/2008	NM	G4-09	Badger Dens No Burrowing Owls Seen		
Northern Harrier	2		5/13/2008	NM	G4-10	Nest site with male and female		
American Kestrel	1		5/13/2008	NM	G4-11	Marsh with Russian olive		
Yellow-headed Blackbird	1		5/13/2008	NM	G4-11	Marsh with Russian olive		
Marsh Wren	1		5/13/2008	NM	G4-12	Bulrush and cattail PEM		
Yellow-headed Blackbird	2		5/13/2008	NM	G4-12	Bulrush and cattail PEM		
Ring-necked Pheasant	2	1	5/13/2008	NM	G4-12	Bulrush and cattail PEM		
Red-winged Blackbird	1	1	5/13/2008	NM	G4-12	Bulrush and cattail PEM		
California Quail		5	5/13/2008	NM	G4-12	Upland		
Mourning Dove	1	2	5/13/2008	NM	G4-12	Russian olive		
Yellow-headed Blackbird	3		5/13/2008	44	G4-13 IN	PSS with water		
Black-necked Stilt	1		5/13/2008	44	G4-13 IN	PSS with water		
Virginia Rail	1		5/13/2008	44	G4-13 IN	PSS with water		
Cinnamon Teal	2		5/13/2008	44	G4-14 IN	PSS with water		
Red-winged Blackbird	3		5/13/2008	44	G4-14 IN	PSS with water		
Ring-necked Pheasant	3		5/13/2008	44	G4-14 IN	Upland with cheatgrass		
Unknown Raptor	1		5/13/2008	NM	G4-15 IN	Upland with cheatgrass		
Killdeer	2		5/13/2008	NM	G4-17	Basalt outcrop with cheatgrass		
Tricolor Blackbird	1		5/13/2008	NM	G4-18	PEM shallow pond		yes

PacifiCorps Walla Walla to McNary Transmission Line								
Avian Point Count Results			**Wanaket Wildlife Management Area Parcel (Project Mileposts 3.08 to 5.11)**					
Species Observed (Common Name)	**Number < 50 m**	**Number > 50 m**	**Date**	**Map Point ID**	**Point Count ID***	**Habitat**	**BLM Sensitive Species Vale District**	**ODFW Conservation Strategy Species Status**
Black-necked Stilt	2		5/13/2008	NM	G4-18	PEM shallow pond		
Red-winged Blackbird	2		5/13/2008	NM	G4-18	PEM shallow pond		
Wilson's Phalarope	4		5/14/2008	NM	G4-21	PEM shallow pond		
Black-necked Stilts	2		5/14/2008	NM	G4-21	PEM shallow pond		
Killdeer	2		5/14/2008	NM	G4-21	PEM shallow pond		
Red-tailed Hawks	1		5/14/2008	NM	G4-21	PEM shallow pond		
Black-crowned Night Heron	1		5/14/2008	182	G4-22	PEM shallow pond (potential range expansion)		
Gadwall	2		5/14/2008	NM	G4-23	Grass with PEM pond		
Red-winged Blackbird	3	2	5/14/2008	NM	G4-23	Grass with PEM pond		
Mourning Dove		2	5/14/2008	NM	G4-23	Grassland with stringers of shrubs, trees, ponds		
Yellow-headed Blackbird	1	1	5/14/2008	NM	G4-23	Grassland with stringers of shrubs, trees, ponds		
Song Sparrow	1	1	5/14/2008	NM	G4-23	Grassland with stringers of shrubs, trees, ponds		
Northern Flicker	1	2	5/14/2008	NM	G4-23	Grassland with stringers of shrubs, trees, ponds		
Red-tailed Hawk		1	5/14/2008	NM	G4-23	Utility Pole overlooking area		
Cinnamon Teal	2		5/14/2008	NM	G4-24 IN	PEM pond		
Black-crowned Night Heron	1		5/14/2008	45	G4-25	PEM shallow pond (potential range expansion)		
Red-winged Blackbird	2	4	5/14/2008	45	G4-25	PEM pond		
Yellow-headed Blackbird	2		5/14/2008	45	G4-25	PEM pond		
Mallard	2		5/14/2008	45	G4-25	PEM pond		
Long-eared Owl	5		5/14/2008	46	G4-26 IN	Nest site: Russian olive in grove (male, female, 3 owlets)		
Western Kingbird	1		5/14/2008	NM	G4-27	Small sagebrush stand		
Western Meadowlark	2	1	5/14/2008	NM	G4-27	Small sagebrush stand		
California Quail		3	5/14/2008	NM	G4-27	Unknown		
Ring-necked Pheasant		1	5/14/2008	NM	G4-27	Unknown		
Ring-necked Pheasant		2	5/14/2008	NM	G4-28	Unknown		
Western Meadowlark		2	5/14/2008	NM	G4-28	Sagebrush with Sandberg's bluegrass, cheatgrass		
Mourning Dove		1	5/14/2008	NM	G4-28	Russian olive		
Black-billed Magpie	3		5/14/2008	NM	G4-29	Sagebrush with Russian olive		

PacifiCorps Walla Walla to McNary Transmission Line								
Avian Point Count Results			**Wanaket Wildlife Management Area Parcel (Project Mileposts 3.08 to 5.11)**					
Species Observed (Common Name)	**Number < 50 m**	**Number > 50 m**	**Date**	**Map Point ID**	**Point Count ID***	**Habitat**	**BLM Sensitive Species Vale District**	**ODFW Conservation Strategy Species Status**
Killdeer	1		5/14/2008	NM	G4-29	Pasture east of Wanaket boundary		
Ring-necked Pheasant		2	5/14/2008	NM	G4-29	Pasture east of Wanaket boundary		
California Quail		2	5/14/2008	NM	G4-29	Pasture east of Wanaket boundary		
Western Meadowlark	1		5/14/2008	NM	G4-29	Sagebrush with Russian olive		
Red-tailed Hawk		4	5/14/2008	189	G4-29	Out of boundary: Russian olive and dead cottowood adult & 3 young hatched		

*IN=incidental observation, not observed during point count time period or station.
NM=datapoint not shown on map, no ODFW strategy or priority species found at point.

APPENDIX D
GIS Tabular Data Set for Project Area

GPSNO*	TYPE	GISCOMMENT	FIELDSV	FILENAME	IDENT	STATUS	DATE_1	OBSERVER	SVCOMMENT	STATE	SPEC_CODE	SPEC_COM	SPEC_SCI	NUMBER
1	WAYPOINT	Initial survey from road	A	Garmin DF	014	PRIORITY, RAPTOR	16-APR-08 13:37:44	Dave Fornander	Red-tailed hawk	WA	RTHA	Red-tailed hawk	Buteo jamaicensis	5
2	WAYPOINT	Initial survey from road	A	Garmin DF	016	PRIORITY, RAPTOR	16-APR-08 14:14:22	Dave Fornander	Swainson's hawk	WA	SWHA	Swainson's hawk	Buteo swainsoni	1
3	WAYPOINT	Initial survey from road	A	Garmin DF	017	PRIORITY, RAPTOR	16-APR-08 14:23:14	Dave Fornander	Swainson's hawk	WA	SWHA	Swainson's hawk	Buteo swainsoni	3
4	WAYPOINT	Initial survey from road	A	Garmin DF	019	PRIORITY, RAPTOR	16-APR-08 16:19:30	Dave Fornander	Red-tailed hawk	WA	RTHA	Red-tailed hawk	Buteo jamaicensis	2
5	WAYPOINT	Initial survey from road	A	Garmin DF	021	PRIORITY, RAPTOR	16-APR-08 16:59:36	Judy Ferguson	Northern harrier	WA	NOHA	Northern harrier	Circus cyaneus	2
6	WAYPOINT	Initial survey from road	A	Garmin DF	022	PRIORITY, RAPTOR	16-APR-08 17:21:12	Dave Fornander	Red-tailed hawk	WA	RTHA	Red-tailed hawk	Buteo jamaicensis	1
7	WAYPOINT	Initial survey from road	A	Garmin DF	023	PRIORITY, RAPTOR	16-APR-08 17:46:28	Dave Fornander	Red-tailed hawk	WA	RTHA	Red-tailed hawk	Buteo jamaicensis	1
8	WAYPOINT	Initial survey from road	A	Garmin DF	026	PRIORITY, RAPTOR	17-APR-08 11:16:51	Dave Fornander	Ferruginous hawk	OR	FEHA	Ferruginous hawk	Buteo regalis	1
9	WAYPOINT	Initial survey from road	A	Garmin DF	028	PRIORITY, RAPTOR	17-APR-08 11:44:04	Dave Fornander	Ferruginous hawk	OR	FEHA	Ferruginous hawk	Buteo regalis	1
10	WAYPOINT	Initial survey from road	A	Garmin DF	031	PRIORITY, RAPTOR	17-APR-08 14:27:58	Dave Fornander	Ferruginous hawk	OR	FEHA	Ferruginous hawk	Buteo regalis	1
11	WAYPOINT	Initial survey from road	A	Garmin DF	032	PRIORITY, RAPTOR	17-APR-08 15:59:46	Dave Fornander	Ferruginous hawk	OR	FEHA	Ferruginous hawk	Buteo regalis	1
12	WAYPOINT	Initial survey from road	A	Garmin DF	033	PRIORITY, RAPTOR	17-APR-08 17:43:30	Dave Fornander	Red-tailed hawk	WA	RTHA	Red-tailed hawk	Buteo jamaicensis	1
13	WAYPOINT	Initial survey from road	A	Garmin DF	034	PRIORITY, RAPTOR	17-APR-08 17:48:38	Dave Fornander	Great horned owl	WA	GHOW	Great horned owl	Bubo virginianus	2
14	WAYPOINT	Initial survey from road	A	Garmin DF	036	PRIORITY, RAPTOR	17-APR-08 18:05:17	Dave Fornander	Swainson's hawk	WA	SWHA	Swainson's hawk	Buteo swainsoni	1
15	WAYPOINT	Initial survey from road	A	Garmin DF	037	PRIORITY, RAPTOR	17-APR-08 18:09:19	Dave Fornander	Swainson's hawk	WA	SWHA	Swainson's hawk	Buteo swainsoni	1
16	WAYPOINT	Initial survey from road	A	Garmin DF	038	PRIORITY, RAPTOR	17-APR-08 18:17:51	Dave Fornander	Red-tailed hawk	WA	RTHA	Red-tailed hawk	Buteo jamaicensis	1
17	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 1	024	PRIORITY	13-MAY-08	Chuck Blair	Brewer's sparrow	OR	BRSP			
18	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 1	029	PRIORITY	13-MAY-08	Chuck Blair	Brewer's sparrow, Loggerhead shrike	OR	BRSP, LOSH			
19	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 1	032	PRIORITY	14-MAY-08	Chuck Blair	INC: Long-billed curlew	OR	LBCU			
20	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 1	034	PRIORITY	13-MAY-08	Chuck Blair	Brewer's sparrow	OR	BRSP			
21	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 1	035	PRIORITY	13-MAY-08	Chuck Blair	Long-billed curlew	OR	LBCU			
22	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 1	040	PRIORITY	15-MAY-08	Chuck Blair	Long-billed curlew	OR	LBCU			
23	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 1	048	PRIORITY	16-MAY-08	Chuck Blair	Grasshopper sparrow	WA	GRSP			
24	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	01	PRIORITY, RAPTOR	13-MAY-08	Renee Storey	Swainson's hawk	OR	SWHA	Swainson's hawk	Buteo swainsoni	3
25	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	002	PRIORITY, RAPTOR	13-MAY-08	Renee Storey	Swainson's hawk	OR	SWHA	Swainson's hawk	Buteo swainsoni	1
26	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	027	PRIORITY	13-MAY-08	Renee Storey	Tricolor blackbird	OR	TRBL			
27	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	030	PRIORITY, RAPTOR	13-MAY-08	Renee Storey	Sharp-shined hawk	OR	SSHA	Sharp-shined hawk	Accipiter striatus	1
28	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	032	PRIORITY	13-MAY-08	Renee Storey	Tricolor blackbird	OR	TRBL			
29	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	033	PRIORITY	13-MAY-08	Renee Storey	Tricolor blackbird	OR	TRBL			
30	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	034	PRIORITY	13-MAY-08	Renee Storey	Tricolor blackbird	OR	TRBL			
32	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	042	PRIORITY	15-MAY-08	Renee Storey	Brewer's sparrow, Long-billed curlew	OR	BRSP, LBCU			
33	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	044	PRIORITY	15-MAY-08	Renee Storey	Brewer's sparrow	OR	BRSP			
34	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	045	PRIORITY	15-MAY-08	Renee Storey	Long-billed curlew	OR	LBCU			
35	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	047	PRIORITY, RAPTOR	16-MAY-08	Renee Storey	Prairie falcon	WA	PRFA	Prairie falcon	Falco mexicanus	1
36	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 3	013	PRIORITY	14-MAY-08	Katina Kapantais	Loggerhead shrike	OR	LOSH			
37	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 3	022	PRIORITY	14-MAY-08	Katina Kapantais	Loggerhead shrike	OR	LOSH			
38	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 3	041	PRIORITY	16-MAY-08	Katina Kapantais	Grasshopper sparrow	WA	GRSP			
39	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	001	PRIORITY, RAPTOR	13-MAY-08	Judy Ferguson	Osprey	OR	OSPR	Osprey	Pandion haliaetus	1
40	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	002	PRIORITY, RAPTOR	13-MAY-08	Judy Ferguson	Swainson's hawk, Tricolor blackbird	OR	SWHA, TRBL	Swainson's hawk	Buteo swainsoni	2
41	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	004	PRIORITY, RAPTOR	13-MAY-08	Judy Ferguson	Swainson's hawk, Long-billed curlew	OR	SWHA, LBCU	Swainson's hawk	Buteo swainsoni	2
42	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	005	PRIORITY	16-MAY-08	Judy Ferguson	Grasshopper sparrow, Long-billed curlew	OR	GRSP, LBCU			
43	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	006	PRIORITY	13-MAY-08		Wilson's pharlarope, Black-necked stilt	OR	WIPH, BNST			
44	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	013	PRIORITY	13-MAY-08		Black-necked stilt	OR	BNST			
46	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	026	PRIORITY, RAPTOR	14-MAY-08	Judy Ferguson	Long-eared owl (nest)	OR	LEOW (nest)	Long-eared owl	Osio otus	5
47	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	030	PRIORITY, RAPTOR	14-MAY-08	Judy Ferguson	Great-horned owl	OR	GHOW	Great-horned owl	Bubo virginianus	2
48	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	036	PRIORITY	13-MAY-08	Judy Ferguson	Loggerhead shrike, Long-billed curlew, Sage sparrow	OR	LOSH, LBCU, SAGS			
49	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	039	PRIORITY, RAPTOR	15-MAY-08	Judy Ferguson	Ferruginous hawk	OR	FEHA	Ferruginous hawk	Buteo regalis	3
50	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	040	PRIORITY, RAPTOR	16-MAY-08	Judy Ferguson	Northern harrier	WA	NOHA	Northern harrier	Circus cyaneus	1
51	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	042	PRIORITY, RAPTOR	16-MAY-08	Judy Ferguson	Red-tailed hawk	WA	RTHA	Red-tailed hawk	Buteo jamaicensis	2
52	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 1	006	PRIORITY	2008/05/28-15:08:01	Chuck Blair	Grasshopper sparrow	WA	GRSP			
53	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 1	007	PRIORITY	2008/05/28-15:36:38	Chuck Blair	Brewer's sparrow	WA	BRSP			
54	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 1	008	PRIORITY, RAPTOR	2008/05/28-16:29:30	Chuck Blair	Red-tailed hawk	WA	RTHA	Red-tailed hawk	Buteo jamaicensis	1
55	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 1	015	PRIORITY	2008/05/29-15:31:33	Chuck Blair	Common snipe	OR	COSN			
56	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 1	016	PRIORITY, RAPTOR	2008/05/29-16:04:45	Chuck Blair	Red-tailed hawk, Common snipe	OR	COSN	Red-tailed hawk	Buteo jamaicensis	1
57	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 2	004	PRIORITY	2008/05/28-15:48:56	Renee Storey	Long-billed curlew, Grasshopper sparrow	WA	LBCU, GRSP			

GPSNO*	TYPE	GISCOMMENT	FIELDSV	FILENAME	IDENT	STATUS	DATE_1	OBSERVER	SVCOMMENT	STATE	SPEC_CODE	SPEC_COM	SPEC_SCI	NUMBER
58	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 2	005	PRIORITY	2008/05/28-16:30:15	Renee Storey	Long-billed curlew	WA	LBCU			
59	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 2	009	PRIORITY	2008/05/29-15:40:28	Renee Storey	Common snipe	OR	COSN			
60	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 2	010	PRIORITY	2008/05/29-16:21:45	Renee Storey	Common snipe	OR	COSN			
61	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 3	002	PRIORITY	2008/05/28-14:02:25	Katina Kapantais	INC: Long-billed curlew	WA	LBCU			
62	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 3	007	PRIORITY, RAPTOR	2008/05/28-14:50:10	Katina Kapantais	Ferruginous hawk	WA	FEHA	Ferruginous hawk	Buteo regalis	1
63	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 3	008	PRIORITY, RAPTOR	2008/05/28-14:51:50	Katina Kapantais	Ferruginous hawk	WA	FEHA	Ferruginous hawk	Buteo regalis	1
64	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 3	010	PRIORITY	2008/05/28-15:40:29	Katina Kapantais	Grasshopper sparrow	WA	GRSP			
65	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 3	011	PRIORITY	2008/05/28-16:07:25	Katina Kapantais	INC: Grasshopper sparrow	WA	GRSP			
66	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 3	025	PRIORITY	2008/05/29-16:21:16	Katina Kapantais	Common snipe	OR	COSN			
67	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 4	032	PRIORITY	2008/05/29-15:24:54	Judy Ferguson	Common snipe	OR	COSN			
68	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 4	033	PRIORITY	2008/05/29-16:15:08	Judy Ferguson	Grasshopper sparrow	OR	GRSP			
69	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 4	037	PRIORITY	2008/05/30-13:21:31	Judy Ferguson	Swainson's hawk	WA	SWHA			
70	WAYPOINT	Survey Dates 5-27 thru 5-30-2008	C	Garmin 4	038	PRIORITY, RAPTOR	2008/05/30-13:34:15	Judy Ferguson	Swainson's hawk (nest)	WA	SWHA (nest)	Swainson's hawk	Buteo swainsoni	2
71	WAYPOINT	Lat/Long coordinates supplied	B	N/A	N/A	PRIORITY	14-MAY-08	Katina Kapantais	INC: Loggerhead-shrike	OR	LOSH			
72	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 2	026	PRIORITY	13-MAY-08	Judy Ferguson	American White Pelican	OR	AWPE			
182	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	22	POTENTIAL NEW RANGE	14-MAY-08	Judy Ferguson	Black-Crowned Night Heron	OR	BCNH	Black-Crowned night heron	Nycticorax nycticorax	1
189	WAYPOINT	Data Downloaded 5-19-2008	B	Garmin 4	29	RAPTOR	14-MAY-08	Judy Ferguson	Red-tailed hawk	OR	RTHA	Red-tailed hawk	Buteo jamaicensis	4
*Data points in this table reflect ONLY those locations where Priority Species were found.														

GPSNO*	SEX	NEST_OBS	AGE	ACTIVITY	HABITAT	COMMENTS	USGS_QUAD	TRS	LAT	LONG	HAB_FDSHT	Label_ID
1	M&F	yes	2A:3Y	2 adults feeding downy young	Cottonwood tree in ag land along Touchet River	Unknown number of nestlings	Lowden, WA	7N,33E,34	46.048846	-118.669103	Riparian tree	30
2	unk	no	A	flying	Over Touchet River		Lowden, WA	7N,33E,22	46.067576	-118.667803	Riparian tree	32
3	2M&1F	no	A	nuptial flying and skirmishing	Over Touchet River	Near Thompson Cattle Ranch	Lowden, WA	7N,33E,22	46.070328	-118.669470	Riparian tree	33
4	M&F	yes	A	1 on nest;1 calling overhead	Locust tree		Zangar Junction, WA	7N,32E,30	46.061007	-118.860794	Upland tree	37
5	M&F	no	A	hunting	Marshes and riparian trees cottonwood Wallula WMU	Smith's Harbor Overlook			46.068097	-118.902021	Riparian tree / Marsh	36
6	unk	yes	A	on nest	Cottonwood tree riparian zone of Walla Walla River	Wallula Wlf Mgmt Unit	Zangar Junction, WA	7N,32E,30	46.062997	-118.887282	Riparian tree	38
7	unk	no	A	perched	Cottonwood tree riparian zone of Walla Walla River	Wallula Wlf Mgmt Unit	Zangar Junction, WA	7N,31E,25	46.067690	-118.874794	Riparian tree	39
8	unk	no	A	soaring overhead	Heavily treed farmland		Hat Rock, OR	5N,29E,28	45.881373	-119.182237	Farmstead tree	2
9	unk	no	A	flying overhead	Grassland with stringers of shrubs, trees and ponds.	Wanaket Wlf area.	Hat Rock, OR	5N,29E,20	45.900533	-119.244772	Riparian tree	4
10	unk	no	A	flying overhead	Grass with trees.	2 osprey seen and heard here as well.	Umatilla, OR	5N,28E,27	45.927490	-119.305297	Riparian tree	8
11	unk	no	A	flying overhead	Juniper canyon mouth with wetland and upland veg.		Umatilla, OR	5N,28E,10	45.955751	-119.035811	Upland tree	9
12	unk	no	A	soaring	Woodward Canyon mostly agriculture		Juniper, OR	6N,30E,35	46.101537	-118.582140	Agricultural	41
13	unk	yes	1A:1+Y	young in nest with adult	Woodward Canyon mostly agriculture		Lowden, WA	7N,34E,8	46.075103	-118.616872	Agricultural	42
14	unk	no	A	perched and flying	Dry Creek riparian and agriculture		College Place, WA	7N,34E,22	46.068777	-118.530474	Riparian tree	44
15	unk	no	A	perched	Dry Creek riparian and agriculture		College Place, WA	7N,34E,23	46.072076	-118.520561	Riparian tree	45
16	unk	yes	A	1 on nest	Dry Creek riparian area	Possibly a red-tailed hawk	College Place, WA	7N,34E,23	46.094346	-118.489887	Riparian tree	46
17									45.913272	-119.114177		
18									45.922939	-119.093043		
19									45.922978	-119.076245		
20									45.922782	-119.071400		
21									45.922889	-119.066516		
22									45.938300	-119.026373		
23									46.022668	-118.926190		
24	unk	no	A	flying overhead					45.910639	-119.274552	Shrub steppe	15
25	unk	no	A	flying overhead	Grassland with trees	Pasture grasslands			45.910224	-119.270227	Agricultural	14
26									45.909918	-119.267851		
27	unk	no	A	flying overhead	Sagebrush, cheatgrass with Russian olive				45.908318	-119.257845	Upland tree	16
28									45.908334	-119.255337		
29									45.907219	-119.246399		
30									45.906046	-119.238073		
32									45.952464	-119.000549		
33									45.947681	-119.001135		
34									45.934990	-119.033175		
35	unk	no	A	flying					46.031734	-118.913139	Agricultural	47
36									45.919095	-119.104557		
37									45.922237	-119.065212		
38									46.023430	-118.927651		
39	unk	no	A	flying					45.910222	-119.269794	Grassland / Riparian tree	17
40	1M&1F	no	A	flying overhead & calling	Grassland with trees				45.910230	-119.270239	Grassland	18
41	unk	no	A	flying overhead	Rabbitbrush and cheatgrass				45.911126	-119.274403	Shrub steppe	20
42									45.911044	-119.273882		
43									45.910270	-119.267886		
44									45.909550	-119.257672		
46	1M,1F,3unk	yes	2A:3Y	on nest	Russian olive	Wanaket Wlf area			45.905774	-119.233875	Upland tree	23
47	unk	no	A	perched	Russian olive	Wanaket Wlf area.			45.903430	-119.212508	Riparian tree	26
48									45.932543	-119.039265		
49		yes	1A:2Y	1 on nest with downy young	Dead cottonwood in untilled grassy swale.				45.947605	-119.001741	Grassland	27
50	M	no	A	flying	CRP grasslands				46.037039	-118.887216	Grassland	48
51	unk	no	A	flying-calling	CRP grasslands				46.037066	-118.903970	Grassland	49
52									46.059803	-118.819839		
53									46.058779	-118.807040		
54	unk	no	A	flying	Rabbitbrush and cheatgrass				46.062656	-118.798447	Shrub steppe	50
55									45.900722	-119.265699		
56	unk	no	A	flying	Cattails, Russian olive, weedy upland				45.901341	-119.272313	Riparian tree / Marsh	29
57									46.072166	-118.758800		

GPSNO*	SEX	NEST_OBS	AGE	ACTIVITY	HABITAT	COMMENTS	USGS_QUAD	TRS	LAT	LONG	HAB_FDSHT	Label_ID
58									46.077871	-118.752057		
59									45.902405	-119.301669		
60									45.901330	-119.273290		
61									46.061696	-118.839600		
62	M	yes	A	Flying female on nest at map id #53	Near nest on platform with #6				46.059681	-118.823438	Shrub steppe	51
63	F	yes	A:?Y	1 on nest; 1 calling overhead	Nest on platform with #6.	Male overhead; Female flushed from deep nest.			46.059728	-118.823297	Shrub steppe	52
64									46.059686	-118.808395		
65									46.058469	-118.804449		
66									45.901011	-119.269247		
67									45.900961	-119.299895		
68									45.900863	-119.279932		
69									46.090900	-118.658461		
70	1M&1F	yes	A	nesting	Nest in telephone pole 500' south of Touchet				46.088789	-118.659322	Grassland	53
71									45.922520	-119.089390		
72									45.911011	-119.273782		
182			A						45.908478	-119.248304		
189	unk	yes	1A:3Y	young in nest with adult	old cottowood near Russian olive				45.905084	-119.224032		
*Data poin												

no

APPENDIX E

Breeding Bird and WGS Field Survey Sheets for Project Area

Touchet Creek

RAPTOR NEST SITE CHARACTERISTICS

East Side

USGS QUAD: _____ TRS LOCATION: Near 609 Touchet Rd

MAP ID: WP 014 - Fernandez DATE: 16 April 2008

TIME: 12:40 pm OBSERVER: Ferguson

SPECIES: Red tail hawk

ADULTS: 2 # YOUNG or EGGS VISIBLE: 3

AGE OF YOUNG: Downy white

ADULT ACTIVITY: Feeding young ♂ carried in ♀ 2 ea ft

NEST STRATA:

Cliff	Artificial platform
Ground	Artificial berm, pit, dirt bank, etc.
(Tree)	Transmission tower (metal)
Shrub	Transmission pole (wood)
Burrow	Building
Rock outcrop	Sign/fence

CLIFF NEST: Location of nest: Top Face Other _____
Cavity Vertical Crack Ledge Pinnacle
Ledge Area (cm): N/S _____ E/W _____
NE/SW _____ NW/SE _____
Cliff Aspect: N S E W NE NW SE SW
Height from ground: _____ Dist. From Top: _____
Length of Cliff: _____

TREE NEST: Nest location: On trunk (On limb) Tree species: Cottonwood
Height of tree: 50-65' Height of nest: 1 acre
Diameter of tree at base of nest: 25" DBH: _____
Tree: (Live)/Dead Isolated/(In Grove) around house Area of Grove _____
Distance to nearest large tree: _____

SHADE (%): _____ ACCESSIBILITY: easy Someone's yard

HABITAT: Habitat types within 0.5 km of nest: ag land

Distance to water: 1/4-1/2 mile Type of water: _____

COMMENTS: Photo 1

Touchet River

RTHA
SWHA
SOSP
BB MAG
AMKE
MODO
Pheasants

Walla Walla R. — 16 April 2008

CAQU
MODO
unk black goose
WEME
AMKE
Pheasant
CORA
SOSP
BRANT Positive ID
~~NE OA~~
Cormorant

Walluka WLF MGMT unit
♀ £07 NOHA hunting 1510
AMKE
SOSP
NOFL
RWBB
BB BB
2 avocets
AMRO
MALL
AM WOSH
AMCOOTS
BLNK STILTS

overlook smith's Habitat
021

BCCH
WCSP
DEJU
SWHA
RTHA
GBHE

EN0917151022PDX

RAPTOR NEST SITE CHARACTERISTICS

USGS QUAD: _____ TRS LOCATION: WP 4-39

MAP ID: _____ DATE: 15 May 2008

TIME: 1159 a.m. OBSERVER: Ferguson, Blair, Rapanta & Storey

SPECIES: Ferruginous Hawk

ADULTS: 1 #YOUNG or EGGS VISIBLE: 2

AGE OF YOUNG: Downy

ADULT ACTIVITY: sitting on Nest, flushed & harrassed by WESTERN KINGBIRD

NEST STRATA:

Cliff	Artificial platform
Ground	Artificial berm, pit, dirt bank, etc.
Tree	Transmission tower (metal)
Shrub	Transmission pole (wood)
Burrow	Building
Rock outcrop	Sign/fence

CLIFF NEST: Location of nest: Top Face Other _____
Cavity Vertical Crack Ledge Pinnacle
Ledge Area (cm): N/S _____ E/W _____
NE/SW _____ NW/SE _____
Cliff Aspect: N S E W NE NW SE SW
Height from ground: _____ Dist. From Top: _____
Length of Cliff: _____

TREE NEST: Nest location: On trunk On limb Tree species: unk dead tree
Height of tree: 30' Height of nest: 25'
Diameter of tree at base of nest: 20" DBH: 30"
Tree: Live/Dead Isolated/In Grove Area of Grove _____
Distance to nearest large tree: Miles

SHADE (%): None ACCESSIBILITY: yes

HABITAT: Habitat types within 0.5 km of nest: ~~sand~~ unfarmed farmland

Distance to water: 2.5 mi Type of water: River

COMMENTS: _____

RAPTOR NEST SITE CHARACTERISTICS

USGS QUAD:_____ TRS LOCATION:_____

MAP ID: WP 026 11:15 a.m. DATE: 17 April 2008

TIME: ~~88~~ 1019 OBSERVER: Ferguson & Storey

SPECIES: FEHA

ADULTS: 1 soaring overhead # YOUNG or EGGS VISIBLE:_____

AGE OF YOUNG:_____

ADULT ACTIVITY:_____

NEST STRATA:

Cliff	Artificial platform
Ground	Artificial berm, pit, dirt bank, etc.
Tree	Transmission tower (metal)
Shrub	Transmission pole (wood)
Burrow	Building
Rock outcrop	Sign/fence

CLIFF NEST: Location of nest: Top Face Other_____
Cavity Vertical Crack Ledge Pinnacle
Ledge Area (cm): N/S_____ E/W_____
NE/SW_____ NW/SE_____
Cliff Aspect: N S E W NE NW SE SW
Height from ground:_____ Dist. From Top:_____
Length of Cliff:_____

TREE NEST: Nest location: On trunk On limb Tree species:_____
Height of tree:_____ Height of nest:_____
Diameter of tree at base of nest:_____ DBH:_____
Tree: Live/Dead Isolated/In Grove Area of Grove_____
Distance to nearest large tree:_____

SHADE (%):_____ ACCESSIBILITY:_____

HABITAT: Habitat types within 0.5 km of nest:_____
Heavily treed farmland

Distance to water:_____ Type of water:_____

COMMENTS:_____

RAPTOR NEST SITE CHARACTERISTICS

USGS QUAD:_____ TRS LOCATION:_____

MAP ID: WP 028 11:43 DATE: 17 April

TIME: 1041 OBSERVER:_____

SPECIES: FEHA

ADULTS: 1 # YOUNG or EGGS VISIBLE:_____

AGE OF YOUNG:_____

ADULT ACTIVITY: Flying over Wanaket WIF area

NEST STRATA:

Cliff	Artificial platform
Ground	Artificial berm, pit, dirt bank, etc.
Tree	Transmission tower (metal)
Shrub	Transmission pole (wood)
Burrow	Building
Rock outcrop	Sign/fence

CLIFF NEST: Location of nest: Top Face Other_____
Cavity Vertical Crack Ledge Pinnacle
Ledge Area (cm): N/S_____ E/W_____
NE/SW_____ NW/SE_____
Cliff Aspect: N S E W NE NW SE SW
Height from ground:_____ Dist. From Top:_____
Length of Cliff:_____

TREE NEST: Nest location: On trunk On limb Tree species:_____
Height of tree:_____ Height of nest:_____
Diameter of tree at base of nest:_____ DBH:_____
Tree: Live/Dead Isolated/In Grove Area of Grove_____
Distance to nearest large tree:_____

SHADE (%):_____ ACCESSIBILITY:_____

HABITAT: Habitat types within 0.5 km of nest: Grassland w. strings of shrubs & weeds & ponds – 2 photos

Distance to water:_____ Type of water:_____

COMMENTS:_____

CH2MHILL SUBJECT _____ BY _____

SHEET NO. ____ of ____ DATE _____

PROJECT NO. _____

1159 am 15 May 08

WP 4-39

~~FHP~~ Ferrug hawk

West A&2 young

Dead tree broken top

25'

MIDDLE FOR FIELD

(copied to Report sheet)

1139 am 15 May 07

WY 4-39

~~[illegible]~~ Fern'ng Nowak

Nestucca Young

Dead tree broken top

35'

Midpoint from trail

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/29/2008
Point Count Identifier: G1:016	Map Point: 56
Habitat Type: Cattails with Russian Olives and weeds	ODFW Preliminary Category Rating
Revised ODFW Rating Based on Strategy Species Presence	

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Yellow-headed Blackbird			4		6	No	No
Red-winged Blackbird			3		2	No	No
Ring-necked Pheasant			0		1	No	Yes
Morning Dove			4		0	No	No
Song Sparrow			0		3	No	No
Red-tailed Hawk			1		0	No	No
American Robin			1		0	No	No
Snipe			0		1	No	Yes

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/14/2008
Point Count Identifier: G1:029	Map Point: 18
Habitat Type: Sagebrush w/ cheatgrass	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Western Meadowlark			1		3	No	No
Brewer's Sparrow			0		1	Yes	No
Loggerhead Shrike			0		1	No	Yes
Brewer's Blackbird			0		1	No	No
Morning Dove			0		1	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/14/2008
Point Count Identifier: Incidental by G1:034	Map Point: 20
Habitat Type: Cheatgrass w/ fire killed sagebrush, a few rabbitbrush growing back	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Brewer's Sparrow			6		0	Yes	No
Killdeer			2		1	No	Yes
Western Meadowlark			0		5	No	No
Lark Sparrow			0		1	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/14/2008
Point Count Identifier:G1:035	Map Point 21
Habitat Type: Cheatgrass and Poa w/ fire killed sagebrush	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Western Meadowlark			1		6	No	No
Long-billed Curlew			0		1	Yes	Yes
Ring-necked Pheasant			0		1	No	Yes
Western Kingbird			0		1	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/15/2008
Point Count Identifier:G1:040	Map Point: 22
Habitat Type: Cheatgrass w/ fire killed sagebrush	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Long-billed Curlew			0		2	Yes	Yes
Western Meadowlark			0		3	No	No
Western Kingbird			0		2	No	No
Savannah Sparrow			0		1	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/28/2008
Point Count Identifier: G1:06	Map Point: 53
Habitat Type: Cheatgrass, rabbitbrush w/ sage in distance	ODFW Preliminary Category Rating
Revised ODFW Rating Based on Strategy Species Presence	

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Western Meadowlark			0		6	No	No
Horned Lark			0		3	No	No
Brewer's Sparrow			0		2	Yes	No
Lark Sparrow			0		1	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/28/2008
Point Count Identifier: G1:07	Mile Post: 52
Habitat Type: Cheatgrass w/ rabbitbrush	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Common Raven			0		4	No	No
Horned Lark			2		4	No	No
Western Meadowlark			1		8	No	No
Grasshopper Sparrow			0		3	Yes	No (State Monitor)
Brewer's Blackbird			0		2	No	No
Lark Sparrow			0		1	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 13 May 08
Point Count Identifier: G2-026-inc	Map Point: 72
Habitat Type: Sage/Cheat	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
White Pelican		4				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/28/2008
Point Count Identifier: G3:010	Map Point: 64
Habitat Type: Cheatgrass, crested wheat with sparse sage/	ODFW Preliminary Category Rating
Revised ODFW Rating Based on Strategy Species Presence	

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Horned Lark			5		0	No	No
Western Meadowlark			4		3	No	No
Lark Sparrow			1		0	No	No
Gulls			0		10	No	No
Grasshopper Sparrow			0		1	Yes	No (State Monitor)
Cliff Swallow			2		0	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date:05/28/2008
Point Count Identifier : G3:012	Map Point: 61
Habitat Type: Rabbitbrush with Cheatgrass	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Western meadowlark			3		3	No	No
Horned Lark			2		2	No	No
Brewer's Blackbird			2		3	No	No
Long-billed Curlew			0		1	Yes	Yes

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/14/2008
Point Count Identifier: G3:013	Map Point: 36
Habitat Type: Sage/Bitterbrush w/ Cheatgrass	ODFW Preliminary Category Rating
Revised ODFW Rating Based on Strategy Species Presence	

Species Observed (Common name)		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
California Quail		3		3	No	No
Western Meadowlark		3		2	No	No
Loggerhead Shrike		1		0	Yes	Yes
Killdeer		0		3	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/28/2008
Point Count Identifier: G3:014	Map Point: WallaWalla River N46.06609 W118.79358
Habitat Type: Riparian Forest and Shrub	ODFW Preliminary Category Rating
Revised ODFW Rating Based on Strategy Species Presence	

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Bullock's Oriole			6			No	No
Cliff Swallow			15			No	No
Bank Swallow			15			Yes	No
Song Sparrow			3			No	No
Yellow Warbler			1			No	No
Red-winged Blackbird			12			No	No
Double-crested Cormorant			2			No	No
White Pelican			7			Yes	Yes
Black-billed Magpie			15			No	No
Coyote			1			No	No
Brewer's Blackbird			13			No	No
Morning Dove			1			No	No
Great Blue Heron			1			No	Yes
Western Kingbird			4			No	No
Gull Species			29			No	No
Yellow-headed Blackbird			1			No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/28/2008
Point Count Identifier: G3:01	GPS Coordinates: (not mapped) N46.02343 W118.92764
Habitat Type: River	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
American White Pelican			0		3	Yes	Yes
American Crow			0		1	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/14/2008
Point Count Identifier: G3:022A	Map Point: 37
Habitat Type:Sagebrush w/ Cheatgrass Unde	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Loggerhead Shrike		1		0	Yes	Yes
California Quail		0		1	No	No
Western Meadowlark		2		0	No	No
Western Kingbird		1		0	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/29/2008
Point Count Identifier: G3:025	Map Point: 66
Habitat Type: Russian Olive Shrub/Forested Wetland	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Song Sparrow			2		1	No	No
Brown-headed Cowbird			2		1	No	No
Western Kingbird			1		0	No	No
Common Snipe			1		1	No	No
Bullock's Oriole			1		0	No	No
Morning Dove			0		1	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/16/2008
Point Count Identifier: G3:041	Map Point: 38
Habitat Type: Bluebunch, wheatgrass, basaln	ODFW Preliminary Category Rating: 2 (GN adjacent to agricu

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Western Meadowlark		2		1	No	No
Grasshopper Sparrow		0		2	Yes	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/14/2008
Point Count Identifier: N45.92252, W119.089	Map Point: 71
Habitat Type: Sagebrush w/ Cheatgrass	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Loggerhead Shrike		NA		NA	yes	Yes
Red-tailed Hawk		NA		NA	No	No
Barn Swallow		NA		NA	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/29/2008
Point Count Identifier: Incidental by G1:015	Map Point: 55
Habitat Type: Mixed wet meadow / Russian olive pasture 1	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Common Snipe			NA		4-5 birds	No	Yes

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/28/2008
Point Count Identifier: Incidental G1:03	Map Point: 61
Habitat Type: Grazed Poa segunda and Sagebrush	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Long-billed Curlew			NA		NA	Yes	Yes

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/14/2008
Point Count Identifier: Incidental by G1:032	Map Point: 19
Habitat Type: Cheatgrass w/ fire killed sagebrush	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Long-billed Curlew			NA		NA	Yes	Yes
California Quail			NA		NA	No	No

PacifiCorps Walla Walla to McNary Transmission Line							
Avian Point Count Results				Survey Date: 05/16/2008			
Point Count Identifier:Incidental G1:048				Map Point: 23			
Habitat Type: Bluebunch				ODFW Preliminary Category Rating			
Revised ODFW Rating Based on Strategy Species Presence							
Species Observed			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)							
Grasshopper Sparrow			NA		NA	Yes	No (State Monitor)

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/28/2008
Point Count Identifier: Incidental G1:08	Map Point: 64
Habitat Type: Cheatgrass w/ rabbitbrush	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Red-tailed Hawk			NA		NA	No	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/28/2008
Point Count Identifier: Incidental by G3:011	Map Point: 65
Habitat Type: Sage/rabbitbrush with cheatgrass	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Vesper Sparrow			NA		NA	No	Yes
Grasshopper Sparrow			NA		NA	Yes	No (State Monitor)

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/28/2008
Point Count Identifier: Incidental by G3:07	Map Point: 62
Habitat Type: Sagebrush with cheatgrass	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Ferruginous Hawk			NA		NA	No	No

PacifiCorps Walla Walla to McNary Transmission Line							
Avian Point Count Results				Survey Date: 05/28/2008			
Point Count Identifier: Incidental by G3:08				Map Point: 63			
Habitat Type: Sagebrush with cheatgrass				ODFW Preliminary Category Rating			
Revised ODFW Rating Based on Strategy Species Presence							
Species Observed			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)							
Ferruginous Hawk			NA		NA	Yes	Yes

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 05/14/2008
Point Count Identifier: G1:024	Map Point: 17
Habitat Type: Sage/bitter/rabbitbrush w/ cheatgrass	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed (Common name)			Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
Morning Dove			1		0	No	No
Western Kingbird			1		0	No	No
Western Meadowlark			4		3	No	No
Brewer's Sparrow			0		1	Yes	No

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 29 May 08
Point Count Identifier: G2-009	Map Point: 59
Habitat Type: PEM and surrounding area	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Yellow-headed Blackb		2				
California Quail		1				
Red-winged Blackbird		2				
Common Snipe		1				yes
Song Sparrow		1				
Mourning Dove		1				
Killdeer		1				yes
Red-winged Blackbird		1				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 29 May 08
Point Count Identifier: G2-010 (9 on sheet)	Map Point: 60
Habitat Type: PEM w/ pasture surrounding	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Common Snipe				1		yes
California Quail		2				
Song Sparrow		2				
Western Kingbird		2				
Western Meadowlark		1				
European Starling		2				
Ring-necked Pheasan		1				yes
Mallard		1				
2 rabbits seen here.						

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 13 May 08
Point Count Identifier: G2-01	Map Point: 25
Habitat Type: Sage/Cheat	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Swainson's Hawk		3			yes	yes
Ring-necked Pheasan		2				yes
Western Meadowlark		1		1		

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 13 May 08
Point Count Identifier: G2-27	Map Point: 26
Habitat Type: PEM	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Red Winged Blackbird		4				
American Kestrel	in sage/cheat			1		
Tricolored Blackbird		2				
Ring-necked Pheasan				1		yes
European Starling		1				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 13 May 08
Point Count Identifier: G2-04	Map Point: 30 (raptor seen during point counts)
Habitat Type: PEM w/ Sage/Cheat border	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Yellow-headed Blackb		4				
Red-winged Blackbird		4				
Mourning Dove		4				
Killdeer	sage/cheat	1				yes
Ring-necked Pheasan				2		yes
Sharp-shinned Hawk	sage/cheat			1		
American Coot				2		

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 13 May 08
Point Count Identifier: G2-32	Map Point: 28
Habitat Type: PEM	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Red-winged Blackbird		5				
Yellow-headed Blackb		7				
Tricolored Blackbird		1				
Canada Goose		2				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 14 May 08
Point Count Identifier: G2-33-inc	Map Point: 29
Habitat Type: Wanaket (PEM, Cheat, RO)	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Tricolored Blackbird		1				
Red-winged Blackbird		1				
Killdeer		1				yes
Brown-headed Cowbir		1				
Mallard		1				
Ring-necked Pheasan		1				yes
Western Kingbird		1				
Gull sp.		1				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 14 May 08
Point Count Identifier: G2-34	Map Point: 30
Habitat Type: PEM w/ sage/cheat border	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Red-winged Blackbird		6				
Yellow-headed Blackb		3				
Mallard		2				
Tricolored Blackbird		2				
Western Meadowlark		2				
Gadwall		2				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 15 May 08
Point Count Identifier: G2-32	Map Point: 42
Habitat Type: Cheat and some native grass	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Western Meadowlark		6				
Horned Lark		3				
Brewer's Sparrow		1			yes	
LB Curlew?				1	yes	yes

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 15 May 08
Point Count Identifier: G2-33	Map Point: 44
Habitat Type: Sage	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Brewer's Sparrow		1			yes	

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 15 May 08
Point Count Identifier: G2-45	Map Point: 34
Habitat Type:	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
White Pelican	Juniper Ca	28				
LB Curlew	harrassing	1			yes	yes

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 28 May 08
Point Count Identifier: G4(2)-05	Map Point: 58
Habitat Type: Grassland	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
LB Curlew	nesting	1		4	yes	yes
W. Meadowlark		2		3		
Horned Lark		2		2		
STARTHISTLE Patche						

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 16 May 08
Point Count Identifier: G4(2)-03-inc	Map Point: 42
Habitat Type: Sage/Grassland	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
American Kestrel	G4(2)-4	1				
LB Curlew		1			yes	yes
Grasshopper sparrow?	Incidental	1	not singing tentative by sight			

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 28 May 08
Point Count Identifier: G4(2)-005-inc	Map Point: 57
Habitat Type: Cheat/Sage	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Grasshopper Sparrow	G4(2)-6	1			yes	
LB Curlew	G4(2)-7	4+			yes	yes
STARTHISTLE!!!	G4(2)-8	clusters				
STARTHISTLE!!!	G4(2)-9,10	clusters				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 28 May 08
Point Count Identifier: G4(2)-33	Map Point: 68
Habitat Type: Grassland/Russian Olive	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
RN Pheasant		1				yes
B. Oriole		4		3		
YH Blackbird				1		
Raptor unk				?		
Grasshopper Sparrow		1			yes	
BB Magpie		1				
American Robin		1				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 28 May 08
Point Count Identifier: G4(2)-37	Map Point: 69
Habitat Type: Grassland w/ Riparian	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
W. Meadowlark		2		1		
RN Pheasant				4		yes
Swainson's Hawk				2	yes	
Song Sparrow				2		
Mourning Dove				3		
BB Magpie				3		
RW Blackbird				6		
W. Kingbird				2		

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 28 May 08
Point Count Identifier: G4(2)-37-inc	Map Point: 70 (nest site)
Habitat Type: Grassland w/ Riparian	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Swainson's Hawk	G4(2)-36	2	nesting pai	pole near to	yes	

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 30 May 08
Point Count Identifier: G4(2)-38	Map Point: 70 bird point near nest site
Habitat Type: Grassland w/ Riparian	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Song Sparrow		3		4		
RW Blackbird		3				
RN Pheasant		1		5		yes
BB Magpie				2		
Mourning dove		1		1		
Swainson's Hawk		2			yes	
W. Meadowlark		2		1		
Violet Green Swallow		2				
W. Kingbird		2				
B. Oriole		2				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 13 May 08
Point Count Identifier: G4-2-inc	Map Point: 40
Habitat Type: Cheat w/ Riparian near	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Swainson's Hawk	wp-4-001	2			yes	
Osprey	wp-4-001	1				
Western Kingbird	wp-4-2	1				
Lomatium dissectum	wp-4-3	1 plant	1 photo			
Killdeer	p-4-17	2				yes
Tricolor Blackbird	wp-4-18	1			yes	
Black-necked Stilt	wp-4-18	2				
Red-winged Blackbird	wp-4-18	2				

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 13 May 08
Point Count Identifier: G4-12-inc	Map Point: 44
Habitat Type: PSS w/ upland grass near	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
YH Blackbird	G4-13	3				
Black-neck stilt	G4-13	1			shorebird	
Virginaia rail	G4-13	1			shorebird	
Cin. Teal	G4-14	2				
RW Blackbird	G4-14	3				
RN Pheasant	G4-14	3				yes
Unk Raptor	G4-15	1				?

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 14 May 08
Point Count Identifier: G4-21 and 22-inc	Map Point: 182
Habitat Type: PEM OW	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Wilson's Phalarope	G4-21	4	2 m & 2 f	shallow pond PEM		
Black-necked Stilts	G4-21	2		shallow pond PEM		
Killdeer	G4-21	2		shallow pond PEM		
Red-tailed Hawks	G4-21	1	FO Calling	grass Russian olive		
Black-crowned Night H	G4-22	1		shallow pond PEM		

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 14 May 08
Point Count Identifier: G4-25-inc	Map Point: 46
Habitat Type: Russian Olive Wanaket	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Long Eared Owls	G4-26	5	emale and 3 chicks			

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 14 May 08
Point Count Identifier: G4-29	Map Point: 189 (where seen from, not nest site)
Habitat Type: Russian Olive/Grass/Sage	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
BB Magpie		3				
Killdeer		1				yes
RN Pheasant				2		yes
CA Quail				2		
Western Meadowlark		1				
RT Hawk			1A & 3Y nes	4		
Lots of BB Magpie nes						

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 15 May 08
Point Count Identifier: G4-36	Map Point: 48
Habitat Type: Grassland w/ few Sage	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Western Meadowlark		1		5		
Horned Lark		1				
Mourning Dove				1		
LB Curlew		1		1	yes	yes
Shrike calls in Sagebrush patches						yes
Sage Sparrow male singing in small sage					yes	yes

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 13 May 08
Point Count Identifier: G4-4	Map Point: 41
Habitat Type: Grassland w/ Russian Olive	ODFW Preliminary Category Rating

Revised ODFW Rating Based on Strategy Species Presence

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Swainson's Hawk		2			yes	
American Robin				2		
RN Pheasant				1		yes
CA Quail				2		
W. Meadowlark		1				
LBCU	2		Incidental Observation		yes	yes

PacifiCorps Walla Walla to McNary Transmission Line

Avian Point Count Results	Survey Date: 13 May 08
Point Count Identifier: G4-6-inc	Map Point: 43
Habitat Type: OW/PEM/Russian Olive	ODFW Preliminary Category Rating
Revised ODFW Rating Based on Strategy Species Presence	

Species Observed		Number < 50 m		Number > 50 m	ODFW Strategy Species Status	WDFW Priority Species
(Common name)						
Wilson's Phalarope		4			shorebird	
BN Stilt		2			shorebird	
Killdeer		2				yes
RT Hawk		1				
BC Nightheron		1			range	

Appendix D
BLM Special-Status Species List, Vale District, Oregon

Appendix D
State Director's Special Status Species List
USDI Bureau of Land Management - Oregon and Washington
Date: January 2008

Federally Threatened, Endangered, and Proposed

Taxon	Scientific Name	Common Name	ESU_DPS	Federal Status	Date Listed	Critical Habitat	Recovery Plan	VA-OR
MA	CANIS LUPUS	GRAY WOLF		FE	2003	None in OR	Final 1987	D
MA	LYNX CANADENSIS	CANADA LYNX		FT	2000	Designated 2006	None	S
VA	MIRABILIS MACFARLANEI	MACFARLANE'S FOUR O'CLOCK		FT	1979	None	Final 2000	S
VA	SILENE SPALDINGII	SPALDING'S CATCHFLY		FT	2001	None	Final 2007	S
VA	THELYPODIUM HOWELLII SSP. SPECTABILIS	HOWELL'S SPECTACULAR THELYPODY		FT	1999	None	Final 2002	S
FA	ONCORHYNCHUS MYKISS	STEELHEAD	SNAKE RIVER BASIN	FT	1997	Designated 2005	None	D
FA	ONCORHYNCHUS TSHAWYTSCHA	CHINOOK SALMON	SNAKE RIVER FALL/SPRING/ SUMMER RUNS	FT	1992	Designated 1993	None	D
FN	ONCORHYNCHUS CLARKI HENSHAWI	LAHONTAN CUTTHROAT TROUT	ALL	FT	1970	None	Final 1995	D
FN	SALVELINUS CONFLUENTUS	BULL TROUT	COLUMBIA RIVER	FT	6/10/1998	Final 2005	Draft 2002	D

Sensitive Invertebrates

Taxon	Scientific Name	Common Name	ISSSSP Status	VA-OR
IBI	GONIDEA ANGULATA	WESTERN RIDGED MUSSEL	SEN	D
IG	CRYPTOMASTIX POPULI	HELLS CANYON LAND SNAIL	SEN	D
IG	PYRGULOPSIS INTERMEDIA	CROOKED CREEK SPRINGSNAIL	OR-SEN	D
IILE	BOLORIA BELLONA	MEADOW FRITILLARY	SEN	S
IILE	BOLORIA SELENE	SILVER-BORDERED FRITILLARY	OR-SEN	D
IILE	OCHLODES YUMA	YUMA SKIPPER	SEN	D

Sensitive Vertebrates

Taxon	Scientific Name	Common Name	ISSSSP Status	VA-OR
BI	AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	OR-SEN	D
BI	CENTROCERCUS UROPHASIANUS	GREATER SAGE-GROUSE	SEN	D
BI	COCCYZUS AMERICANUS	YELLOW-BILLED CUCKOO	SEN	D
BI	CYGNUS BUCCINATOR	TRUMPETER SWAN	OR-SEN	D
BI	DOLICHONYX ORYZIVORUS	BOBOLINK	SEN	D
BI	FALCO PEREGRINUS ANATUM	AMERICAN PEREGRINE FALCON	SEN	D
BI	HALIAEETUS LEUCOCEPHALUS	BALD EAGLE	SEN	D
BI	LARUS PIPIXCAN	FRANKLIN'S GULL	OR-SEN	D
BI	MELANERPES LEWIS	LEWIS' WOODPECKER	OR-SEN	D
BI	PELECANUS ERYTHRORHYNCHOS	AMERICAN WHITE PELICAN	SEN	D
BI	PICOIDES ALBOLARVATUS	WHITE-HEADED WOODPECKER	SEN	S
BI	PODICEPS AURITUS	HORNED GREBE	OR-SEN	D
BI	TYMPANUCHUS PHASIANELLUS COLUMBIANUS	COLUMBIAN SHARP-TAILED GROUSE	OR-SEN	S
HA	ASCAPHUS MONTANUS	INLAND TAILED FROG	OR-SEN	D
HA	BUFO WOODHOUSII	WOODHOUSE'S TOAD	OR-SEN	D
HA	RANA LUTEIVENTRIS	COLUMBIA SPOTTED FROG	OR-SEN	D
HA	RANA PIPIENS	NORTHERN LEOPARD FROG	SEN	D
HR	CHRYSEMYS PICTA	PAINTED TURTLE	OR-SEN	D
MA	RACHYLAGUS IDAHOENSIS	PYGMY RABBIT	SEN	D
MA	CORYNORHINUS TOWNSENDII	TOWNSEND'S BIG-EARED BAT	SEN	D
MA	EUDERMA MACULATUM	SPOTTED BAT	SEN	S
MA	MYOTIS THYSANODES	FRINGED MYOTIS	OR-SEN	D
MA	SPERMOPHILUS WASHINGTONI	WASHINGTON GROUND SQUIRREL	SEN	S
MA	VULPES MACROTIS	KIT FOX	OR-SEN	D
FN	CATOSTOMUS TAHOENSIS	TAHOE SUCKER	OR-SEN	D
FN	ONCORHYNCHUS MYKISS	INLAND REDBAND TROUT (All stocks)	SEN	D
FN	RICHARDSONIUS EGREGIUS	LAHONTAN REDSIDE SHINER	OR-SEN	D

Sensitive Non-Vascular Plants

Taxon	Scientific Name	Common Name		VA-OR
BR	BARBILOPHOZIA LYCOPODIOIDES	LIVERWORT		S
BR	ENCALYPTA INTERMEDIA	MOSS		S
BR	JUNGERMANNIA POLARIS	LIVERWORT		S
BR	PELTOLEPIS QUADRATA	LIVERWORT		S
BR	PTILIDIUM PULCHERRIMUM	LIVERWORT		S
BR	RHIZOMNIUM NUDUM (*)	MOSS		S
BR	SCHISTIDIUM CINCLIDODONTEUM	MOSS		S
	TEXOSPORIUM SANCTI-JACOBI	LICHEN		S

Sensitive Vascular Plants

	Scientific Name	Common Name	ISSSSP Status	VA-OR
	ABRONIA TURBINATA	TRANS MONTANE ABRONIA	OR-SEN	D
	ACHNATHERUM SPECIOSUM	DESERT NEEDLEGRASS	OR-SEN	S
	ACHNATHERUM WALLOWAENSIS	WALLOWA RICEGRASS	OR-SEN	S
	AGASTACHE CUSICKII	CUSICK'S GIANT-HYSSOP	OR-SEN	D
	ALLENROLFEA OCCIDENTALIS	IODINE BUSH	OR-SEN	D
	ALLIUM GEYERI VAR. GEYERI	GEYER'S ONION	OR-SEN	S
	AMSINCKIA CARINATA	MALHEUR VALLEY FIDDLENECK	OR-SEN	D
	ARGEMONE MUNITA	PRICKLY-POPPY	OR-SEN	D
	ARTEMISIA ARBUSCULA SSP. LONGICAULIS	LAHONTAN SAGEBRUSH	OR-SEN	D
	ARTEMISIA PAPPOSA	OWYHEE SAGEBRUSH	OR-SEN	D
	ASPLENIUM TRICHOMANES-RAMOSUM	GREEN SPLEENWORT	OR-SEN	S
	ASTRAGALUS CALYCOSUS	KING'S RATTLEWEED	OR-SEN	D
	ASTRAGALUS COLLINUS VAR. LAURENTII	LAURENCE'S MILK-VETCH	OR-SEN	S
	ASTRAGALUS CUSICKII VAR. STERILIS	STERILE MILK-VETCH	OR-SEN	D
	ASTRAGALUS GEYERI VAR. GEYERI	GEYER'S MILK-VETCH	OR-SEN	D
	ASTRAGALUS MULFORDIAE	MULFORD'S MILK-VETCH	OR-SEN	D
	ASTRAGALUS PLATYTROPIS	BROAD-KEELED MILK-VETCH	OR-SEN	D
	BOTRYCHIUM ASCENDENS	UPWARD-LOBED MOONWORT	SEN	S
	BOTRYCHIUM CAMPESTRE	PRAIRIE MOONWORT	OR-SEN	S
	BOTRYCHIUM CRENULATUM	CRENULATE MOONWORT	SEN	S
	BOTRYCHIUM HESPERIUM	WESTERN MOONWORT	WA-SEN/OR-STR	S
	BOTRYCHIUM LINEARE	SLENDER MOONWORT	SEN	S
	BOTRYCHIUM LUNARIA	MOONWORT	OR-SEN	S
	BOTRYCHIUM MINGANENSE (*)	GRAY MOONWORT	OR-SEN	D
	BOTRYCHIUM MONTANUM	MOUNTAIN GRAPE-FERN	OR-SEN	S
	BOTRYCHIUM PARADOXUM	TWIN-SPIKED MOONWART	SEN	S
	BOTRYCHIUM PEDUNCULOSUM	STALKED MOONWORT	SEN	S
	BUPLEURUM AMERICANUM	BUPLEURUM	OR-SEN	S
	CALOCHORTUS MACROCARPUS VAR. MACULOSUS	GREEN-BAND MARIPOSA-LILY	SEN	D
	CALOCHORTUS NITIDUS	BROAD-FRUIT MARIPOSA-LILY	SEN	S
	CAMISSONIA PYGMAEA	DWARF EVENING-PRIMROSE	SEN	S
	CAREX ABRUPTA	ABRUPT-BEAKED SEDGE	OR-SEN	S
	CAREX ANTHOXANTHEA	YELLOW-FLOWERED SEDGE	WA-SEN	
	CAREX ATROSQUAMA	BLACKENED SEDGE	OR-SEN/WA-STR	S
	CAREX CAPILLARIS	HAIRLIKE SEDGE	SEN	S
	CAREX CORDILLERANA	CORDILLERAN SEDGE	OR-SEN	S
	CAREX DIOICA VAR. GYNOCRATES	YELLOW BOG SEDGE	SEN	S
	CAREX IDAHOA	IDAHO SEDGE	OR-SEN	D
	CAREX LASIOCARPA VAR. AMERICANA	SLENDER SEDGE	OR-SEN	S
	CAREX MEDIA	INTERMEDIATE SEDGE	SEN	S
	CAREX NARDINA	SPIKENARD SEDGE	OR-SEN	S
	CAREX PELOCARPA	NEW SEDGE	OR-SEN	S
	CAREX PYRENAICA SSP. MICROPODA	PYRENAEAN SEDGE	OR-SEN	S
	CAREX RETRORSA	RETRORSE SEDGE	OR-SEN	S
	CAREX SUBNIGRICANS	DARK ALPINE SEDGE	OR-SEN	S
	CAREX VERNACULA	NATIVE SEDGE	OR-SEN	S
	CASTILLEJA FRATERNA	FRATERNAL PAINTBRUSH	OR-SEN	S
	CASTILLEJA RUBIDA	PURPLE ALPINE PAINTBRUSH	OR-SEN	S
	CAULANTHUS CRASSICAULIS VAR. GLABER	SMOOTH WILD CABBAGE	OR-SEN	D
	CAULANTHUS MAJOR VAR. NEVADENSIS	SLENDER WILD CABBAGE	OR-SEN	D
	CHAENACTIS XANTIANA	DESERT CHAENACTIS	OR-SEN	D
	CHAETADELPHA WHEELERI	WHEELER'S SKELETON-WEED	OR-SEN	D

Sensitive Vascular Plants				
	Scientific Name	Common Name	ISSSSP Status	VA-OR
	CHEILANTHES FEEI	FEE'S LIP-FERN	SEN	S
	CRYPTOGRAMMA STELLERI	STELLER'S ROCKBRAKE	SEN	S
	CYMOPTERUS ACAULIS VAR. GREELEYORUM	GREELEY'S CYMOPTERUS	OR-SEN	D
	CYMOPTERUS LONGIPES SSP. IBAPENSIS	IBAPAH WAVEWING	OR-SEN	D
	CYPERUS LUPULINUS SSP. LUPULINUS	A CYPERUS	OR-SEN	S
	CYPRIPEDIUM FASCICULATUM (*)	CLUSTERED LADY'S-SLIPPER	SEN	S
	DELPHINIUM BICOLOR	FLATHEAD LARKSPUR	OR-SEN	D
	DODECATHEON PULCHELLUM VAR. SHOSHONENSE	DARKTHROAT SHOOTINGSTAR	OR-SEN	D
	ELATINE BRACHYSPERMA	SHORT SEEDED WATERWORT	OR-SEN	D
	ELEOCHARIS BOLANDERI	BOLANDER'S SPIKERUSH	OR-SEN	D
	ERIGERON DISPARIPILUS	WHITE CUSHION ERIGERON	OR-SEN	S
	ERIGERON ENGELMANNII VAR. DAVISII	ENGELMANN'S DAISY	OR-SEN/ WA-STR	S
	ERIGERON LATUS	BROAD FLEABANE	OR-SEN	D
	ERIOGONUM CHRYSOPS	GOLDEN BUCKWHEAT	OR-SEN	D
	ERIOGONUM HOOKERI	HOOKER'S WILD BUCKWHEAT	OR-SEN	D
	ERIOGONUM PROCIDUUM	PROSTRATE BUCKWHEAT	OR-SEN	D
	ERIOGONUM SALICORNIOIDES	PLAYA BUCKWHEAT	OR-SEN	D
	GEUM ROSSII VAR. TURBINATUM	SLENDER-STEMMED AVENS	OR-SEN	D
	HACKELIA CRONQUISTII	CRONQUIST'S STICKSEED	OR-SEN	D
	HACKELIA OPHIOBIA	THREE FORKS STICKSEED	OR-SEN	D
	HELIOTROPIUM CURASSAVICUM	SALT HELIOTROPE	OR-SEN	D
	HYMENOXYS LEMMONII	COOPER'S GOLDFLOWER	OR-SEN	D
	IVESIA RHYPARA VAR. RHYPARA	GRIMY IVESIA	OR-SEN	D
	IVESIA SHOCKLEYI	SHOCKLEY'S IVESIA	OR-SEN	D
	JUNCUS TRIGLUMIS VAR. ALBESCENS	THREE-FLOWERED RUSH	OR-SEN	S
	KOBRESIA BELLARDII	BELLARD'S KOBRESIA	OR-SEN	S
	KOBRESIA SIMPLICIUSCULA	SIMPLE KOBRESIA	OR-SEN	S
	LEPIDIUM DAVISII	DAVIS' PEPPERGRASS	OR-SEN	D
	LIPOCARPHA ARISTULATA	ARISTULATE LIPOCARPHA	SEN	S
	LISTERA BOREALIS	NORTHERN TWAYBLADE	OR-SEN	S
	LOMATIUM ERYTHROCARPUM	RED-FRUITED LOMATIUM	OR-SEN	S
	LOMATIUM FOENICULACEUM SSP. FIMBRIATUM	FRINGED DESERT-PARSLEY	OR-SEN	D
	LOMATIUM RAVENII	RAVEN'S LOMATIUM	OR-SEN	D
	LUPINUS LEPIDUS VAR. CUSICKII	CUSICK'S LUPINE	OR-SEN	D
	LUPINUS NEVADENSIS	NEVADA LUPINE	OR-SEN	D
	LYCOPODIUM COMPLANATUM	GROUND CEDAR	OR-SEN	S
	MALACOTHRIX SONCHOIDES	LYRATE MALACOTHRIX	OR-SEN	D
	MENTZELIA CONGESTA	UNITED BLAZINGSTAR	OR-SEN	D
	MENTZELIA MOLLIS	SMOOTH MENTZELIA	OR-SEN	D
	MENTZELIA PACKARDIAE	PACKARD'S MENTZELIA	OR-SEN	D
	MIMULUS EVANESCENS	DISAPPEARING MONKEYFLOWER	OR-SEN	D
	MIMULUS HYMENOPHYLLUS	MEMBRANE-LEAVED MONKEYFLOWER	OR-SEN	S
	MUHLENBERGIA MINUTISSIMA	ANNUAL DROPSEED	OR-SEN	D
	OPHIOGLOSSUM PUSILLUM	ADDER'S-TONGUE	SEN	S
	OXYTROPIS SERICEA VAR. SERICEA	WHITE LOCOWEED	OR-SEN	D
	PELLAEA BRIDGESII	BRIDGES' CLIFF-BRAKE	OR-SEN	S
	PENSTEMON DEUSTUS VAR. VARIABILIS	VARIABLE HOT-ROCK PENSTEMON	WA-SEN/ OR-STR	D
	PHACELIA GYMNOCLADA	NAKED-STEMMED PHACELIA	OR-SEN	D
	PHACELIA INUNDATA	PLAYA PHACELIA	OR-SEN	D
	PHACELIA LUTEA VAR. MACKENZIEORUM	MACKENZIE'S PHACELIA	OR-SEN	D
	PHACELIA MINUTISSIMA	DWARF PHACELIA	SEN	S
	PHLOX HENDERSONII	HENDERSON'S PHLOX	OR-SEN	S
	PHLOX MULTIFLORA	MANY-FLOWERED PHLOX	OR-SEN	S
	PHYSARIA CHAMBERSII	CHAMBERS' TWINPOD	OR-SEN	D
	PLATANTHERA OBTUSATA	SMALL NORTHERN BOG-ORCHID	SEN	S
	PLEUROPOGON OREGONUS	OREGON SEMAPHOREGRASS	OR-SEN	S
	POGOGYNE FLORIBUNDA	PROFUSE-FLOWEREED MESA MINT	OR-SEN	D
	POTAMOGETON DIVERSIFOLIUS	RAFINESQUE'S PONDWEED	OR-SEN	D
	PYRROCOMA LIATRIFORMIS	PALOUSE GOLDENWEED	WA-SEN/ OR-STR	D
	PYRROCOMA RADIATA	SNAKE RIVER GOLDENWEED	OR-SEN	D
	RAFINESQUIA CALIFORNICA	CALIFORNIA CHICORY	OR-SEN	D
	RORIPPA COLUMBIAE	COLUMBIA CRESS	SEN	S

Sensitive Vascular Plants				
	Scientific Name	Common Name	ISSSSP Status	VA-OR
	RUBUS BARTONIANUS	BARTONBERRY	OR-SEN	S
	SALIX FARRIAE	FARR'S WILLOW	OR-SEN	S
	SALIX WOLFII	WOLF'S WILLOW	OR-SEN	S
	SAXIFRAGA ADSCENDENS SSP. OREGONENSIS	WEDGE-LEAF SAXIFRAGE	OR-SEN	S
	SENECIO ERTTERAE	ERTTER'S SENECIO	OR-SEN	D
	STANLEYA CONFERTIFLORA	BIENNIAL STANLEYA	OR-SEN	D
	SUKSDORFIA VIOLACEA	VIOLET SUKSDORFIA	OR-SEN	S
	SYMPHORICARPOS LONGIFLORUS	LONG-FLOWERED SNOWBERRY	OR-SEN	D
	THALICTRUM ALPINUM	ALPINE MEADOWRUE	OR-SEN	S
	THELYPODIUM EUCOSMUM	ARROW-LEAF THELYPODY	OR-SEN	S
	TOWNSENDIA MONTANA	MOUNTAIN TOWNSENDIA	OR-SEN	S
	TOWNSENDIA PARRYI	PARRY'S TOWNSENDIA	OR-SEN	S
	TRIFOLIUM DOUGLASII	DOUGLAS' CLOVER	SEN	S
	TRIFOLIUM LEIBERGII	LEIBERG'S CLOVER	OR-SEN	D
	TRIFOLIUM OWYHEENSE	OWYHEE CLOVER	OR-SEN	D
	TROLLIUS LAXUS VAR. ALBIFLORUS	AMERICAN GLOBEFLOWER	OR-SEN	S
	UTRICULARIA MINOR	LESSER BLADDERWORT	OR-SEN/ WA-STR	S

STATE DIRECTOR'S SPECIAL STATUS SPECIES LIST - Acronyms
USDI BUREAU OF LAND MANAGEMENT - OREGON and WASHINGTON
Date: January 2008

BLM Units:

VA-OR Vale District (in Oregon)

ISSSSP Status:

SEN = Sensitive in OR and WA
OR-SEN = Sensitive in OR only
WA-SEN = Sensitive in WA only
STR = Strategic in OR and WA
OR-STR = Strategic in OR only
WA-STR = Strategic in WA only

Federal Status:

FE = Federal Endangered
FT = Federal Threatened
FPT = Federal Proposed Threatened
With "O" or "W" at the end, means status only applies in Washington or Oregon

Taxon: Invertebrates

IA = Class Arachnida: Spiders, Scorpions, Mites & Ticks IBI = Class Bivalva: Clams, Oysters & Mussels
ICL = Class Clitellata: Leeches & Earthworms ICR = Class Crustacea: Crustaceans
IG = Class Gastropoda: Snails & Slugs IIC = Order Collembola: Springtails
IICO = Order Coeloptera: Beetles & Weevils
IIHE = Order Hemiptera: True Bugs
IIHY = Order Hymenoptera: Ants, Bees & Wasps
IILE = Order Lepidoptera: Butterflies & Moths
IIOD = Order Odonata: Dragonflies & Damselflies
IIOR = Order Orthoptera: Grasshoppers, Crickets & Roaches
IIPL = Order Plecoptera: Stoneflies
IITR = Order Trichoptera: Caddisflies & Water Moths
IT = Class Turbellaria: Flatworms

Vertebrates

BI = Birds
HA = Amphibians
HR = Reptiles
MA = Mammals
FA = Anadromous Fish
FN = Non-anadromous Fish

Non-Vascular Plants

BR = Bryophytes
LI = Lichens

D = Documented occurrence = A species located on land administered by the BLM or the Forest Service based on historic or current known sites of a species reported by a credible source for which BLM and the Forest Service has knowledge of written, mapped or specimen documentation of the occurrence.

S = Suspected occurrence = Species is not documented on land administered by the BLM or the Forest Service, but may occur on the unit because: 1) BLM District or National Forest is considered to be within the species' range ***and*** 2) appropriate habitat is present ***or*** 3) known occurrence of the species (historic or current) in vicinity such that the species could occur on BLM or FS land.

Appendix E
Avoidance, Monitoring, Protection, and Discovery Plan for Treating Identified Cultural Resources and Unanticipated Discoveries

Avoidance, Monitoring, and Protection Plan for Treating Identified Cultural Resources and Unanticipated Discoveries

Wallula to McNary 230-kilovolt Transmission Line Project
October 2015

Introduction

Cultural resources and human remains are protected under a number of federal statutes, including the National Historic Preservation Act, the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act; and under state statutes, including the Oregon Revised Statutes (ORS) 97.740-97.760 for Indian Graves and Protected Objects, ORS 358.905-358.955 for the Protection of Archaeological Objects and Sites, ORS 390.235 for Archaeological Permit Requirements; and the Revised Code of Washington Chapters 27.44 and 27.53 for protection for Indian burials, cairns, glyptic markings, and historic graves on private and public property and civil and criminal penalties. PacifiCorp and the federal action agencies must adhere to the mandates of this legislation regarding the protection of cultural resources within the Area of Potential Effect; that is, the Wallula to McNary 230-kilovolt Transmission Line Project (project) from Wallula, Washington, to McNary, Oregon. The project crosses Walla Walla County, Washington, and Umatilla County, Oregon.

Avoidance

Class III inventories for the project right-of-way have been conducted, and all sites available for visual inspection are presumed to have been identified and documented. No archaeological resources have been identified in the footprint of the undertaking, project-wide. Effects on historic properties will be mitigated through an agreement with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). Therefore, no transmission line poles will be placed within the boundaries of known or unmitigated historic properties.

Monitoring

A potential exists for the unanticipated discoveries of cultural resources during construction or reclamation activities associated with the project. A discovery would be a previously undocumented cultural resource with no surface manifestation. Such discoveries should be limited in number and would almost exclusively be limited to subsurface finds of cultural deposits.

Unanticipated discoveries fall into two categories, depending on the nature of the cultural materials. The first category consists of archaeological materials such as artifacts and features (for example, hearths, pit structures, and remains of dwellings). The second category consists of human remains, funerary objects, sacred objects, or objects of cultural patrimony.

The following construction monitoring procedures shall be enacted:

A. A **permitted archaeologist**[1] will conduct or oversee construction and reclamation monitoring within the project boundaries. During any ground-disturbing activities (for example, pole placement, blading, and reclamation) on project properties, a **permitted archaeologist** will watch construction and inspect the ground surface as activities are ongoing, and will have the authority to halt all construction activities in the vicinity of a discovery.

B. If cultural resources are discovered during monitoring, all ground-disturbing activities in the

[1] PacifiCorp's contract archaeologist who is permitted by the applicable agency or landowner to perform cultural resources work.

vicinity of the discovery will be immediately halted. The **permitted archaeologist** will immediately notify the **applicable agency**[2] or **landowner**, and the monitor will evaluate the significance of the discovery. The **applicable agency** or **permitted archaeologist** (for private land) will notify the **applicable historic preservation office (HPO)**[3] about the discovery. If the discovery is determined to be significant, the **applicable agency** or **permitted archaeologist** will work with the **applicable HPO** to develop a Treatment Plan for the discovery. Ground-disturbing activities in the vicinity of the discovery may not resume until PacifiCorp is notified by the **applicable agency** or **landowner** that it may do so.

Protection

PacifiCorp will instruct all employees, contractors, subcontractors, and any additional parties involved in the project not to disturb, damage, or remove any historic or prehistoric cultural resources encountered on the project.

The **applicable agency** or **landowner** will work with the **permitted archaeologist** to implement the following actions for all historic properties discovered on a project property.

I. Archaeological Resources

A. PacifiCorp, or their **permitted archaeologist**, will notify the **applicable agency** or **landowner** of any and all cultural resources, or other objects of historic, paleontological, or scientific interest, including, but not limited to, historic or prehistoric ruins or artifacts discovered as a result of this undertaking.

B. Where a discovery is made, PacifiCorp will work with the construction superintendent to direct construction away from the immediate vicinity of the discovery (a minimum of 100 feet), protect the discovery, and immediately notify the **applicable agency** or **landowner**. The **applicable agency** or **permitted archaeologist**, in turn, will notify the **applicable HPO** and other parties as appropriate.

C. Discovery situations will be handled in an expedited manner to not interfere with the construction schedule any more than is necessary. In all discovery situations, construction work will be redirected away from the discovery or halted at the discovery location for a period of time adequate to assess the nature of the discovery and to determine the necessary course of action as determined by the **applicable agency** or **landowner**, in consultation with the **applicable HPO**. The **permitted archaeologist** will complete a site form or a site update that documents the discovery and its evaluation. Work will not resume in the area of discovery until authorized by the **applicable agency** or **landowner**.

D. If the discovery consists of a small, simple feature, the **applicable agency** may determine that it is not eligible for the National Register of Historic Places (NRHP). At the discretion of the **applicable agency**, the **permitted archaeologist** will collect ancillary samples from the feature for determination of age and subsistence data. Feature plans and profiles will be drawn and the feature will be photographed. The **permitted archaeologist** will take the necessary time to complete any excavation or sample removal in a cost-effective manner. Adequate time will be provided to ensure complete and thorough work. Once this determination has been made and the appropriate data have been collected, construction will be allowed to proceed at the location of the discovery after authorization has been given by the **applicable agency**.

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[2] The authorized officer or cultural resources specialist of the lead agency for the subject property.

[3] The Tribal Historic Preservation Office for Tribal trust land (i.e., Wanaket Wildlife Area), the Oregon State Historic Preservation Office for all other land in Umatilla County, or Washington Department of Archaeology and Historic Preservation for all land in Walla Walla County.

E. If the **applicable agency** determines that the discovery is eligible for the NRHP and designated for excavation, in consultation with the **applicable HPO**, a Treatment Plan will be developed by the **permitted archaeologist**. The Treatment Plan will include a schedule and plan for excavation and reporting. In some cases, the discovery/feature may be unavoidable and in the direct path of construction. Under these circumstances, mitigative excavation will proceed immediately upon plan approval from the **applicable agency**, in consultation with the **applicable HPO**. In circumstances where construction schedules allow, full excavation of discoveries/features may be possible before construction resumes. Where placement of construction activities can occur without immediate impact to the discovery, or where excavation of the portions of the discovery in the path construction has been completed, full implementation of the Treatment Plan for the discovery may be deferred until construction in the vicinity has been completed. To ensure avoidance of project impacts, the discovery must be secured and protected against damage until PacifiCorp implements the applicable consultation and treatment measures. Subject to construction scheduling and the onset of inclement weather, treatment activities outside the immediate construction corridor may be deferred until the following field season. Under no circumstances will completion of treatment be deferred more than one field season.

F. PacifiCorp will be responsible for protecting the historic property from construction impact until any deferred treatments have been completed. Treatment may include, but is not limited to, complete site excavation. Other measures may be required. If treatment of discoveries/features will be deferred past completion of construction, PacifiCorp will set forth written assurances to fund fieldwork, analyses, curation, and publication of results through a surety bond, as well as obtain written permission from the **applicable agency** or **landowner** for continued access to the site. Copies of these assurances will be submitted to the **applicable agency** or **landowner**.

II. Human Remains

A. Human remains, funerary objects, sacred objects, or objects of cultural patrimony may be discovered during construction or reclamation. If human remains or associated artifacts are discovered, they will be protected until appropriate disposition has been determined in accordance with NAGPRA. Construction activities with potential influence on the discovery will cease immediately on direction of the **applicable agency** or the **permitted archaeologist**, but may continue elsewhere. Immediately upon discovery, the **permitted archaeologist**, in accordance with the procedures outlined above, will secure the location with appropriate security and avoidance measures, and notify the **applicable agency**, **applicable law enforcement agency,**[4] and **applicable coroner.**[5] It may be necessary for PacifiCorp to provide 24-hour, onsite security for NAGPRA-associated discoveries.

B. If there is any question as to the cultural affiliation of the burial, or whether the burial is prehistoric, the **applicable agency** or the **permitted archaeologist** will contact the **applicable HPO** to assist in the determination before beginning any extensive excavations. If the remains are determined to be a burial, consultation with the **applicable HPO** will help define procedures for recovery, preservation, or other actions.

C. If it is determined that the remains are not Native American, the **applicable agency** or the **permitted archaeologist** will consult with descendants or identifiable ethnic groups that may be related to the remains to determine disposition of the remains.

[4] Umatilla Tribal Police for Tribal trust land (i.e., Wanaket Wildlife Area) or applicable county sheriff for all other land.

[5] Tribal Coroner for Tribal trust land (i.e., Wanaket Wildlife Area) or applicable county coroner for all other land.

Contacts

Table 1 lists the applicable agencies and HPOs by land ownership. Table 2 lists contact information for the applicable agencies and HPOs.

TABLE 1.
Applicable Agencies and HPOs for Cultural Resources Avoidance, Monitoring, and Protection Procedures by Land Ownership within the Project Area

Tax Lot	Property Name	Action Agency/Landowner	Status	HPO	Law Enforcement
5N28A00001300, 5N28240000100, 5N29C00000900	Wanaket Wildlife Area	USDI Bureau of Indian Affairs (trusted to Confederated Tribes of the Umatilla Indian Reservation)	Federal; Tribal trust land	CTUIR Tribal Historic Preservation Office	Umatilla Tribal Police
5N30000000200	McNary National Wildlife Refuge	USDI Fish and Wildlife Service	Federal	Oregon SHPO	Umatilla County Sheriff's Office
5N281400 1600	Vale District	USDI Bureau of Land Management	Federal	Oregon SHPO	Umatilla County Sheriff's Office
5N28090000100, 5N2816A000200, 5N2816A001000, 5N2816AD00400	Bonneville Power Administration/ Portland District	Bonneville Power Administration/U.S. Army Corps of Engineers	Federal	Oregon SHPO	Umatilla County Sheriff's Office
Other land in Umatilla County	Not applicable	Private landowners	Private	Oregon SHPO	Umatilla County Sheriff's Office
Other land in Walla Walla County	Not applicable	Private landowners	Private	Washington DAHP	Walla Walla County Sheriff's Office

USDI = U.S. Department of the Interior
SHPO = State Historic Preservation Office
DAHP = Department of Archaeology and Historic Preservation

TABLE 2.
Contacts for Permitted Archaeologist, Applicable Agencies, Historic Preservation Offices, and Law Enforcement

Permitted Archaeologist	Oregon State Historic Preservation Office	Washington Dept. of Archaeology and Historic Preservation
Robin McClintock CH2M HILL 2020 SW Fourth Avenue Suite 300 Portland, OR 97201 Tel: 503.235.5000 Fax: 503.736.2000 Robin.McClintock@ch2m.com	Dennis Griffin Oregon Parks & Recreation Department 725 Summer Street NE, Suite C Salem, OR 97301 Tel: 503.986.0690 Fax: 503.986.0793 Dennis.Griffin@oregon.gov	Allyson Brooks, State Historic Preservation Officer (SHPO) 1063 Capitol Way S, #106 Olympia, WA 98504 Tel: 360.586.3066 DAHP: 360.586.3064 Fax: 360.586.3067 Allyson.Brooks@dahp.wa.gov
Bureau of Indian Affairs	**Confederated Tribes of the Umatilla Indian Reservation**	**Umatilla Tribal Police**
Michael Jackson, Superintendent Raymond Huesties Umatilla Agency 46807 B Street Pendleton, OR 97801 Tel: 541.278.3786 Fax: 541.278.3791 michael.jackson@bia.gov	Carey Miller, Archaeologist Tribal Historic Preservation Office Cultural Resources Protection Program 46411 Timíne Way Pendleton, OR 97801 Tel: 541.429.7234 Fax: 541.429.7234 careymiller@ctuir.org	Public Safety Building 46400 Timíne Way Pendleton, OR 97801 Tel: 541.278.0550 Fax: 541.278.0554 publicsafety@ctuir.org
U.S. Fish and Wildlife Service	**USDI Bureau of Land Management**	**Bonneville Power Administration**
Lamont Glass McNary Refuge Manager 64 Maple Street Burbank, WA 99323 Tel: 509.546.8300 Fax: 509.546.8303 lamont_glass@fws.gov	Lori Wood Baker City Field Manager, Vale District 3100 H Street Baker City, OR 97814 Tel: 541.523.1431 Fax: 541.523.1965 lwood@blm.gov	Joe Cottrell, Realty Specialist Spokane District Office 2410 E Hawthorne Road Mead, WA 99021-9594 Tel: 509.528.4182 BPA: 1-877-417-9454 jecottrell@bpa.gov
Umatilla County Sheriff Office	**Walla Walla County Sheriff Office**	
4700 NW Pioneer Place Pendleton, OR 97801 Tel: 541.966.3600	240 W Alder Street, #101 Walla Walla, WA 99362 Tel: 509.524.5400	

Appendix F
Project Stakeholders and Nearby Landowners

Table 1. Project Stakeholders

Wallula to McNary 230-kilovolt Transmission Line Project

Name	Organization/Company/Agency	City	State
Allegro, Justin	WDFW Habitat Program	Olympia	WA
Barreto, Greg	District 58	Salem	OR
Bealey, Ki	Walla Walla Public Works Department	Walla Walla	WA
Beard, Jim	Confederated Tribes of the Umatilla Reservation	Pendleton	OR
Belchoff, Boris/Manager	U.S. Bureau of Reclamation, Umatilla Field Office	Hermiston	OR
Bloomfield, Jonathan	U.S. Fish and Wildlife Service	Portland	OR
Bolen, Jeremy, District Manager	Hermiston Irrigation District/Dept. of Interior	Hermiston	OR
Buck, Lela	Wanapum Tribe	Beverly	WA
Chamberlain, Elizabeth	City of Walla Walla	Walla Walla	WA
Corkran, Doug - KEC -4	Bonneville Power Administration	Vancouver	WA
Cummings, Steve	Bureau of Reclamation	Hermiston	OR
Dedrick, Mary	City of Umatilla	Umatilla	OR
Denny, Mike	Washington Audobon Society	College Place	WA
Dozier, Perry	Walla Walla County	Walla Walla	WA
Duncan, James	Walla Walla County	Walla Walla	WA
Eldridge, Steve	Umatilla Electric Cooperation	Hermiston	OR
Elfering, Bill	Umatilla County	Pendleton	OR
Farnsworth, Sharon	City of Umatilla	Umatilla	OR
Farrow, Teara	Confederated Tribes of the Umatilla Indian Reservation	Pendleton	OR
Fenton, George	City of Umatilla	Umatilla	OR
Fitzsimmons, Dave, TPC-TPP-4	Bonneville Power Administration	Vancouver	WA
Gerard, Randy A.	West Umatilla Vector Control District	Hermiston	OR
Germond, Jon	Oregon Fish and Wildlife Service	Salem	OR
Givens, Larry	Umatilla County	Pendleton	OR
Glover, Tom	Walla Walla County of	Walla Walla	WA
Godinez, Enrique	United States Army Corps of Engineers Portland Regional Office	Portland	OR
Grant, Kerry	Washington Department of Transportation	Union Gap	WA
Griffin, Dennis, Dr.	Oregon State Historical Preservation Office	Salem	OR
Hansell, Bill	District 29	Pendleton	OR
Hewitt, Mike	16th District	Olympia	WA
Huber, Audie	Confederated Tribes of the Umatilla Indian	Pendleton	OR

Table 1. Project Stakeholders
Wallula to McNary 230-kilovolt Transmission Line Project

Name	Organization/Company/Agency	City	State
	Reservation		
Hueckel, Greg	Washington Fish and Wildlife Service	Spokane Valley	WA
Hutchinson-Talaski, Karen	Umatilla Chamber of Commerce	Umatilla	OR
Huxel, Darla	Umatilla Police Department	Umatilla	OR
Jackson, Michael	Bureau of Indian Affairs	Pendleton	OR
Johnson, Hulette	Umatilla County Economic Development Director	Pendleton	OR
Johnson, James	Walla Walla County	Walla Walla	WA
Kuntz, Jim	Port of Walla Walla	Walla Walla	WA
Lougee, David	City of Umatilla	Umatilla	OR
Mabbott, Tamra	Umatilla County	Pendleton	OR
Maland, John	City of Walla Walla	Walla Walla	WA
Meisner, Neal E.	Bonneville Power Administration (CTUIR)	Portland	OR
Meninick, Johnson	Yakama National Cultural Resource Program	Toppenish	WA
Morlan, Janet	Oregon Department of State Lands	Salem	OR
Murdock, George	Umatilla County	Pendleton	OR
Nealey, Terry R.	16th District	Olympia	WA
Oregon Department of Environmental Quality	Oregon Department of Environmental Quality	Pendleton	OR
Prentice, Lauren	Walla Walla County	Walla Walla	WA
Puzey, Kim	Port of Umatilla	Umatilla	OR
Ray, Melvin	City of Umatilla	Umatilla	OR
Reller, Dave	Columbia Rural Electric Association	Dayton	WA
Roxbury, Mike	Umatilla Fire Department	Umatilla	OR
Russell, Glenn, TPC-TPP-4	Bonneville Power Administration	Vancouver	WA
Searles, Bill	City of Umatilla	Umatilla	OR
Senters, Anne - LC - 7	Bonneville Power Administration	Vancouver	WA
Shribbs, Shanda	Oregon Department of Energy- Energy Facility Siting Council	Salem	OR
Smith, Greg	District 57	Heppner	OR
Smith, Lyle	City of Umatilla	Umatilla	OR
Straughan, Tom	Oregon Department of Agricultural, Division of Natural Resources	Salem	OR
TenEyck, Roak	City of Umatilla	Umatilla	OR
Trott, David	City of Umatilla	Umatilla	OR

Table 1. Project Stakeholders

Wallula to McNary 230-kilovolt Transmission Line Project

Name	Organization/Company/Agency	City	State
U.S. Fish and Wildlife Service	Lee Albright	Burbank	WA
Walsh, Maureen	16th District	Olympia	WA
Ward ,Bob	City of Umatilla	Umatilla	OR
Washington Department of Ecology	Washington Department of Ecology	Olympia	WA
Welker, Todd	Washington Department of Natural Resources	Ellensburg	WA
Whitlam, Rob	Washington Department of Archeology and Historical Preservation	Olympia	WA
Wood, Lori	Bureau of Land Management	Baker City	OR
Woolson, David	Walla Walla Valley Chamber of Commerce	Walla Walla	WA
Zimmerman, Bruce	Confederated Tribes of the Umatilla Reservation	Pendleton	OR
Notification for JUST Public Meetings			
Broadbent, Kirman (Joe)	Builders Construction Services Inc.	Touchet	WA

Table 2. Umatilla County Landowners

Wallula to McNary 230-kilovolt Transmission Line Project

Landowner	City	State
Anacapa Land Co., LLC	Houston	TX
B. Kik Properties, LLC	Hermiston	OR
Basford, Aaron J.	Hermiston	OR
Bonneville Power Administration (BPA)	Portland	OR
Bucks Consumer Supply Inc.	Mead	WA
Estes, Justin l. and Jenny l.	Hermiston	OR
Findley Acquisitions, LLC	Portland	OR
Hawman Farms, Inc.	Hermiston	OR
Hawman Properties, LLC	Hermiston	OR
Jared, Greg Scott	Hermiston	OR
JB Land LLC	Hermiston	OR
Kloepper, Orlin D.	Umatilla	OR
Langley, Joyce A.	Umatilla	OR
Latham, Ricky R.	Hermiston	OR
Lewis & Clark College (TRS)	Portland	OR
Marks, David H. and Regina	Hermiston	OR
Marks, Troy W. and Sara	Hermiston	OR
Peterson, Kenneth D.	Hermiston	OR
Rupp Ranches	Richland	WA
Rupp, Randy F.	Richland	WA
Sturza, Pete	Hermiston	OR
Umatilla, Port of	Umatilla	OR
U.S. Army Corps of Engineers and Bonneville Power Administration (USACE and BPA)	Vancouver	WA
U.S. Department of the Interior Bureau of Land Management (BLM)	Portland	OR
U.S. Department of the Interior Bureau of Indian Affairs (Dept of Int BIA)	Pendleton	OR
U.S. Fish and Wildlife Service (USFWS)	Portland	OR
Westerling, Darlene	Hermiston	OR

Table 3. Landowners within 1,000 Feet of Transmission Line
Wallula to McNary 230-kilovolt Transmission Line Project

Landowner	City	State
Anacapa Land Co., LLC	Houston	TX
Anderson, Eberheart L.	Denair	CA
Atwood, Barbara Lee	Hermiston	OR
B. Kik Properties, LLC	Hermiston	OR
Basford, Aaron J.	Hermiston	OR
Blair, Joann G.	Umatilla	OR
BLM	Portland	OR
Bonney, Stuart F.	Stanfield	OR
BPA	Portland	OR
Brooks, A. Kassai	Hermiston	OR
Bucks Consumer Supply, Inc.	Mead	WA
Carr, Rickie L.	Umatilla	OR
Dept. of Interior, BOR	Boise	ID
Dept of Interior, BIA	Pendleton	OR
Donns Places, Inc.	Hermiston	OR
Estes, Justin L. and Jenny L.	Hermiston	OR
Findley Acquisitions, LLC	Portland	OR
Frederickson, Daryl C. and June	Umatilla	OR
Garcilazo, Vincente and Maria	Umatilla	OR
Gonzalez, Juan D. and Oralia M.	Hermiston	OR
GT Land and Cattle, LLC	Hermiston	OR
H P, LLC	Umatilla	OR
Hawman Properties, LLC	Hermiston	OR
Hayden, Richard D.	Hermiston	OR
Hedge, Misty D.	Umatilla	OR
Hindman, Shirley A.	Touchet	WA
Hontz, Carl L.	Umatilla	OR
Hopkins, Martin J. and Hopkins, Michael L.	Umatilla	OR
Hunt, Forest E. and Joann E.	Umatilla	OR
Hussey, Jack O.	Irrigon	OR
Jared, Greg Scott	Hermiston	OR
JB Land, LLC	Hermiston	OR

Table 3. Landowners within 1,000 Feet of Transmission Line
Wallula to McNary 230-kilovolt Transmission Line Project

Landowner	City	State
Jenks, Duane O. and Jenks Vard B. (Trs)	Moses lake	WA
Kiks Golf Center, LLC	Hermiston	OR
Kloepper, Orlin D.	Stanfield	OR
Langley, Duke A.	Umatilla	OR
Langley, Joyce	Umatilla	OR
Latham, Ricky R.	Hermiston	OR
Lee, Edward F.	Umatilla	OR
Lewis & Clark College	Portland	OR
Lind, Bernard S.	Umatilla	OR
Marks, David H. and Regina	Hermiston	OR
Marks, Troy W. and Sara	Hermiston	OR
Montoya, Josefina M.	Umatilla	OR
Moon, Kenneth and Linda	Boring	OR
Myers, Leon R. and Swank, Barbara A.	Umatilla	OR
Pacific Land Partner, LLC	Othello	WA
Pacific Power & Light Co.	Portland	OR
Perez, Eligio O. and Obdulia, Topia	Umatilla	OR
Peterson Kenneth D.	Hermiston	OR
Pierce, Vincent L.	Touchet	WA
Poulson, Steven D. and Jonilyn M.	Umatilla	OR
Ritzer, Michael Anthony and Tabitha June	Hermiston	OR
Royale Columbia Farms, Inc.	Hermiston	OR
Rupp Ranches	Richland	WA
Rupp, Randy F.	Richland	WA
Sanguino, Jose and Estela A.	Umatilla	OR
Schwenkfelder, John R. and Bonnie	Meridian	ID
Shockman, Melony Irene	Corvallis	OR
State of Oregon	Salem	OR
Sturza, Pete	Hermiston	OR
Turney, Willard F. and Patricia E.	Umatilla	OR
Umatilla, City of	Umatilla	OR
Umatilla, County of	Pendleton	OR

Table 3. Landowners within 1,000 Feet of Transmission Line

Wallula to McNary 230-kilovolt Transmission Line Project

Landowner	City	State
Umatilla, Port of	Umatilla	OR
U.S. Department of Interior Bureau of Reclamation)	Boise	ID
U.S. Department of Interior	Pendleton	OR
USACE	Walla Walla	WA
USACE and BPA	Vancover	WA
USFWS	Portland	OR
Vanarsdale, Barbara J.	Hermiston	OR
Walker, Rita J.	Stanfield	OR
Walla Walla, County of	Walla Walla	WA
Washington, State of (Department of Natural Resources)	Olympia	WA
Westerling, Darlene	Hermiston	OR
Whitman, Coll, Board of Trustees	Walla Walla	WA
Wilson, Claude B., Jr.	College place	WA
Zahner, Frank M. and Shirley J.	Camano island	WA