

**Walla Walla–Tucannon River Transmission Line
Rebuild Project**

Revision Sheet for the Environmental Assessment

Finding of No Significant Impact

Mitigation Action Plan

DOE/EA-1731

Bonneville Power Administration

May 2011

Revision Sheet
for the
Walla Walla–Tucannon River Transmission Line Rebuild Project
Final Environmental Assessment
DOE/EA-1731

Summary

This revision sheet documents the changes to be incorporated into the Walla Walla–Tucannon River Transmission Line Rebuild Project Preliminary Environmental Assessment (EA). With the addition of these changes, the Preliminary EA will not be reprinted and will serve as the Final EA.

On April 8, 2011, the Preliminary EA was sent to agencies and interested parties. Notification that the EA was available and how to request a copy was sent to all others on the mailing list of potentially affected parties. Comments on the Preliminary EA were accepted until April 25, 2011. BPA received a total of six comment letters. The “Public Comments” section below presents the comments received and BPA’s responses to those comments.

Revisions to the EA

A number of minor changes were made to the Preliminary EA and are presented below by the chapter and section in which they appeared in the Preliminary EA. In addition to the revisions listed below, a number of mitigation measures have been added to the Proposed Action since the Preliminary EA was released. New mitigation measures and changes to existing mitigation are identified in the attached Mitigation Action Plan.

Chapter 2—Proposed Action and Alternatives

2.1 Proposed Action

2.1.4 Access Roads (Page 2-6)

In the summary of stream crossings, the Coppei Creek and Wolf Fork Creek bullets have been updated to clarify the size of rock used in the ford crossings. The new text reads as follows:

...a layer of cobble or rock measuring at least six inches in diameter

The following text has been added to the description of the Coppei Creek crossing:

In Coppei Creek where the entire ford would be hardened, a low-flow channel would be constructed to concentrate low water flows instead of water being spread across at a low depth.

Chapter 3—Affected Environment, Environmental Consequences, and Mitigation Measures

3.2 Land Use and Recreation

3.2.1 Affected Environment

City of Walla Walla (Page 3-5)

The following text has been added after the second paragraph in this section:

The City of Walla Walla and Port of Walla Walla are exploring the potential of developing a light industrial business park on the easternmost parcel of the City's landfill property adjacent to the Washington State Department of Corrections ground. The current alignment of the transmission line is adjacent to this parcel.

3.2.2 Environmental Consequences—Proposed Action

Plans and Policies (Page 3-7)

The following statement is found in the Preliminary EA:

The future acquisition of easements for the expanded ROW would not affect the underlying land ownership and is not anticipated to change the use of the land in such a way that it would result in noncompliance with county and local ordinances and codes.

The statement has been revised to read:

The future acquisition of easements for the expanded ROW would not affect the underlying land ownership and is not anticipated to change the existing use of the land in such a way that it would result in inconsistency with county and local ordinances and codes. However, future changes to land uses and zoning could be limited by the expanded ROW, if they were incompatible with the safe operation and maintenance of the transmission line.

Agriculture (Page 3-8)

The following text has been added following the last paragraph in this section:

Easements acquired by BPA to allow for widening of the transmission line ROW would occur predominantly in land that is currently in agricultural use. Although the legal rights to the land would be acquired by BPA, it is not anticipated that this would result in significant impacts on existing agricultural land use. Agricultural cultivation would be allowed to continue in these easements so long as they did not interfere with the safe construction, operations, or maintenance of the transmission line.

3.5 Fish and Wildlife

3.5.2 Environmental Consequences—Proposed Action

Wildlife and Their Habitat

Operations and Maintenance (Page 3-38)

The following text has been added after the fourth paragraph in the section:

The spacing of conductors on 115-kV transmission line is wide enough that electrocution of raptors and large birds is generally not a problem as it is with distribution lines.

3.12 Cultural Resources

3.12.3 Mitigation Measures

The following mitigation measure has been added to this section:

BPA will provide for a cultural resource expert to monitor all ground-disturbing activities in the vicinity of structures 7/3, 23/1 through 23/4, and 36/2.

Chapter 4—Environmental Consultation, Review, and Permit Requirements

4.2 State, Areawide, and Local Plan and Program Consistency

4.2.6 City of Walla Walla Comprehensive Plan

The following statement is found in the Preliminary EA:

The future acquisition of easements for the expanded ROW would not affect the underlying land ownership and is not anticipated to change the use of the land in such a way that it would result in noncompliance with county and local ordinances and codes.

The statement has been revised to read:

The future acquisition of easements for the expanded ROW would not affect the underlying land ownership and is not anticipated to change the existing use of the land in such a way that it would result in inconsistency with county and local ordinances and codes. However, future changes to land uses and zoning could be limited by the expanded ROW if they were incompatible with the safe operation and maintenance of the transmission line.

Public Comments

This section presents comments received on the Preliminary EA and responses to those comments.

Table 1. Public/Agency Comments on the Preliminary Environmental Assessment

Comment	Commenter	Commenter's Organization
WTEA 0001	Jim Shepard	Shepard Farms Inc.
WTEA 0002	Johnson Meninick	Confederated Tribes and Bands of the Yakima Nation
WTEA 0003	Maxey	
WTEA 0004	Michael Ritter	Washington Department of Fish and Wildlife
WTEA 0005	Dean Abrams	City of Walla Walla
WTEA 0006	Thorn	

Comment WTEA 0001

	WTEA 0001 Shepherd/Shepherd Farms, Inc.
0001-1	To BPA: I represent the Shepherd Family who owns Shepherd Farms. We are Mile 18 on the BPA Walla Walla-Tucannon Transmission Line. We have five poles on our place. Four of the five poles are surrounded by wheat this year. If you go into these fields before harvest, you will destroy substantial amounts of wheat. Will you please wait until after August 1, 2011? By this time, all wheat will be harvested. Your contractor may then access these poles through wheat stubble. There will no crop damage. This will be the cheapest and easiest time for access. It will be the best time for farmers on this part of the line. I also understand that you want to move some of the poles from their existing positions.
0001-2	In our situation, it will make it more inconvenient to farm around the poles in the new, proposed positions. Furthermore, it will take more farm land out of production. Please replace these poles in their existing positions. Thank you. Sincerely, Jim Shepherd

Responses

0001-1

BPA does not know the exact timing of when our construction contractor will be working in line mile 18; however, BPA will attempt to accommodate the August 1st date. The contractor will contact you to help coordinate construction activities with your farming activities.

0001-2

Because of the physical contours of the land in line mile 18, it was necessary to relocate two structures and add three structures in that line mile. BPA minimized the impact by placing four of the five structure locations near the edge of the fields. These changes to the line will assure that our energized conductor will maintain the minimum ground clearance necessary so that farming activities can safely continue as they do today.

Comment WTEA 0002

WTEA 0002

Meninick/Confederated Tribes and Bands of the Yakima Nation



Confederated Tribes and Bands of the Yakama Nation
Established by the Treaty of June 9, 1855

Post Office Box 151
Toppenish Washington 98948

April 19, 2011

Bonneville Power Administration
PO Box 491
Vancouver, WA 98666-0491
ATTN: ERICH ORTH

**Subject: TEP-TPP-3
Walla Walla – Tucannon River Transmission Line Rebuild Project**

Mr. Orth,

Thank you for contacting the Cultural Resources Program (CRP) of the Confederated Tribes and Bands of the Yakama Nation (Yakama) in regard to the Walla Walla – Tucannon Transmission Line Rebuild Project. As expressed in the letter addressed Ms. Breeden, BPA Environmental Coordinator, on January 22, 2010 (attached), this project falls within the Usual and Accustomed Territory of the Yakama, which the Yakama have reserved rights to the land as defined in the Treaty of 1855 (12 STAT., 951).

We have reviewed the preliminary Environmental Assessment (EA) and the Yakama do not concur with the findings of no significant impact to cultural resources.

This was determined upon examination the Cultural Resource Survey completed by Plateau Archaeological Investigations, LLC cited in the preliminary EA. This is because of two reasons: the lack of Tribal involvement in determining traditional cultural properties (TCPs) and the absence of subsurface testing within areas of possible ground disturbance.

0002-1 TCPs should be identified by knowledgeable *people* not by merely conducting ethnographic research. This is further predicated through the President's Executive Order 13007, which outlines the methods in determining a sacred site. This will ensure that areas cultural importance are protected pursuant to the American Indian Religious Freedom Act (PL 95-351, 42 USC 1996 and 1996a).

0002-2 Subsurface testing should also be completed in areas where ground disturbance is going to occur. Plateau Archaeological cites 48 FR 44716, which states that a reconnaissance survey is conducted in order to determine the "presence or absence of expected property types." This includes material below the surface, which is especially important when the

area of potential effect is within an area used for agriculture that disturbs the first 45 centimeters of the soil (often referred to as the "plow zone"). It should be noted that several discoveries important to the archaeological record have been uncovered regardless of the lack of cultural material on the surface (e.g. the Richey-Roberts Clovis Site). Furthermore, inadequate testing has led to controversy in Washington State, which occurred at the village site *Tse-whit-zen* when over 300 intact skeletons were uncovered, costing the State of Washington approximately \$80,000,000 as a result of mitigation, project delay (and eventual shutdown), and out-of-court settlement.

0002-3

Therefore, the Yakama CRP urge that the Bonneville Power Administration work closely with the Yakama in order to adequately document TCPs and that subsurface testing occurs within areas of ground disturbance, which includes, but not limited to, road improvements, pole replacement, and staging areas.

If you have any questions in regard to what is stated in this letter, feel free to contact myself at 509-865-5121, extension 4737, email johnson@yakama.com or Gideon Cauffman, CRP Archaeologist, at extension 4609, email cauffmang@gmail.com.

Respectfully,



Johnson Meninick
Manager
Cultural Resources Program
Confederated Tribes and Bands of the Yakama Nation

Responses

0002-1

Following the receipt of this letter, BPA engaged in communication with Gideon Cauffman, Archeologist for the Confederated Tribes and Bands of the Yakima Nation, to identify areas of concern and determine adequate measures to avoid or mitigate impacts. As part of that communication, Traditional Cultural Properties were discussed and no specific concerns were identified.

0002-2

Following the receipt of this letter, BPA communicated with Gideon Cauffman, Archeologist for the Confederated Tribes and Bands of the Yakima Nation, to identify areas of concern and determine adequate measures to avoid or mitigate impacts. As part of that communication, specific areas were identified where cultural resources could be affected. BPA has agreed to add the following mitigation measure to Section 3.12.3 of the EA.

BPA will provide for a cultural resource expert to monitor all ground-disturbing activities in the vicinity of structures 7/3, 23/1 through 23/4, and 36/2.

0002-3

BPA is consulting with the Confederated Tribes and Bands of the Yakima Nation pursuant to Section 106 of the National Historic Preservation Act, and will continue to work with them throughout the construction of the Proposed Action. This includes providing notification and seeking input should artifacts or remains be discovered.

Comment WTEA 0003

WTEA 0003
Maxey

B O N N E V I L L E P O W E R A D M I N I S T R A T I O N

**Proposed Walla Walla – Tucannon River Transmission Line Rebuild
Project Comment Form**

Does the preliminary EA analyze the resources important to you?

Mostly

Are there other ways to lessen potential resource impacts?

Not Realistic ones

Other comments?

The last time some Poles were replaced (7-8 years ago) equipment associated were staged on my property causing damage. The crew supervisor told me before they left they would repair the damage. This never occurred! I had to fix the excessive repairs myself. I hope this type of situation will be addressed in the upcoming line rebuild

Please mail your comments by **April 25, 2011** to:

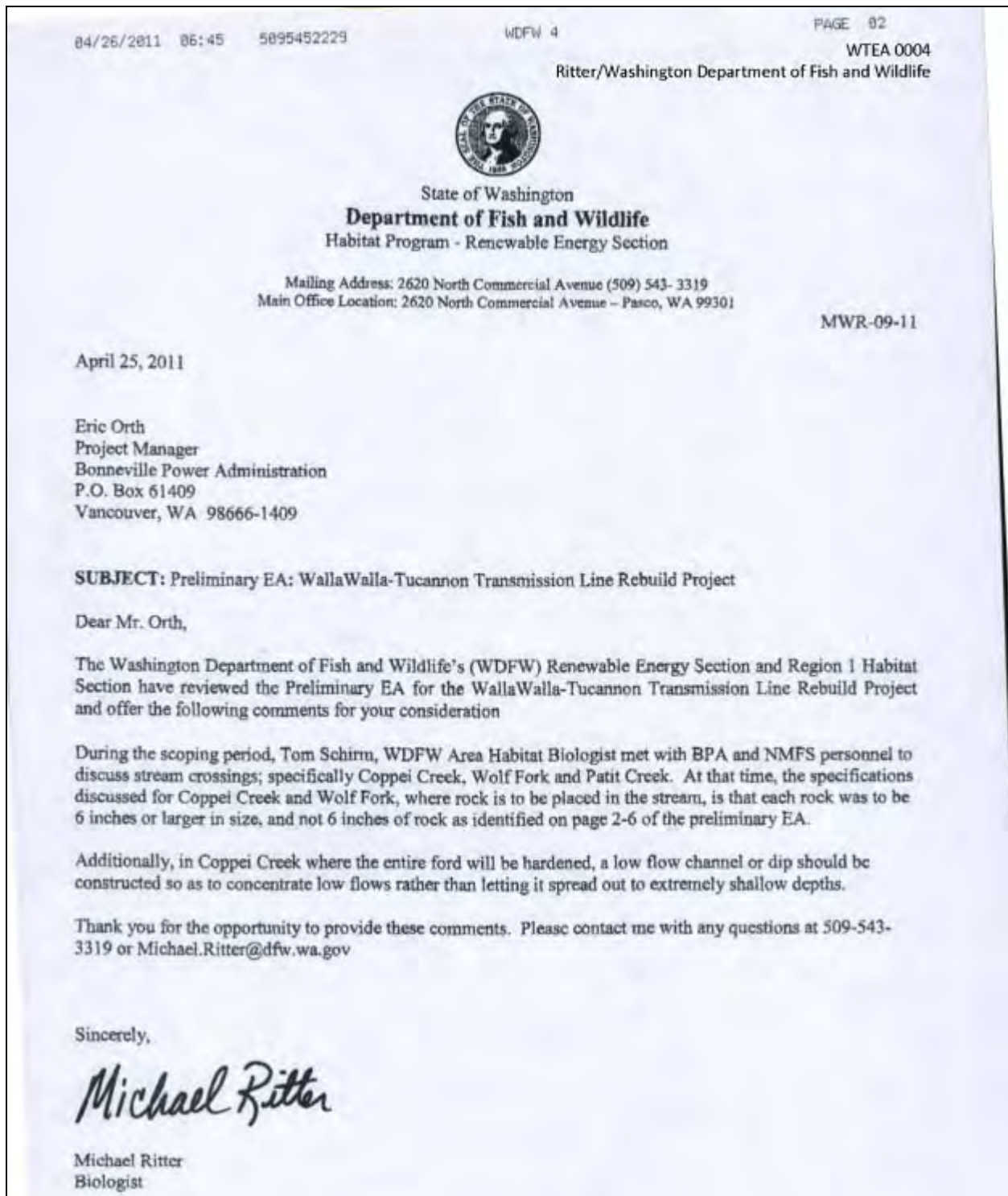
BPA Public Affairs - DKE-7
PO Box 14428
Portland, OR 97293-4428.

You may also fax your comments to 503-230-3285, call: 800-622-4519,
or submit comments online at www.bpa.gov/comment

Response

BPA will require the construction contractor to return all land to existing conditions or to better condition than before construction was initiated.


Comment WTEA 0004



Response

Section 2.1.4 of the EA has been revised to clarify the size of the rock used in the ford crossings and to specify that a low-flow channel would be constructed.

Comment WTEA 0005

04/25/2011 17:12 5271951	WTEA 0005 Abrams/City of Walla Walla	PAGE 01/02														
		PUBLIC WORKS SERVICE CENTER P.O. Box 478 Walla Walla, WA 993620216														
		<table border="0"><tr><td>Administration</td><td>(509) 527-4463</td></tr><tr><td>Engineering</td><td>(509) 527-4537</td></tr><tr><td>Equipment Pool</td><td>(509) 527-4506</td></tr><tr><td>Landfill</td><td>(509) 527-4591</td></tr><tr><td>Sanitation</td><td>(509) 527-4479</td></tr><tr><td>Streets</td><td>(509) 527-4363</td></tr><tr><td>Water</td><td>(509) 527-4380</td></tr></table>	Administration	(509) 527-4463	Engineering	(509) 527-4537	Equipment Pool	(509) 527-4506	Landfill	(509) 527-4591	Sanitation	(509) 527-4479	Streets	(509) 527-4363	Water	(509) 527-4380
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Streets	(509) 527-4363															
Water	(509) 527-4380															
<p>April 25, 2011</p>																
<p>Bonneville Power Administration Public Affairs – DKE -7 VIA Facsimile</p>																
<p>Subject: Walla Walla-Tucannon River Transmission Line Rebuild Project Environmental Assessment Comments</p>																
<p>Gentlemen:</p>																
<p>This correspondence is in response to the Notice of Availability and draft Environmental Assessment published by the Bonneville Power Administration for the Walla Walla-Tucannon River Transmission Line Rebuild Project</p>																
<p>While the City is supportive of rebuilding the subject transmission line, we do need to bring forward some discussion items.</p>																
<p>1. Right of Way Acquisition (2.1.1, pg 2-2)</p>																
0005-1	<p>The resource important to the City of Walla Walla with regards to this project is the references to the acquisition of additional rights of way along the existing alignment and how that will affect the market value and full potential use of City owned land. The parcel most affected is the approximately 77.3 acre orphaned parcel created by segregation with the State Highway 12 realignment project. That parcel is currently zoned as Public Access and is currently farmed. However, the City has initiated a process to re-zone the parcel to R 72 Residential. The City has considered developing the parcel to its highest and best use or selling it with the potential to develop as a residential subdivision. An additional 40 feet of right of way would greatly reduce the usable portion of that parcel, and future value.</p>															
<p>The City would prefer that the alignment be moved north of State Highway 12 in the Sudbury Landfill parcel along its southern border. This would relieve the existing parcel south of State Highway 12 of encumbrances and provide the opportunity for its fullest potential development.</p>																
<p>2. Land Use and Recreation (3.2.1, pg 3-3)</p>																
<p>Fix Numbers • Service Center (509) 525-0845 • Equipment Pool (509) 527-3769 • Landfill (509) 522-4570 <small>www.ci.walla.wa.us</small></p>																

0005-2

We feel that it is important to note that together with the Port of Walla Walla, the City is exploring the potential of developing a light industrial business park on the easternmost parcel of the City's landfill property adjacent to the Washington State Department of Corrections ground. The BPA's current alignment is adjacent to that parcel.

We ask that the Environmental Assessment consider the impacts to this potential development.

3. State, Areawide, and Local Plan and Program Consistency (4.2.6, pg 4-4)

0005-3

The City does not agree with the statement that "The future acquisition of easements for the expanded ROW would not affect the underlying land ownership and is not anticipated to change the use of the land in such a way that it would result in noncompliance with the municipal code". Whether the City-owned parcels are utilized as landfill, light industrial, residential or farmland, the acquisition of additional right of way will impact the potential uses.

We ask that the full impact to the parcels be considered.

I hope this information is helpful and we look forward to continued involvement with this project.

Sincerely,



Dean Abrams
Civil Engineer

Copy: Ki Bealey, Public Works Director
Neal Chavre, Interim City Engineer

Responses

0005-1

The scope, schedule, and cost of the project are based on rebuilding the transmission line in its existing location. Any new alignments would require additional time in the schedule and the acquisition of new easements and would increase the cost of the project. BPA is open to consideration of moving certain sections of the transmission line; however, this would be at the expense of the City of Walla Walla.

0005-2

The EA has been revised to include a discussion of the possible impacts on future land use changes and developments that could occur as a result of the acquisition of easements to widen the transmission line ROW. The exploration of the potential development of a light industrial park has been disclosed in the EA.

0005-3

BPA respectfully disagrees with the commenter. Widening the ROW would not result in a de facto impact on the categories of land use identified by the commenter. As described in Section

2.1.1 of the EA, the underlying land owner would continue to have ownership of the property and could continue to use the property. As an example, agricultural uses that currently occur outside of the ROW would be permitted to continue after the easement is acquired, because agricultural uses typically do not interfere with the safe construction, operation, or maintenance of the transmission line. Only in the instances where it would interfere with the safe construction, operation, or maintenance of the transmission line would BPA restrict the use of the land in expanded ROW. The discussions of consistency with local plans and policies in Sections 3.22 and 4.2.6 of the EA have been revised to include this information.

Comment 0006

WTEA 0006
Thorn

B O N N E V I L L E P O W E R A D M I N I S T R A T I O N

**Proposed Walla Walla – Tucannon River Transmission Line Rebuild
Project Comment Form**

Does the preliminary EA analyze the resources important to you?

Are there other ways to lessen potential resource impacts?

0006-1

*We request that the project start at the west end and proceed eastward toward the Tucannon. The higher elevation east end is much wetter and must be given time to dry out or landowners will not allow access.
~~Also we~~*

Other comments?

0006-2

We need to know whether the line route will be changed, and if so, where. Will the poles be replaced in the same places?

Please mail your comments by **April 25, 2011** to:
BPA Public Affairs - DKE-7
PO Box 14428
Portland, OR 97293-4428.

You may also fax your comments to 503-230-3285, call: 800-622-4519,
or submit comments online at www.bpa.gov/comment

Responses:0006-1

BPA evaluated both options: 1) starting east and working west; and 2) starting west and working east. BPA believes that the preferred option is to begin at the east end and work towards the west because of the dense population of farmers on the west end of the line and the large potential for crop damage to these farmers in the early summer months prior to harvest, which could include financial implications to BPA. BPA recognizes that the weather will remain wet on the east end of the line through June; BPA will work with landowners to minimize the impact as much as possible. Because of the importance of the reliability of this transmission line, construction needs to be completed in one construction season (May–November), so that the line can be re-energized prior to the winter months.

0006-2

The transmission line route will not change. Most poles will be replaced in the same locations as they are today—as described in Section 2.1.5 of the EA—with some additional structures and location changes.

Walla Walla-Tucannon River Transmission Line Rebuild Project

Preliminary Environmental Assessment

April 2011



DOE/EA-1731



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Chapter 1

Purpose of and Need for Action

1.1 INTRODUCTION

The Bonneville Power Administration (BPA) is a federal agency that owns and operates more than 15,000 miles of high-voltage transmission lines. The transmission lines move most of the Pacific Northwest's high-voltage power from facilities that generate the power to utility customers throughout the region. BPA has a statutory obligation to ensure that its transmission system has sufficient capability to serve its customers while maintaining a system that is safe and reliable. The Federal Columbia River Transmission Act directs BPA to construct the improvements, additions, and replacements to its transmission system necessary to maintain electrical stability and reliability, and to provide service to BPA's customers (16 United States Code [USC] Section 838b(b-d)).

The Walla Walla-Tucannon River Transmission Line Rebuild Project (Rebuild Project), the federal Proposed Action, would include replacing wood poles and associated structural components for the Walla Walla-Tucannon River No. 1 115-*kilovolt*¹ (kV) transmission line located in Walla Walla and Columbia counties, Washington (Figure 1-1). This Environmental Assessment (EA) was prepared by BPA pursuant to regulations implementing the National Environmental Policy Act (NEPA) (42 USC 4321 *et seq.*), which requires federal agencies to assess the impacts their actions may have on the environment. BPA prepared this EA to determine if the Proposed Action would cause impacts that would warrant preparing an Environmental Impact Statement (EIS), or if it would warrant preparing a Finding of No Significant Impact (FONSI).

1.2 UNDERLYING NEED FOR ACTION

The Walla Walla-Tucannon River No. 1 transmission line was originally built in 1940. The wood-pole transmission line serves two utility customers, Puget Sound Energy (PSE) (Hopkins Ridge Wind Farm) and Columbia Rural Electric Association (CREA), which in turn serves several communities in eastern Washington. No major rebuild work has been done on the Walla Walla-Tucannon River line since it was originally built. In general, wood poles supporting transmission lines are expected to have a service life of 55 to 60 years, at which point they are usually replaced because of age, rot, and other deterioration. Most of the *structures* on the Walla Walla-Tucannon River transmission line now exceed their service life and are physically worn and structurally unsound in places.

Based on the current condition of these structures, there is a need to replace the wood pole structures and associated structure components to maintain reliable electrical service and to avoid risks to public and worker safety.

¹ Technical terms shown in *bold-italic* typeface are defined in Chapter 6, Glossary and Acronyms.

1.3 PURPOSES OF ACTION

In considering possible ways to meet the identified need for action, BPA will consider how to best achieve the following purposes or objectives:

- Maintain or improve transmission system reliability to BPA and industry standards.
- Continue to meet BPA’s contractual and statutory obligations.
- Minimize environmental impacts.
- Demonstrate cost-effectiveness.

1.4 PUBLIC INVOLVEMENT

BPA conducted public outreach for the Proposed Action through various means, including providing notice of the Proposed Action, the environmental process, and opportunities to comment. On March 1, 2010, BPA sent an initial letter to adjacent landowners, public interest groups, local governments, tribes, and state and federal agencies notifying them of the Proposed Action and upcoming survey activities and providing contact information. The letter explained the proposal, the environmental process, and how to comment during the Preliminary EA scoping period, which extended to April 18, 2010. Public meetings were held in Walla Walla, Washington, on March 17, 2010, and in Dayton, Washington, on March 18, 2010. The notice letter to the public identified several ways to comment, including at one of the public meetings.

BPA also created a website specifically for the Proposed Action where people could access current information about the proposal and environmental review process (http://www.efw.bpa.gov/environmental_services/Document_Library/Walla_Walla-Tucannon_River_Rebuild/). The initial public letter described above was posted on this website.

BPA identified four tribes that have a potential interest in the Proposed Action, based on their historic or current use of the land in the project area: The Confederated Tribes of the Colville Indian Reservation, The Confederated Tribes of the Umatilla Indian Reservation, The Confederated Tribes and Bands of the Yakama Nation, and the Nez Perce Tribe. In addition, BPA spoke with regional U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and Washington Department of Fish and Wildlife (WDFW) representatives to discuss methods to minimize impacts on sensitive fish, wildlife, and plant species.

Seven written comments were received about the Proposed Action during the scoping period. The most common comments concerned the following issues:

- potential impacts on agricultural lands during construction, and
- repair of damage or impacts on private property.

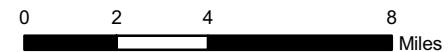
All comments that were received, both written and oral, were considered in the analysis. A list of all interested parties is included in Chapter 5. All public comments can be viewed at the following website: <http://www.bpa.gov/applications/publiccomments/CommentList.aspx?ID=95>.



Figure 1-1. Project Location Map

BPA Walla Walla–Tucannon River Transmission Line Rebuild Project

- ▲ BPA Substation
- First Structure of Each Mile
- Project Line
- BPA Transmission Lines
- Major Rivers & Creeks
- County Boundary



February 22, 2010



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1.5 DAYTON TAP LINE

CREA is considering the construction of a 7-mile, 115-kV tap line that would connect its Dayton Substation to BPA's Walla Walla–Tucannon River transmission line (the Dayton Tap Line). If constructed, the Dayton Tap Line would connect to the Walla Walla-Tucannon River line at two locations adjacent to Structure 40/2 and Structure 40/3. Where the tap line would connect, BPA would need to install disconnect switches, two small switch platforms, *guy wires*, *ground wires*, and connecting equipment. There could also be a wood-pole *dead-end structure* constructed on the east end of the transmission line *right-of-way* (ROW) for the Dayton Tap Line to terminate.

CREA is preparing an environmental review to analyze the potential impacts of the Dayton Tap Line project. If, after environmental review, CREA decides to go forward with its project, the components of its project would be installed and operated outside of BPA's Rebuild Project ROW. BPA's proposed Rebuild Project for electrical reliability and safety is justified independently of CREA's project. In addition to having independent utility, the Rebuild Project would not prejudice CREA's ultimate decision on the Dayton Tap Line. Therefore, the tap line itself is not considered part of the Proposed Action in this EA.

Pending environmental review and a decision to proceed, construction of the Dayton Tap Line could begin as early as the summer of 2011. Because the potential decision to construct and energize the tap line could be on such a shortened timeline, and considering BPA's mandates to fulfill the agency's obligation to maintain system reliability and serve its customers, BPA believes it would be prudent to consider the potential environmental effects of its potential connection facilities within the scope of this EA. Therefore, BPA is including in this EA an analysis of the facilities it would need to accommodate the potential future tap line.

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Chapter 2

Proposed Action and Alternatives

2.1 PROPOSED ACTION

The Proposed Action would rebuild the 47-mile-long 115- kV transmission line from the existing Walla Walla *Substation*², located in the city of Walla Walla, Washington, to the existing Tucannon River Substation, located near the town of Dayton, Washington. The western portion of the transmission line is located in Walla Walla County; the eastern portion is located in Columbia County (Figure 1-1).

The Proposed Action would entail the following activities:

- widening of the transmission line ROW by 20 feet in both directions from the centerline;
- removal of existing wood-pole structures and conductors;
- installation of replacement wood-pole structures and associated components;
- installation of conductors, ground wire, and counterpoise;
- installation of two *steel-lattice structures*;
- improvement and reconstruction of some existing access roads;
- construction of new access roads;
- abandonment of some existing access roads;
- establishment of temporary staging areas for storage of materials;
- accommodation of facilities to allow for the potential future connection of a tap line that would connect the transmission line to CREA’s Dayton Substation;
- removal of some vegetation, including some *danger trees*; and
- revegetation of areas disturbed by construction activities.

Each of these activities is described in detail in the remaining portions of this chapter. The estimated project requirements are summarized below.

Corridor length	47 miles
ROW width	100 feet
New ROW easement acquisition	228 acres
Number of wood-pole structures removed	295
Number of structures installed:	
Wood, two-pole suspension	260
Wood, three-pole angle	57

² Technical terms shown in bold italic typeface are defined in Chapter 6, Glossary and Acronyms.

Steel-lattice structures ³	2
TOTAL:	319
Number of additional structures compared to existing conditions	24
Number of new structures outfitted with guy wires	105
Structure height above ground	Wood structures: 45 to 105 feet Steel-lattice structures: 80 feet
Conductors	3
Access roads⁴	14 feet wide on average, with a 20-foot potential disturbance area. Located within a 50-foot-wide road easement
Total Length of Access Roads ¹	32.31 miles
New Roads	0.46 mile
Reconstructed Roads	13.57 miles
Abandoned Roads	1.63 miles

2.1.1 Transmission Line Route and Right-of-Way

The existing transmission line consists of 295 wood-pole structures. Each structure is designated by a unique number based on the distance from the Walla Walla Substation (the designated start point) and the number of structures within a given mile. For example, in the first mile from the Walla Walla Substation, there are eight wood-pole structures. The first structure is designated as Structure 1/1, the second structure is Structure 1/2, and so on, up to the eighth structure, which is designated as Structure 1/8. Numbering in line mile 2 begins with Structure 2/1 and ends with the last of nine structures, Structure 2/9.

Structure replacement would occur within the existing 60-foot-wide transmission line ROW. The existing ROW is located mostly on privately owned lands. The land uses within and adjacent to the existing ROW are mainly rural residential and agricultural. Approximately 9,437 linear feet (approximately 1.8 miles) of the existing ROW is on land owned by the City of Walla Walla.

As part of the Proposed Action, the transmission line ROW would be widened by 20 feet in each direction from the centerline. To acquire the ROW, BPA would purchase easements from the underlying landowner. Most easements for the transmission line would give BPA the right to

³ In addition to the two steel-lattice transmission towers, two small steel-lattice platforms would be installed in the transmission line ROW to support the connection of the tap line.

⁴ Access roads include all roads used by BPA exclusively for access to the transmission line. This distance does not include public roads, such as U.S. Highway 12 that may be used as the primary road for access to isolated structures. Distance also does not include roads abandoned as a result of the Proposed Action (1.63 miles).

construct, operate, and maintain the line in perpetuity. Although the underlying landowner would still own and use the property, BPA would not permit any uses of the transmission line ROW that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities. These restrictions would be part of the legal rights that BPA would acquire for the transmission line. The acquisition of easements for the expanded ROW would not occur at the time of construction, but would take place a number of years later. The area where the new ROW would be acquired is located predominantly on privately owned land. The land uses in these areas are similar to those within and adjacent to the existing ROW.

2.1.2 Structure Design

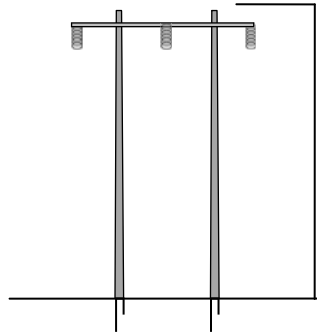
A total of 317 wood-pole and 2 steel-lattice structures would replace the existing 295 wood-pole structures. In general, the existing structures would be replaced with structures of essentially the same design—two-pole or three-pole—and with similar structural components (i.e., structure cross arms, *insulators*, and *dampers*). All wood structures would have the same general appearance but would vary in size depending on their function. Two steel-lattice towers would be installed to span a long canyon crossing between Structures 32/3 and 33/1.

Most (260) of the proposed structures would be two-pole suspension structures (Figure 2-1), which are used in straight alignments or where turning angles between structures are generally less than 15 degrees. They are constructed of two poles, because they do not have to withstand the stresses created by angles in the *conductor*.

Fifty-seven structures would be three-pole structures, either angle or dead-end. *Angle structures* would be located at points where the line changes direction, generally at angles of 15 degrees or greater. *Dead-end structures* would be placed at intervals along the transmission line to independently carry the weight and tension of the conductors. Dead-end structures could be used on a straight alignment, at angles greater than 15 degrees, or on very long spans, such as river crossings.

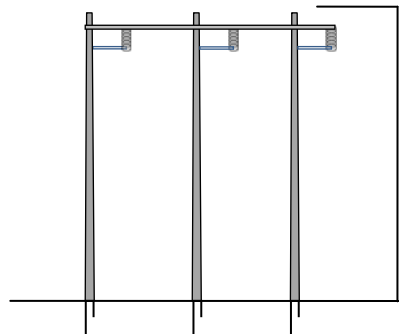
The heights of the new wood-pole structures would be similar to the heights of existing structures, ranging from 45 to 105 feet above ground. The two new steel-lattice structures would be approximately 80 feet tall. Structure heights at particular locations would depend on terrain, the length of the span, and other factors.

Guy wires and guy anchors to support new structures would be installed as required. Guy wires would connect the wood-pole structures to the ground to provide extra support and stability.



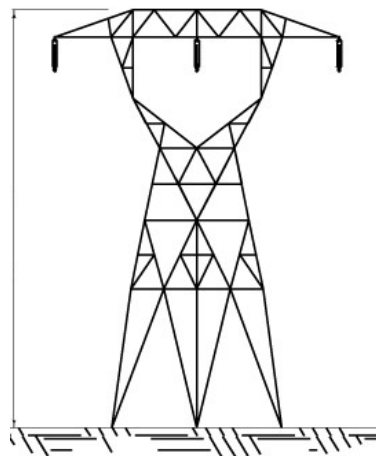
Average Height
45–90 Feet

Existing and Proposed
Pole Wood Suspension Structures



Average Height
45–105 Feet

Existing and Proposed
3-Pole Wood Dead-End Structures



Average Height
80 Feet

Proposed
Steel Lattice Structure

Figure 2-1. Existing and Proposed Wood and Steel-Lattice Structures
BPA Walla Walla–Tucannon River Transmission Line Rebuild Project



2.1.3 Conductors, Overhead Ground Wires, and Counterpoise

Conductors

Alternating-***current*** transmission lines, like the Walla Walla–Tucannon River transmission line, require three conductors to make a complete ***circuit***. The existing conductors would be removed and new ones attached using non-ceramic insulators. Insulators keep conductors a safe distance from other parts of the structure and prevent electricity in the conductors from moving to other conductors, the structure, or the ground. The existing conductor has a diameter of 0.78 inch; the proposed conductor would be larger, with a diameter of 0.95 inch. The new conductor would be more reflective than the existing conductor for the first few years after installation, until it naturally weathers and dulls.

Overhead Ground Wire

Overhead ground wires are used for lightning protection. If lightning strikes, the overhead ground wire takes the charge instead of the conductors. An overhead ground wire is currently attached between the Walla Walla Substation and Structure 1/6 and between Structure 47/3 and the Tucannon River Substation. Ground wires would be replaced in these locations.

Counterpoise

A system of underground wires, or ***counterpoise***, is attached to some structures for additional lightning protection. The counterpoise takes the lightning charge from the overhead ground wire and dissipates it into the earth. The wires are laid out horizontally from structures and buried in the ground. Counterpoise would only be located where overhead ground wire is present (six structures in the first line mile and five structures in the last line mile) and would be replaced as needed. Typically, at each of these 11 structures, the trench in which the counterpoise is buried would be excavated by a small backhoe and would measure approximately 30 inches deep by 24 inches wide by 15 feet long.

2.1.4 Access Roads

Most transmission line structures are accessible for the length of the transmission line. Access roads are generally multiuse roads (e.g., residential access, country roads) used by a variety of individuals for various purposes. However, some access roads within the ROW were created specifically for BPA use.

Some access road work would be needed to improve access to structure sites during construction and during ongoing operation and maintenance activities. This work would include roadway improvements and/or reconstruction, abandonment of some existing roads, construction of three new access roads, installation of six stockyard gates, construction of one new ford, and construction of one new ***culvert***. Roadway work would be conducted at 13 sites along the transmission line ROW, from Structure 2/1 near the Walla Walla Substation to Structure 46/6 near the Tucannon River Substation.

The following list summarizes the areas where creeks or streams would be forded to provide access to the transmission line.

- **Unnamed Tributary.** A new access road that would provide access to Structures 18/2 and 18/3 would include a ford of the tributary.
- **Coppei Creek.** An existing hardened ford of Coppei Creek would be used to access Structures 23/2 and 23/3. Crushed rock would be placed on each side of the crossing from the apex of the break from the surrounding fields to the stream and then down to the stream. For the stream crossing itself (about 40 feet), 6 inches or more of rock would be used.
- **South Fork Touchet River.** An existing hardened ford of South Fork Touchet River would be used to access Structure 32/5.
- **Wolf Fork Touchet River.** An existing hardened ford of Wolf Fork Touchet River would be used to access structures located in line miles 34 and 35. On the field side of the stream, 6 inches of clean cobble would be placed on the natural substrate, extending approximately 30 feet into the stream. From that point across the remainder of the stream, steel plating or grating would be placed to allow construction traffic to cross the stream without disturbing the native substrate. When construction is finished, the plating would be removed as would the 30 feet of cobble. Removal of the cobble would be done in such a way as to avoid disturbing the underlying substrate.
- **Cougar Creek.** An existing hardened ford of Cougar Creek would be used to access Structures 41/1 through 41/4.
- **North Patit Creek.** An existing hardened ford of North Patit Creek would be used to access Structures 43/6 and 44/1. No rock needs to be placed in the stream, because the bottom is stable. Approximately 75 feet of rock would be placed from the ordinary high water mark on one side of the stream to the crest of the small hill, being careful to introduce no material into the stream. On the opposite side of the stream, rock would be placed from the ordinary high water mark to the transmission line structures.

Roadway improvements would be implemented, as needed, to make access roads suitable for BPA transmission line equipment. Roads requiring substantial work would be reconstructed. Between Structure 2/1 and Structure 46/6, 13.57 miles of existing access roads would be reconstructed or improved. In addition, about 1.63 miles of existing access road would be abandoned, primarily because better access would be provided along an alternate route. Road abandonment would occur in the vicinity of Structures 2/1, 16/3, 16/4, 27/6, and 43/5. Three new access roads would also be constructed to provide access near Structures 18/3, 39/5, and 41/1. Approximately 0.46 mile of new access roads would be constructed.

The roadway system is being inventoried to determine the best location(s) for gates to discourage unauthorized access to the transmission line corridor. Some existing gates may need to be replaced. The four existing gates are located on roads leading to Structures 18/4, 32/3, 39/3, and 40/4. Other gates could be installed at new locations to restrict access, as needed.

A new culvert would need to be installed in one location to provide better drainage during rain and snow events. New and replacement culverts would be 24 inches in diameter or smaller. All culverts not replaced would be inspected and cleared of debris. No culverts would be replaced or newly installed on any fish-bearing stream.

2.1.5 Construction Activities

The schedule for construction of the Proposed Action depends on the completion and outcome of the environmental review process. If the Proposed Action is implemented, construction would likely begin in June 2011 or shortly thereafter. All major construction activities would be completed by December 2011. Project construction activities are described below.

During construction, *best management practices* (BMPs) would be implemented to minimize construction-related *erosion* and the potential for introducing construction-related materials (e.g., oil, hazardous materials) into waterways and other sensitive habitats. All BMPs would be derived from and implemented in accordance with the *Stormwater Management Manual for Eastern Washington* (Washington State Department of Ecology 2004).

Removal of Existing Structures

Removal of existing structures would involve excavating around the structure base and using a boom crane to pull the structures out of the ground. Excavated poles would be hauled off site using a line truck. Some shrubs and small trees in the ROW might need to be cleared to allow equipment and machinery to access the structures (see Vegetation Management below). With the possible exception of danger trees, no mature trees would be removed.

At most structure sites (i.e., two-pole suspension structures), structure replacement could disturb an area up to 50 feet by 100 feet per structure (about 0.1 acre) within the previously disturbed ROW. The disturbance area for replacement of three-pole wood structures could be larger (approximately 100 feet by 100 feet, or 0.2 acre) because *pulling and tensioning* of the new conductors would generally occur near these structures. The disturbance area for the two steel-lattice towers would be approximately 100 feet by 100 feet, or 0.2 acre. In or near sensitive habitats (e.g., *wetlands* and fish-bearing streams), disturbance areas would be reduced to 50 feet by 50 feet (approximately 0.06 acre) where possible. Staking or flagging would be installed in these areas to restrict vehicle and equipment access to designated routes and areas to protect these sensitive habitats.

The conductors and overhead ground wire would be removed by reeling the wires onto large spools using a large truck called a puller. The puller would be set up with empty reels to hold the old conductors as they are reeled in. Once removed, the old conductors would be delivered to a metal salvage location to be recycled.

Installation of Replacement Structures

All wood-pole structures would be replaced. Structure components (structure cross arms, insulators, and dampers) would also be replaced, except for cross arms in some instances. During structure replacement, the cross arms would be inspected; if they are constructed of steel and are in good condition, they could be reused.

Replacement wood-pole structures would be brought to the structure sites from the *staging areas* by flatbed truck and, in general, installed in the same ground holes from which the existing structures were removed. The existing holes would be reaugered to about 10 feet deep in the ground using an auger on a drill rig. The replacement poles would be lifted by crane into position and placed into the holes. Holes would be backfilled with excavated material and gravel, as

required. At most structure sites, any additional soil removed by the auger that is not used for backfilling would be spread evenly around the structure base for stability. At structure sites in sensitive areas, the augered soil would be removed from the site and disposed of in an appropriate fill or waste disposal site.

Guy wires and guy wire anchors to support new structures would be installed, as required. If guy wires are present at a structure site and need to be replaced, a hole would be excavated at the location of the guy wire anchor and the old guy wire would be cut off. Depending on the location, the underground guy wire anchor would be left or removed. Holes for new guy wire anchors would be dug with either an auger or a backhoe. Depending on the height, design and location of the new structure, a new guy wire anchor could be placed in the same location as the old anchor and set in crushed rock. The remainder of the guy wire anchor hole would be backfilled with native material.

Equipment used for removing and installing wood poles and other structure components would include flat bed trucks, line trucks with boom crane, backhoes, augers, and bucket trucks. All trucks and equipment would be restricted to operating within BPA's established access roads.

Installation of Steel-Lattice Structures

Steel-lattice towers are anchored to the ground with footings. Four footings anchor each tower at four points. The design for each footing varies based on the soil, depth to bedrock, and quality of bedrock at each site. For a typical tower site, a hole is excavated, steel plates or a grid of crossbeams are placed in the hole, and the hole is filled up with the original material excavated or with concrete.

An area about 8 feet by 8 feet is usually needed for a footing. If no bedrock is found, a hole about 12 feet deep is excavated. If bedrock is found and is adequate for using anchor borings, holes are drilled in the bedrock and steel rods and grout are inserted. The rods are then attached to a concrete footing, or welded directly to part of the tower and covered with compacted soil. If the bedrock cannot support anchor rods, the bedrock may need to be blasted to reach an adequate footing depth.

Steel-lattice towers are either assembled at the tower site and lifted into place by a large crane or assembled at a staging area and set in place by a large sky-crane helicopter. The towers are assembled in sections. Each tower contains three components: tower legs, tower body, and bridge. The bridge is the uppermost portion of the tower and serves as the attachment point for the insulators, which in turn support the conductors. The towers are then bolted to the footings after they are set in place.

Installation of Facilities Associated with the Dayton Tap Line

As part of the Proposed Action, BPA could install connecting facilities within the existing Walla Walla–Tucannon River ROW to accommodate CREA's potential Dayton Tap Line. These facilities would include disconnect switches, two switch platforms, anchor cables, ground wires, and other connecting equipment. The switch platforms would require excavation within a footprint of 20 feet by 20 feet (0.01 acre). These platforms would be placed approximately 12 feet away from the wood-pole structures. There might also be a wood-pole dead-end structure constructed on the east end of the transmission line ROW for the Dayton Tap Line to terminate.

Installation of Conductors, Ground Wire, and Counterpoise

The existing conductors do not meet current standards. The proposed conductors would be made of steel and would have a slightly higher *capacity* than the existing conductors. The appearance of the conductors would be similar, although the new conductors could be slightly more reflective for the first few years until they naturally weather and dull.

The conductor would be installed by setting up a pulling and tensioning site at the beginning and end of each identified pulling section. Typically, pulling sections are lengths along the ROW that are no more than 25 structures long. Conductor pulling and tensioning sites would be needed approximately every 2 to 4 miles depending on the length of the conductor on each reel.

After the equipment (puller and tensioner) is set up, a *sock line* (usually a rope) would be strung through all the structures. This stringing would be done using a helicopter. The sock line would be connected to a hard line (typically a small stranded steel wire), which would be connected to the new conductor and pulled through the structures. Once in place, the new conductor would be tensioned and sagged in place and securely clipped into all of the structures. The tensioner is a large piece of equipment that has many reels that the new conductor is fed through to get the proper tension.

At the same time that the conductors are replaced, overhead ground wire would be removed and replaced, and counterpoise would be replaced, if needed. Overhead ground wire and counterpoise would only be found between the Walla Walla Substation and Structure 1/6 and between Structure 47/3 and the Tucannon River Substation. The decision to replace or retain existing counterpoise would be made during the design process. If replaced, the counterpoise wires would be buried at the base of the structure, extending between the wood poles and from 6 to 18 inches to the outside of the poles where they would connect to a 5/8-inch ground rod. Ground rods typically measure 10 feet in length and would be placed entirely underground in a vertical orientation. Generally, one wire would be buried per structure. The placement of counterpoise wires could be adjusted to avoid sensitive areas, if needed. The wires would be buried approximately 30 inches below the ground surface using a small backhoe. In areas where bedrock is at or near the surface, the wires would be laid on the surface and buried with loose aggregate.

Access Road Work

As described above, roadway improvements and reconstruction would be needed along 13.57 miles of existing roads to provide suitable access for transmission line equipment. Improvement of access roads could involve grading and shaping existing road surfaces and turnouts, placing rock on existing roads, cleaning existing ditches and culverts, replacing or installing culverts, and installing water bars and drain drips, where needed. Reconstruction of existing roads could include modifications to the road base, placement of road base rock, installation or replacement of drainage structures (cross drains and drain dips) to manage water, reshaping of roadway ditches and culvert inlets and outlets, installation or replacement of stream-crossing structures, vegetation removal, and placement of road surface rock.

Approximately 0.46 mile of new access roads would need to be constructed. Work could include removal of vegetation along the proposed roadway, placement of road base rock, installation of

drainage structures, and shaping roadway ditches. New and reconstructed access roads would be composed of a permeable compacted gravel surface.

Road work would occur prior to and concurrent with structure replacement. Most roads would be constructed to a finished 14-foot width, although some areas could be wider to allow vehicles to negotiate curves or bends in the road. The analysis in this EA assumes a potential disturbance width of 20 feet. Table 2-1 includes a list of equipment that could be used for access road work.

Table 2-1. Equipment Used in Access Road Work

Equipment Type	Equivalent Caterpillar Model	Fuel Type
Bulldozers	D5K	Diesel
Excavators (large and small)	328D LCR	Diesel
Dump trucks	NA	Diesel
Crane (300,000 pounds)	NA	Diesel
Road grader	12M	Diesel
Roller compacter	CP56	Diesel
Backhoe	450E	Diesel
Work trucks	NA	Diesel/gas

An excavator could be used to grub out some of the smaller shrubs growing at the immediate road surface edge. Soil disturbance and removal would be minimized as much as possible during vegetation removal. The use of an excavator is preferred to large mowers or brush cutters (e.g., brush hogs) for removing vegetation. Mowing machines are not well suited to this project because they are too large for the size of the roads and are not as precise as excavators. Any larger limbs growing into the roadway would be cut manually with a chainsaw.

Establishment of Staging Areas

Three temporary staging areas would be established along or near the ROW. Staging areas would be used to store and stockpile new and removed materials, as well as other construction-related equipment. The size of the staging areas would be based on the types of sites available for lease and the size needed to accommodate materials and equipment. Each staging area could each be up to 30 acres in size. Staging areas would be established within 10 miles of the transmission line, if possible, to minimize travel. Staging areas are generally large, level, paved sites in commercial or industrial areas. If these areas are not feasible for the location of staging areas, disturbed or common habitat types outside of sensitive habitat areas would be used for staging areas. It is likely that the construction contractor would identify potential areas for lease prior to construction. BPA would complete any required site-specific environmental review once the locations are determined.

2.1.6 Vegetation Management

Restoration of Areas Disturbed by Construction

All areas disturbed by construction activities, except permanent road surfaces, would be reseeded with a native seed mix or a seed mix agreed upon with landowners. The original grade and drainage patterns in sensitive areas would be restored to the extent possible.

Danger Tree Removal

Some *danger tree* clearing would occur as part of the Proposed Action. A danger tree is a tree located inside or outside of the ROW that is a current or future hazard to the transmission line. Danger trees can be either stable or unstable. A tree would be identified as a danger tree if it could make contact with BPA facilities should it fall, bend, or grow within the space that could be occupied by the conductor, either when at rest or when swinging as a result of winds. Vegetation removal would ensure that lines do not sag too close to vegetation and that tree limbs do not fall or bend into the conductor. When vegetation comes too close to conductors, the electricity can jump (arc) from the line to the vegetation. This can be very dangerous to any animal life in the surrounding area and can cause fires and *outages*.

Danger trees would be felled with a chainsaw and branches would generally be lopped and either scattered or chipped. If chipped, the chips would be broadcast. How trees are felled and disposed of depends on the location of the trees and agreements with landowners. Because danger trees are the property of the landowners, they are free to dispose of the trees as they wish.

A total of 217 danger trees have been identified within 60 feet of the centerline of the transmission line ROW. Appendix A summarizes the location, species, and diameters of danger trees by line mile. BPA would discuss danger tree removal activities with landowners prior to removal.

2.1.7 Operation and Maintenance

Ongoing operation and maintenance of the rebuilt transmission line would be essentially the same as for the existing line. The transmission line would continue to be operated at the current voltage (115 kV). BPA would conduct routine, periodic inspection and maintenance. A typical maintenance activity on wood-pole structures is insulator replacement. Although emergency repairs may also be needed, the rebuilt line is anticipated to require emergency maintenance less frequently and on a smaller scale than currently required.

Vegetation would be cleared periodically during ongoing operation and maintenance to maintain access to structures, control noxious weeds, and keep vegetation at a safe distance from the conductor. This vegetation management could include removal of trees determined to be danger trees as discussed above. Vegetation maintenance would be guided by the program identified in BPA's *Transmission System Vegetation Management Program Environmental Impact Statement* (Bonneville Power Administration 2000a). The vegetation management program includes ongoing consultation with landowners and others concerning vegetation management activities. Vegetation management methods could include manual methods (e.g., hand pulling, clipping,

and using chainsaws), mechanical methods (e.g., using roller-choppers and brush hogs), and/or chemical methods (herbicide use).

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, BPA would not rebuild the transmission line and would continue to operate and maintain the existing deteriorating transmission line. Construction activities associated with the Proposed Action would not occur, and the reliability and safety concerns that prompted the proposal for action would persist.

Because of the condition of equipment, it is likely that more frequent maintenance and more frequent access would be required to maintain the transmission line as materials deteriorate and fail. Given the poor condition of some of the roads, it is possible that the road work proposed under the Proposed Action would be funded and carried out as an operations and maintenance project in the future, independent of rebuilding the transmission line. Also, if a decision is made to build the Dayton Tap Line, BPA would need to install the appropriate equipment within its existing ROW.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

The Proposed Action would take place within the existing transmission line corridor. The basic design and function (structure design, location of poles and associated structures, and operating voltage) would not change. Constructing the transmission line in a new corridor would result in impacts outside of the existing ROW. Therefore, BPA is not considering an alternative route. Construction of a transmission line with increased capacity to accommodate present and future wind energy projects was suggested as a possible alternative during the public scoping process. However, adding increased capacity does not meet the purpose of and need for this project. Therefore, this alternative was not considered.

2.4 OTHER POTENTIAL CUMULATIVE ACTIONS

The following projects were identified as applicable to *cumulative impacts* related to the Proposed Action, because they are considered reasonably foreseeable and have the potential to affect resource areas that may also be affected by the Proposed Action. The list of projects is based on a review of the following sources:

- City of Walla Walla website (City of Walla Walla 2010)
- Walla Walla County Public Works Department website (Walla Walla County 2010)
- Columbia County website (Columbia County 2010)
- Washington State Department of Transportation (WSDOT) project website (Washington State Department of Transportation 2011)
- BPA list of current and proposed transmission line projects (Bonneville Power Administration 2010)
- Phone conversations with planners at both Walla Walla and Columbia counties (Prentice pers. comm.; Hendricksen pers. comm.)

2.4.1 Other BPA Projects in the Project Area

Central Ferry–Lower Monumental Transmission Line Project

BPA is proposing to construct a 500-kV transmission line in Garfield, Columbia, and Walla Walla counties. The proposed transmission line would extend west from a new BPA 500-kV substation (Central Ferry Substation) in Garfield County to BPA's existing 500-kV Lower Monumental Substation in Walla Walla County. About 40 miles of transmission line would be constructed. BPA released the Draft EIS for public comment in July 2010 (Bonneville Power Administration 2010). The Final EIS, which was published in February 2011, responded to all comments received on the Draft EIS. On March 11, 2011, BPA issued a Record of Decision (ROD), documenting the agency's decision to construct the project.

Central Ferry Substation

BPA has been asked by PSE to interconnect up to 1,250 megawatts of electricity generated from the proposed Lower Snake River Wind Energy Project (see below) to the Federal Columbia River Transmission System. BPA would construct a new 500–230-kV substation (Central Ferry Substation) serving its two Little Goose–Lower Granite 500-kV lines to provide interconnection for PSE (Bonneville Power Administration 2010). A Final EIS that addressed impacts of the entire project was released by Garfield County on October 7, 2009. Garfield County approved the Conditional Use Permit on November 25, 2009. BPA has issued a tiered ROD under the *Business Plan Environmental Impact Statement*, approving the interconnection request. The construction of the new transmission facilities began in spring 2010. The construction of the substation is anticipated to begin in July 2011.

2.4.2 Other Projects in the Project Vicinity

Lower Snake River Wind Energy Project

PSE is proposing to construct a commercial wind facility on 124,500 acres in Garfield and Columbia counties. In Columbia County, up to 58,033 acres of land would support 351 wind energy turbines, 28 miles of transmission lines, six project substations, two operations and maintenance facilities, six permanent meteorological towers, six project quarries, and 77 miles of new permanent project roads to access project facilities. Some existing public roads may require improvements. The proposed project would be interconnected to the Little Goose–Lower Monumental transmission line operated by BPA (Columbia County 2010).

PSE began construction on Phase I of the project in Garfield County in the spring of 2010. When operational in 2012, this phase will include 149 wind turbines, rated at 2.3 megawatts each.

U.S. Highway 12 Wallula to Walla Walla Corridor Study

WSDOT is currently pursuing a series of phased projects as part of a corridor plan to widen U.S. Highway 12 (U.S. 12) from the Vaughn Hubbard Bridge in Pasco, Washington to the Walla Walla city limits. The corridor plan will widen 40 miles of the U.S. 12 corridor to a four-lane highway to reduce congestion and intersection-related accidents.

Construction on the initial phases of this project began in 2003, and several phases have been completed (State Route [SR] 124 to McNary Pool, McNary Pool to Attalia, Attalia Vicinity, and Frenchtown Vicinity to Walla Walla). Currently, WSDOT is completing the environmental review process for some of the remaining phases, and is in the process of constructing other phases. Phases currently under construction include the U.S. 12 to SR 124 intersection (construction expected to begin spring 2011) (Washington State Department of Transportation 2011).

Port of Columbia: Wallula to Dayton Track Rehabilitation

WSDOT is currently improving the rail line between the Columbia River and Dayton, Washington. The first phase, completed in June 2009, improved four public crossings in Dayton. The ongoing second phase includes rehabilitating two bridges and installing up to 1,000 new ties. The improved alignment generally follows U.S. 12 from Wallula to Walla Walla, where it turns north and generally parallels U.S. 12 to Prescott. It continues east along SR 124 to Dayton. Construction is scheduled to be complete by June 2011 (Washington State Department of Transportation 2011).

Columbia Rural Electric Association's Dayton Tap Line

CREA has proposed to construct a 7-mile, 115-kV transmission line that would connect the Dayton Substation to the Rebuild Project between Structure 40/2 and Structure 40/3. Construction could begin as early as summer 2011.

2.5 COMPARISON OF ALTERNATIVES

Only the Proposed Action would meet the underlying need for the project. The No Action Alternative would neither maintain reliable electrical service nor avoid risks to public and worker safety. Table 2-2 summarizes the stated purposes of the Proposed Action (see Chapter 1) and compares the potential for the Proposed Action and No Action Alternative to meet those objectives. Table 2-3 summarizes the anticipated impacts on specific resources that could result from the Proposed Action and No Action Alternative. A detailed analysis of the environmental impacts of the Proposed Action and No Action Alternative is presented in Chapter 3. Appendix B of this EA contains the criteria used to define the impact determinations used in Table 2-2 below and throughout this EA.

Table 2-2. Comparison of the Proposed Action and No Action Alternative

Purpose	Proposed Action	No Action Alternative
Maintain or improve transmission system reliability to BPA and industry standards	The rebuilt transmission line would continue to operate at 115 kV. New structures and associated equipment would provide more reliability during routine operation and severe weather. Access road work would ensure that emergency repairs are done quickly.	While the existing transmission line would continue to operate at 115 kV, outdated and physically worn structures and associated equipment would pose a greater risk for outages and unreliable service. Emergency response times could be increased by access roads that are in poor condition.
Continue to meet BPA’s contractual and statutory obligations	Improvements in the reliability of the rebuilt transmission line would facilitate BPA’s ability to meet its contractual and statutory obligations to deliver power to its customers.	Potential unreliable service associated with an outdated transmission line could affect BPA’s ability to meet its contractual and statutory obligations should power outages occur.
Minimize environmental impacts	All construction would occur within the existing ROW. Construction-related environmental impacts would be minimized by designing the project to avoid sensitive resources, where possible, and to minimize potential adverse impacts through the minimization and mitigation measures prescribed in Chapter 3 of this document.	There would be no construction-related environmental impacts.
Demonstrate cost-effectiveness	Environmental review, design and engineering, and construction costs are estimated at \$16 million. Would reduce maintenance costs.	Would avoid construction costs. Would incur maintenance costs, which, over time, could be higher than under the Proposed Action.

Table 2-3. Summary of Impacts of the Proposed Action and No Action Alternative

Environmental Resource	Proposed Action	No Action Alternative
Land Use and Recreation	<p>Direct impacts from constructing and maintaining structures and access roads on agricultural land, displacing crops, blocking local access or otherwise disturbing residents, interrupting recreation activities, and disrupting local traffic during construction. Most construction impacts would be temporary.</p> <p>Impacts on:</p> <ul style="list-style-type: none"> • Compliance with plans and policies: low • Agriculture: low • Residential use: low to moderate • Recreation: low • Transportation: low • Cumulative impacts: low 	Continued operation and maintenance would result in low impacts similar to existing conditions.
Geology and Soils	<p>Direct impacts from clearing, grading, vegetation removal, and soil compaction. Indirect impacts associated with soil erosion.</p> <p>Impacts from:</p> <p>The removal and installation of structures: low to moderate</p> <ul style="list-style-type: none"> • Access road work: low to moderate • Staging areas: low • Operation and maintenance: low • Danger tree removal: low • ROW easement acquisition: none • Geological hazards: low • Highly erodible lands: low to moderate • Cumulative impacts: low 	Direct impacts from continued operation and maintenance activities and incidental use of roads. Impacts would be none to low , but would increase as deterioration of structures would require more maintenance.
Vegetation	<p>Direct impacts from clearing and crushing vegetation, damaging plant roots, disturbance to high quality plant communities, and spread of noxious weeds.</p> <p>Impacts from:</p> <ul style="list-style-type: none"> • The removal and installation of structures: low • Access road work: low • Staging areas: low • Operation and maintenance: low • Noxious weeds: low • ROW easement acquisition: low • Danger tree removal: low • Cumulative impacts: low to moderate (spread of weed species) 	Continued levels of vegetation removal. Operation and maintenance activities would result in low to moderate impacts.

Environmental Resource	Proposed Action	No Action Alternative
Fish and Wildlife	<p>Fish and essential fish habitat: direct impacts from changes to water quality or quantity, riparian vegetation, or activities that result in the death of or disturbance to fish.</p> <p>Impacts from:</p> <ul style="list-style-type: none"> • The removal and installation of structures: low • Access road work: low • Staging areas: none • Tensioning sites and counterpoise: none • Operation and maintenance: low • ROW easement acquisition: low • Danger tree removal: low • Cumulative impacts: low <p>Wildlife and their habitat: direct impacts from habitat loss within the ROW and temporary disturbance caused by construction. Indirect impacts from noxious weed infestation of habitat.</p> <p>Impacts from:</p> <ul style="list-style-type: none"> • The removal and installation of structures: low • Access road work: low • Staging areas: low • Tensioning sites and counterpoise: low • Operation and maintenance: low • ROW easement acquisition: low • Danger trees removal: low • State priority habitat and special-status wildlife species: low • Cumulative impacts: low to moderate 	Continued levels of operation and maintenance, including vegetation and danger tree removal would result in low impacts.
Water Resources and Water Quality	<p>Surface water: Direct impacts from ground disturbance resulting in erosion and sediment transport to surface waters, installation of permeable road surfaces and suitable drainage. Indirect impacts from vegetation removal near surface waters, leading to increased exposure to solar radiation and increased water temperatures.</p> <p>Impacts from:</p> <ul style="list-style-type: none"> • The removal and installation of structures: low • Access road work: low to moderate • Staging areas: none • Tensioning and counterpoise: low • Operation and maintenance: low • ROW easement acquisition: low • Danger tree removal: low • Groundwater: none • Cumulative impacts: low 	Continued levels of operation and maintenance would result in low impacts on water resources.

Environmental Resource	Proposed Action	No Action Alternative
Wetlands	<p>Direct impacts from ground disturbance within a wetland or within 100 feet of a wetland affecting soils, vegetation, or hydrology.</p> <p>Impacts from:</p> <ul style="list-style-type: none"> • The removal and installation of structures: low • Access road work: low • Staging areas: none • Tensioning sites and counterpoise: low • Operation and maintenance: low • ROW easement acquisition: low • Danger tree removal: low • Cumulative impacts: low 	Continued levels of operation and maintenance would result in low impacts on wetlands.
Floodplains	<p>Direct impacts from soil compaction that would interfere with subsurface water flow and deposition of soils on the floodplain surface. Indirect impacts from increased sedimentation resulting from erosion related to ground disturbance and vegetation removal.</p> <p>Impacts from:</p> <ul style="list-style-type: none"> • The removal and installation of structures: low • Access road work: low • Staging areas: none • Tensioning sites and counterpoise: low • Operation and maintenance: low • ROW easement acquisition: none to low • Danger tree removal: low • Cumulative impacts: low 	Continued levels of operation and maintenance would result in low impacts on floodplains.
Visual Quality	<p>Direct impacts from installation of 27 new structures and replacement of two wood-pole structures with larger steel-lattice structures, and from construction of new access roads.</p> <p>Impacts on:</p> <ul style="list-style-type: none"> • Motorists: low • Residents: low • Recreation: low • Cumulative impacts: low 	Continued levels of operation and maintenance would result in low impacts on visual quality.
Air Quality	<p>Direct temporary impacts from operation of construction equipment releasing emissions in localized areas.</p> <p>Impacts from:</p> <ul style="list-style-type: none"> • Construction, operation and maintenance: low • Cumulative impacts: low 	The potential for increased maintenance over time may contribute to slightly higher impacts than existing conditions, but they would still be considered low .

Environmental Resource	Proposed Action	No Action Alternative
Socioeconomics and Public Services	<p>Direct temporary impacts from economic activity associated with construction and the displacement of crop production.</p> <p>Impacts on:</p> <ul style="list-style-type: none"> • Employment and income, increased economic activity: beneficial • Employment and income, crop displacement: low • Property value: none to low • Property taxes: none • Sales tax revenues: low • Environmental justice population: none • Public services: none to low • Cumulative impacts: none 	Continued levels of operation and maintenance would result in no impacts on socioeconomics and public services.
Cultural Resources	<p>Direct impacts from disturbing previously unrecorded cultural resources during construction or maintenance activities.</p> <p>Impacts from:</p> <ul style="list-style-type: none"> • Construction: none • Operation and maintenance: none • Cumulative impacts: low 	Continued levels of operation and maintenance would result in no impact on cultural resources.
Noise, Public Health, and Safety	<p>Temporary direct noise impacts from construction equipment, truck traffic, and occasional use of helicopters. Temporary health and safety impacts from traffic during construction and impacts from traffic and electromagnetic fields during operation and maintenance.</p> <p>Noise impacts from:</p> <ul style="list-style-type: none"> • Construction: low to moderate • Operation and maintenance: low <p>Public health and safety impacts from:</p> <ul style="list-style-type: none"> • Construction and operation: low • Cumulative impacts: low 	Continued levels of operation and maintenance would result in low impacts on noise, public health, and safety.
Climate Change	<p>Direct impacts from greenhouse gas (GHG) emissions from construction equipment and increased worker traffic, vegetation removal.</p> <p>Impacts from:</p> <ul style="list-style-type: none"> • The removal and installation of structures: low • The removal of vegetation: low • Operation and maintenance: low • Cumulative impacts: low 	Continued levels of operation and maintenance would result in low impacts on GHG emissions and climate change.

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Chapter 3

Affected Environment, Environmental Consequences, and Mitigation Measures

3.1 INTRODUCTION

This chapter includes an analysis of the potential impacts of the Proposed Action and the No Action Alternative on the human and natural environment. Each section of this chapter includes a description of the potentially affected environment for a specific resource, an analysis of the impacts on that resource, and the mitigation measures that would reduce those impacts.

To identify potential impacts on a resource area, a specific physical area must be studied. In this EA, this is referred to as the *study area*⁵. For some resources, the study area includes locations where direct physical impacts could occur as a result of the project. In such cases, the study area and the project area are identical. However, because the project may result in impacts on resources that are geographically removed from the project area (e.g., airborne emissions may result in measurable air pollution miles downwind from a project location), the study area may be larger and removed from the immediate project area. Unless otherwise specified, the study area for the analysis includes the existing ROW⁶, the danger tree removal area adjacent to the ROW, the access road system that extends off-ROW, and any adjacent properties with land uses that could be affected by the Proposed Action. The location of the affected resources may be identified by proximity to structure location or in references to line miles, which begin at the Walla Walla Substation and increase in number going northeast toward the Tucannon River Substation.

Direct, indirect, and cumulative impacts are considered. Direct impacts are those that would occur as a direct result of construction of the Proposed Action; indirect impacts are those that are caused by the Proposed Action, but would occur later in time and further away in distance. Cumulative impacts are impacts that could occur when considered along with other past, present, and reasonably foreseeable future actions (Section 2.4, Other Potential Cumulative Actions).

To evaluate the impacts associated with construction, operation, and maintenance of the Proposed Action, three impact levels were used: high, moderate, and low. High impacts are considered to be significant while low and moderate impacts are not. In addition, beneficial impacts are noted where applicable. A summary of the significance criteria used for the impact assessment of each resource area is provided in the project work plan (Appendix B).

The impacts of the No Action Alternative are discussed at the end of each resource section.

⁵ Technical terms shown in bold italic typeface are defined in Chapter 6, Glossary and Acronyms.

⁶ Although the Proposed Action would include widening of the ROW by 20 feet on each side, this additional area was not included in study area for most resource areas. This is because all construction activities would occur within the existing ROW.

3.2 LAND USE AND RECREATION

3.2.1 Affected Environment

The study area for land use and recreation includes the current transmission line ROW, land within 0.25 mile of the transmission line, and any properties crossed by access roads proposed to be constructed or improved. Land uses in the study area primarily consist of agriculture and residential uses, and are shown in Figure 3-1. Transportation facilities and applicable land use plans are also discussed below.

Plans and Policies Affecting Land Use

Walla Walla County

The *Walla Walla County Comprehensive Plan* designates the areas crossed by the existing transmission line as Primary Agriculture, which has a corresponding zoning designation of Primary Agriculture-40. The Primary Agriculture designation is intended to protect agricultural lands of long-term commercial significance from conversion to nonagricultural uses, such as high-intensity commercial and residential development. This designation applies to approximately 83% of the *unincorporated land* in Walla Walla County (Walla Walla County 2009).

Utility facilities are a conditionally permitted use in the Primary Agriculture-40 zone. An applicant for a conditional use permit must demonstrate to the County that a proposed action is compatible with the character of the location, does not pose a health or safety risk, and will comply with all applicable development regulations (Walla Walla County Code 17.40.020).

Columbia County

The portion of Columbia County crossed by the transmission line is zoned Agricultural (A-1) and Agricultural-Residential (AR-2) (Benzel pers. comm.). The A-1 zone is intended to protect farms and associated agricultural activities from encroachment by nonagricultural uses. Utility substations are listed as a conditional use in A-1 zones; however, transmission lines and towers are not specifically listed (Columbia County Zoning Ordinance Section 8.D).

The AR-2 zone is intended to promote development of small-acreage lots for agricultural, residential, and recreational use. Utility facilities that are not accessory uses for a permitted use (e.g., agriculture, residences, forestry, grazing) are considered prohibited and may require a variance to be constructed (Columbia County Zoning Ordinance Section 12.D).

Structures, buildings and uses that were lawfully and legitimately established prior to the effective date of the Columbia County Zoning Ordinance (January 3, 1995) are afforded protection under Section 24.A as a nonconforming use. However, the ordinance does not allow for the area dedicated to a nonconforming use to be enlarged or relocated.

Figure 3-1. Land Use and Land Cover
 BPA Walla Walla–Tucannon River Transmission Line Rebuild Project



USGS Land Use / Land Cover

Landcover_class	
[Grey]	Barren Land
[Light Orange]	Cultivated Crops
[Green]	Deciduous Forest
[Dark Red]	Developed, High Intensity
[Light Red]	Developed, Low Intensity
[Red]	Developed, Medium Intensity
[Light Purple]	Developed, Open Space
[Blue-Grey]	Emergent Herbaceous Wetlands
[Dark Green]	Evergreen Forest
[Yellow]	Hay/Pasture
[Light Green]	Herbaceous
[Light Brown]	Mixed Forest
[Brown]	Shrub/Scrub
[Light Blue]	Woody Wetlands

0 2.5 5 Miles

- ▲ BPA Substation
- Structure
- First Structure of Each Mile
- Walla Walla–Tucannon River No. 1
- BPA Transmission Lines
- Major Highway
- Major Road
- Railroad
- Rivers & Streams
- Water Bodies
- County Boundary

Data Source: Bonneville Power Administration Regional GIS Database. All Data Is Best Available as of 11/1/2010. Land Use / Land Cover From USGS.



City of Walla Walla

A small portion of the transmission line (portion between Structures 2/1 and 2/9) crosses land that is owned by the City of Walla Walla in association with its Sudbury Road Landfill. The area of the landfill crossed by the transmission line is not currently in active use for garbage disposal; the active portion of the landfill is located approximately 0.5 mile due north of the Walla Walla Substation. In total, approximately 9,437 linear feet of the ROW are on land owned by the City of Walla Walla including the small portion near the Sudbury Road Landfill.

This area is designated as Public in the *Walla Walla Urban Area Comprehensive Plan 2007 Review & Update* (Peter J. Smith & Company 2008) with a corresponding zoning designation of Public Reserve. Areas zoned Public Reserve are intended to be protected for use by civic, educational, cultural, or otherwise public facilities. Regional electric transmission facilities are considered a Level 3 review use (Walla Walla Municipal Code 20.100.040), requiring a quasi-judicial public hearing and final decision by the local Hearing Examiner prior to construction (Walla Walla Municipal Code 20.26).

Title 20, Division VII, of the Walla Walla Municipal Code describes provisions for nonconforming situations that apply to lots, structures and uses of lots or structures that were lawful prior to the adoption of the code (June 8, 1977), but that would be prohibited, regulated or restricted under the terms of the code (Walla Walla Municipal Code 20.212.010). Under Division VII, nonconforming situations that were otherwise lawful on the effective date of the code may be continued.

Land Uses

Agriculture

Agriculture is the primary land use in the study area, in both Walla Walla and Columbia counties. Walla Walla County is a state and national leader in the production of wheat, with a 2002 production value in excess of \$339 million (Walla Walla County 2009). The Walla Walla area is also known for cultivation of sweet onions and for its growing wine industry. The Walla Walla Valley is a federally recognized winegrowing appellation, and vineyards and wineries are an increasing segment of the County's agricultural economy (Walla Walla County 2009). Agriculture is also the primary industry of Columbia County. Primary crops include wheat, peas, and tree fruit, such as apples.

Agricultural uses along the transmission line consist almost exclusively of grain production, particularly in Walla Walla County. As the transmission line crosses into Columbia County (Structure 25/7), it enters a transitional area, where the topography begins to change from the gently rolling hills seen to the west and north to the steeper slopes of the Blue Mountain foothills to the south. Grain cultivation in the Columbia County portion of the study area is widespread, although the terrain is generally more rugged and fields are often separated by slopes, ravines, and lightly forested areas (Structures 29/5–30/5, 32/3–33/7, 34/4–35/7, and 36/6–38/5). Farmland along the transmission line in Columbia County is cultivated in a larger variety of crops, including beans and peas, in contrast to the fairly continuous pattern of wheat fields in Walla Walla County. Whereas the transmission line structures are located in actively cultivated fields throughout the Walla Walla County portion of the study area, the line crosses relatively

little cropland in Columbia County between Structure 41/6 and the Tucannon River Substation. These breaks between cultivated cropland are often used for livestock grazing or residences, or are left undeveloped because of topographic constraints.

Residential Use

Rural residences are scattered throughout the study area. In Walla Walla County, these residences are primarily associated with farms and are widely separated, in keeping with the County's minimum allowed lot size of 40 acres. While farm residences also occur in the Columbia County portion of the study area, a greater percentage of the rural residences are not associated with agriculture. As illustrated in Figure 3-1, concentrations of residences near the transmission line corridor occur along the following roads:

- Baldwin Road near the Walla Walla Substation (1/6–1/8)
- Bundy Hollow Road (27/6–28/1)
- South Touchet Road (32/4–32/5)
- Wolf Fork Road near the intersection with Touchet River Road (35/2–36/3)

With the exception of the homes near the Walla Walla Substation, these are low-density, rural residences, located outside urban areas on large lots. The existing transmission line infrastructure was built in 1940 and, given its age, much of the residential development occurred after its construction.

Recreation

The Walla Walla Valley contains a large number of recreational opportunities, both public and private. Traditional outdoor recreation activities have been supplemented in recent years by agritourism opportunities such as wine-tasting rooms and food tours hosted by local wineries and specialty farms. Parks and campgrounds in the study area include Blue Mountain KOA, Spring Lake Campground, Blue Lake Campground, Big 4 Lake Campground, Rainbow Lake Campground, and Deer/Watson Campground; all are located 2 to 4 miles east of the Tucannon River Substation on the east bank of the Tucannon River (Dayton Chamber of Commerce 2010). The Umatilla National Forest, which provides hiking and camping opportunities in summer, as well as skiing, snowshoeing, and snowmobiling in winter, is located in southern Columbia County, approximately 4 to 5 miles southeast of the transmission line corridor. The Lewis and Clark Trail State Park is located on U.S. 12 between Waitsburg and Dayton; it provides camping, hiking, swimming and fishing in the Touchet River, as well as a day-use area for picnics and events (Figure 3-1).

Bicycling is a popular activity in the Walla Walla Valley. The City of Walla Walla publishes a map of bicycle routes in the Walla Walla area, including southern Columbia County in Washington and northern Umatilla and Wallowa counties in Oregon. Several routes are located in the study area, concentrated mostly immediately north and northeast of the City of Walla Walla (City of Walla Walla 2009).

While recreational opportunities in the Walla Walla Valley are abundant, very few formal recreational facilities are located in the study area. Recreation in the study area is primarily informal or associated with privately owned facilities not accessible to the public, including gun clubs, shooting ranges, and hunting lands. The land southeast of Dayton, and extending into the

Umatilla National Forest, is listed as a management area for deer and elk by the Washington Department of Fish and Wildlife (2010a). Pheasant have been observed in the wheat fields north and northeast of Walla Walla, a possible indication that property owners may hunt on these lands or allow others to hunt there.

Transportation

Roadway access to the study area is mostly provided by U.S. 12, SR 124, and SR 125, with interconnection provided via local County roads. Regional highway access to the study area is provided by Interstate (I) 82, I-84, and I-90, which connect the study area to Washington and Oregon via U.S. 12, SR 124, and SR 125 (Figure 3-1). Local access highways and county roads are mostly two lanes in the study area.

The *average daily traffic* (ADT) volumes for U.S. 12 are 7,400 vehicles on the west end of the corridor, 10,000 vehicles in Walla Walla, and 3,800 vehicles in Pomeroy near the east end of the corridor. The ADT volumes for SR 125 are 4,200 vehicles in Walla Walla near the west end of the corridor and 520 vehicles on the north end of SR 125, where it connects to U.S. 12 via SR 124. The ADT volumes for SR 124 are 1,400 to 2,100 vehicles between SR 125 and U.S. 12 (Washington State Department of Transportation 2010a).

3.2.2 Environmental Consequences—Proposed Action

Plans and Policies

Under local zoning and development regulations, repairs to and replacement of existing structures under the Proposed Action would be considered maintenance of an existing use and would be subject to a lower level of review by County planning staff. The construction of additional structures or changes in size or type of structures under the Proposed Action would qualify as an expansion of the existing use and require compliance with County development regulations. As a federal agency, BPA is not required to comply with local land use regulations and permitting requirements. However, BPA endeavors to be consistent with local land use regulations wherever possible.

As a utility facility, the Proposed Action would be a conditionally permitted use in Walla Walla County. Where the transmission line is located in Columbia County and the city of Walla Walla, it would be considered in compliance with the criteria for nonconforming use. The future acquisition of easements for the expanded ROW would not affect the underlying land ownership and is not anticipated to change the use of the land in such a way that it would result in noncompliance with county and local ordinances and codes.

Impacts related to compliance with plans and policies are expected to be low.

Agriculture

The Proposed Action has the potential to result in direct impacts on agricultural lands, including both temporary disturbance of crops and farming activities during construction and permanent displacement of crops as a result of access road construction, installation of additional transmission towers, and installation of switch platforms for the connection of the Dayton Tap

Line. As discussed above, under Affected Environment, the majority of the transmission line corridor is located on active agricultural lands.

In most cases, crops are planted under the transmission line within the ROW, with a small clearing required at the base of each tower. Because the Proposed Action would result in a net addition of 24 structures within the ROW, some cultivated land could be permanently converted from agricultural use. Although these new structures may be located in active farmland, only a small area around the base of each tower would be permanently converted from agricultural use. Two small switch platforms could be installed to connect the Dayton Tap Line to the Rebuild Project. These two platforms would each result in the permanent loss of approximately 20 feet by 20 feet (0.01 acre) of cultivated land. Given that the overall agricultural capacity of Walla Walla County includes 567,192 acres of agricultural cropland (U.S. Department of Agriculture 2011) the small area of impact compared to, impacts on agricultural production associated with new structures would be low.

Construction activities associated with removal and installation of transmission lines and structures would involve drilling holes for structure footings, moving heavy equipment on site, and installing support lines and counterpoise wires. If conducted during the growing season, these activities would displace crops within the ROW. This displacement would be temporary, however, and all disturbed cropland not occupied by structures would be regraded and reseeded in agreement with the property owner. To determine the extent of potential temporary impacts on agricultural land use, BPA estimated each tower's acreage of impact in cultivated land as identified in the U.S. Geological Survey (2001) National Land Cover Dataset. Using this methodology, it is estimated that the proposed structures would result in temporary disturbance of approximately 32 acres of cultivated land. This amount of disturbance represents a very small amount of existing agricultural land in the vicinity of the project. Because of the temporary nature of these impacts and BPA's commitment to restore disturbed areas, agricultural impacts associated with these construction activities would be low.

The Proposed Action would also require improvements to and reconstruction of approximately 13.6 miles of existing access roads to allow construction crews to reach the ROW. Although many of these access roads cross agricultural land, all work would occur within existing easements. BPA also plans to construct three new access roads near Structures 18/3, 39/5, and 41/1. Construction of these new access roads would result in a permanent change in land use at these locations, although only the access road at Structure 18/3 is anticipated to cross cultivated cropland. BPA estimates that access road construction would permanently remove approximately 0.4 acre of land from agricultural production. Given the small area of impact compared with the overall agricultural capacity of the Walla Walla Valley, impacts on agricultural production associated with access road improvement and construction would be low.

Residential Use

Construction, operation, and maintenance activities have the potential to affect residential land uses. During construction, trucks and construction equipment may temporarily block local access to private residences and construction activities may increase localized noise and dust levels for a brief period. Operation and maintenance activities could also require the presence of large trucks and equipment on or adjacent to residential land uses for a brief time. Certain operation and maintenance activities like the removal of vegetation could also temporarily disturb residents.

The locations identified above, under Affected Environment, as having greater concentrations of residential development near the transmission line corridor would be most affected by the construction activities associated with the Proposed Action. In addition to these areas, the following residences are likely to experience temporary disturbance from construction activities:

- **Residence near Structure 5/6.** The transmission line is approximately 1,000 feet north of the residence, and the access road for this portion of the ROW passes within 100 feet of the house.
- **Residence near Structure 7/4.** The transmission line is approximately 1,200 feet from the residence, and the access road doubles as the residential driveway.
- **Residence near Structure 16/2.** The transmission tower is approximately 500 feet from the residence.
- **Residence near Structure 41/6.** The transmission line is approximately 400 feet from the residence.
- **Residence near Structure 44/1.** The transmission line is approximately 300 feet from the residence. Access road crosses the property and passes within 100 feet of the home.

Construction activities would be clearly visible to these residences, and in some cases, construction vehicles and equipment would pass close to residences as they travel on access roads to reach the ROW. Because construction activities would be temporary in nature and limited in duration, and because the overall number of residences affected is small, construction impacts on residential uses would generally be low. These impacts could rise to a moderate level for the residences along Wolf Fork Road near the intersection with Touchet River Road (Structures 35/2–36/3), due to the relatively high density of homes. Because this cluster of residences covers over a mile of transmission line, residents in this area would be temporarily exposed to noise, dust, and construction traffic for a longer period of time than areas with fewer structures requiring replacement.

Recreation

The transmission line does not physically cross any parks, campgrounds, or other formal recreational facilities. As described above, under Affected Environment, the Walla Walla Valley offers a large number of recreation opportunities, but the nearest public-access recreation facilities are several miles from the study area.

The transmission line corridor crosses SR 125, Hart Road, Lower Waitsburg Road, Middle Waitsburg Road, Coppei Road, and North Fork Touchet River Road, which are featured on the City's *Walla Walla Valley Bicycle Map* (City of Walla Walla 2009). Recreational bicyclists attempting to use these routes during construction of the Proposed Action could encounter delays due to construction vehicles on the roads or be required to take detours around line crossings. Because these road crossings are widely spaced, it is unlikely that construction crews would be working in the vicinity of more than one crossing simultaneously. With proper public notice of the construction schedule, recreational bicyclists should be able to plan their activities around detours or road closures.

Given the highly rural nature of the portions of Walla Walla and Columbia counties within the study area, it is quite possible that informal or undocumented private recreation of some kind occurs, with hunting being the most likely activity. The Proposed Action would not permanently

affect hunting or other informal recreation activities in the study area, but temporary interruptions could occur, depending on the construction schedule.

Because of the temporary nature of construction activities and the small number of recreational facilities in the study area, overall impacts on recreation as a result of the Proposed Action are anticipated to be low.

Transportation

Up to five work crews would be working along the entire transmission line on any given day. Crews would be working up to 10 hours per day, 6 days per week, for up to 6 months. Each crew would consist of 4 to 6 contractor employees with a small number of support trucks delivering materials (wood piles, string, or conductor) and equipment (cranes, backhoes, excavators, tensioners, or pullers) to the work site. Typically, only one crew would be working at any given site; however, up to two crews could work at the string site. As a result, up to 30 contractor employees could work along the entire corridor with up to 12 employees at a work site.

The Proposed Action has the potential to result in short-term transportation impacts from construction-generated traffic. This could occur as a result of increased construction-related traffic on local roadways and from periodic short-term road closures. The increase in construction-related traffic would represent a relatively low increase in daily traffic volume when compared to the ADT volumes for the roads in the project area. Lane closures would result in temporary traffic delays but are not expected to substantially degrade traffic operation at these locations because of their short duration. Therefore, construction-related transportation impacts would be low. Implementation of the *mitigation* measures discussed below would further minimize transportation impacts.

Operation and maintenance activities would be similar to those currently performed on the existing transmission line. Therefore, no additional operation-related traffic is expected on highways and local roads in the study area.

3.2.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the following mitigation measures would reduce impacts on land use and recreation.

Plans and Policies

- Because the construction of a regional electric transmission line is not consistent with stated uses in the Columbia County zoning ordinance, BPA would directly engage Columbia County planning staff to address potential concerns regarding the Proposed Action.

Agriculture

- A schedule of construction activities would be developed and distributed to all potentially affected landowners along the corridor to allow planting, harvesting, or maintenance activities to be scheduled around construction.
- Potentially affected landowners along the corridor would be consulted regarding timing of construction activities. To the greatest extent feasible, BPA would schedule construction

during periods when active farms along the corridor are likely to be fallow to minimize the potential for crop damage.

- BPA would compensate landowners for the value of commercial crops damaged or destroyed by construction activities. Removal of trees from the existing ROW to maintain safety of the transmission line would not be subject to compensation.
- Disturbed areas would be revegetated after the conclusion of construction with the exception of those areas required to remain clear to ensure the safety of the transmission line and access to the structures.

Residential Use

- A schedule of construction activities would be developed and distributed to all potentially affected landowners along the corridor to allow residents to know when they might be affected by construction activities.
- To the greatest extent possible, construction activities and equipment would be kept clear of residential driveways.

Recreation

- The routing and scheduling of construction traffic would be coordinated with WSDOT and county road staff. Road closures and traffic delays would be publicized to minimize impacts on recreational bicyclists or other visitors who may use the affected roads for access to various recreational opportunities.

Transportation

- The routing and scheduling of construction traffic would be coordinated with WSDOT and County road staff to minimize short interruptions to local traffic when trucks cross roads to access the study area.
- Traffic-control flaggers would be employed and signs warning of construction activity and merging traffic would be posted, when necessary, for short interruptions of traffic.

3.2.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

During construction, potential unavoidable impacts could consist of minor delays and interruptions to local traffic in the study area, generation of noise and dust in residential areas, and temporary interference with agricultural activities. These short-term construction impacts would cease once construction was completed and are considered to be low.

3.2.5 Cumulative Impacts—Proposed Action

Land Use and Recreation

PSE has proposed the construction of a commercial wind power facility in Garfield and Columbia counties. The project would contain 351 wind turbines, 77 miles of access roads, 6 quarries, and various other permanent structures. BPA has decided to construct a new 500-kV transmission line and is constructing a substation. While neither of these projects would affect lands in or around the study area, each has a high potential to permanently remove land in the region from agricultural production. Agricultural land disturbance that would occur as a result of

the Proposed Action would contribute to this larger regional displacement; however, given the small amount of land that would be permanently disturbed by the Proposed Action, the contribution to cumulative impacts would be low.

Transportation

If, after environmental review, BPA decides to undertake the Proposed Action, construction would take place in mid-2011 and would be completed in the same year. No known major construction projects are planned in 2011 on highways in the vicinity of the study area (Washington State Department of Transportation 2010b) or on lands within the study area.

3.2.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, construction activities would not occur. Initially, operation and maintenance activities would be similar to those currently performed on the transmission line corridor and conducted at similar intervals. However, maintenance activities would likely increase in frequency as existing structures deteriorate. The No Action Alternative would not result in any new impacts on land uses and recreation compared with existing conditions.

3.3 GEOLOGY AND SOILS

3.3.1 Affected Environment

The western portion of the study area is situated on the upper eastern edge of the central Columbia Basin. It is characterized by gently rolling hills and shallow valleys deeply mantled by fine, windborne deposits of silt that overlie Columbia River basalt (Everard et al. 1964). Soils in this portion of the study area are comprised primarily of *unconsolidated sediments*, including flood deposits of silt and sand; non-glacial alluvium deposits, such as clay, silt, sand, and gravel associated with streambeds and fans; and periglacial loess deposits of silt and fine sand (Washington State Department of Natural Resources 2010a). Unconsolidated sediments are notably susceptible to wind and water erosion, particularly if soils are bare of vegetation.

The eastern portion of the study area is located along the northernmost extension of the Blue Mountains. It encompasses a long, tilted plateau that extends northwards into an uplifted area of Columbia River basalt characterized by flat-topped ridges, steep-walled canyons, and mountain slopes (Everard et al. 1964). Soils in and around the foothills of the Blue Mountains also include deposits of volcanic rock (Washington State Department of Natural Resources 2010a). The portion of the corridor between line miles 33 and 47 would cross pockets of these volcanic rock formations.

Drainage of the study area is provided by several *perennial* streams that traverse the proposed alignment, including Coppei Creek, Whiskey Creek, Robinson Creek, the South and North Forks of the Touchet River, and Patit Creek.

Geologic Hazards

The Washington Interactive Geologic Map (Washington State Department of Natural Resources 2010a) identifies the following geologic hazards within the study area:

- line mile 32: a shallow, undifferentiated *landslide* located on the east side of the South Fork Touchet River; and
- line miles 36 and 37: a concealed fault.

Other general geologic hazards noted in Walla Walla and Columbia counties include *liquefaction* and/or flash flooding. Liquefaction occurs when soil becomes soft and liquid-like during very strong ground shaking (e.g., associated with an earthquake). Wet or low-lying areas are generally susceptible to liquefaction. Liquefaction mapping provided by the Washington State Department of Natural Resources (WDNR) indicates that liquefaction susceptibility in the study area is generally low, with some pockets of moderate susceptibility along the western side of the proposed alignment, in the vicinity of the city of Walla Walla, and adjacent to the banks of river channels traversing the study area. Proposed wood-pole structures located within line mile 1 and generally within 100 feet of stream channels may be located in areas mapped by WDNR as having a moderate susceptibility for liquefaction. The foothills along the eastern side of the corridor are composed primarily of bedrock and are not susceptible to liquefaction (Washington State Department of Natural Resources 2010a).

Flash floods, which are characterized by a very rapid rise of the water level in a small stream, river, or dry wash, are common in areas of steep terrain and are often associated with brief, intense rainfall. According to the Walla Walla County (2003) Emergency Management Department, the central region of Walla Walla County, particularly the area around the City of Prescott, is likely to experience flash flood conditions. From a soils and geology perspective, flash flooding could affect the stability of a transmission tower if the tower were located in the path of the floodway and not properly stabilized.

Highly Erodible Lands

The Sodbuster, Conservation Reserve, and Conservation Compliance parts of the Food Security Act of 1985 and the Food, Agriculture, Conservation, and Trade Act of 1990 were developed, in part, to encourage farmers to meet minimum standards for environmental protection on environmentally sensitive lands. As a condition of eligibility for many federal farm program benefits, farmers must implement and maintain a soil conservation system, approved by the Natural Resources Conservation Service (NRCS), on officially designated “highly erodible lands.” An erodibility index provided in the *National Food Security Act Manual* (Natural Resources Conservation District 2008) is used to determine which soil types are considered “highly erodible.” Lists of highly erodible and potentially highly erodible map units are maintained at each NRCS field office. Within the study area, the list of highly erodible lands for Walla Walla County is maintained at the NRCS Walla Walla Service Center. The list of highly erodible lands for Columbia County is maintained at the NRCS Dayton Service Center.

In January 2011, both the Walla Walla and Dayton service centers were contacted to request a soil inventory report for highly erodible lands along the transmission line alignment and access road locations, as well as within a 100-foot buffer on either side of proposed infrastructure. The results of those soil inventory reports indicate that the vast majority of the study area—92% of the soils in Columbia County (Fortner pers. comm.) and 91% of the soils in Walla Walla County (Daily pers. comm.)—are designated by NRCS as highly erodible. Lands maintained in crop production in these areas would likely be required to be managed under an approved soil conservation system.

3.3.2 Environmental Consequences—Proposed Action

Removal of Existing Structures and Installation of New Structures

Direct impacts on soils could result from clearing of vegetation, grading, and **compaction** of soils by heavy equipment during removal and installation of proposed structures. Clearing and grading, commonly with a bulldozer, remove both vegetation and the uppermost biologically active portion of the soil. Compaction from heavy equipment degrades soil structure, reducing pore space needed to retain moisture and promote gas exchange. Potential indirect impacts on soils would be associated with soil erosion, either during construction (minor **sheet erosion**) or after construction, before vegetation is able to reestablish. The risk of erosion would be highest in the western portion of the study area, where the unconsolidated sediments are notably susceptible to wind and water erosion; on steep slopes (eastern portion of the study area and/or around drainage ways); on NRCS-designated highly erodible lands (see below); and after rain events.

The extent of impacts at any one site would depend on the quality of soils, amount of moisture in the soils, amount of **surface water** flowing across the site, steepness of slopes in the area, amount of time bare soils are left unvegetated, and type of structure erected, including whether guy wires would be needed to anchor the structure in place. Most existing structures would be removed by excavating around the pole base and removing the pole with a boom crane. However, structures in wet or sensitive habitats, such as wetlands, would be cut above ground, where practicable, resulting in little to no impact on soils. Implementation of the mitigation measures described below would reduce construction-related soil impacts. As a result, impacts on soils from the removal and installation of structures are expected to be low to moderate.

Access Roads

As described in Chapter 2, Proposed Action and Alternatives, approximately 13.57 miles of existing access roads within the study area would be reconstructed under the Proposed Action. In addition, 0.46 mile of new roads would be constructed and 1.63 miles of existing roads would be abandoned. Road construction or reconstruction would require removal of existing vegetation, grading, compaction, placement of crushed rock as a road base, and construction or replacement of culverts, as necessary. These activities would result in soil compaction and temporary increases in construction-related erosion and **stormwater runoff**. Similarly, abandoned roadbeds would likely degrade over time and might contribute to soil erosion.

Erosion associated with construction/reconstruction and subsequent use of access roads would be most notable in areas associated with creeks and streams (at ford crossings), or in areas with steep slopes (greater than 30 degrees).

Use of fords during construction could result in some erosion along the streambed and a transient increase in turbidity levels either at the time of use in perennial streams, or the next time water flows in seasonal stream channels. Implementation of the mitigation measures described below would reduce the potential for construction-related erosion and resulting impacts on soils in these areas and along other portions of the study area. As such, impacts associated with access road improvements are expected to be low to moderate.

Staging Areas

Staging areas have not specifically been identified for the Proposed Action. However, BPA will require the construction contractor to locate all staging areas outside sensitive areas (streams, wetlands), in level, open, and likely developed or disturbed sites. All areas temporarily disturbed during construction would be returned to preconstruction conditions and revegetated as appropriate. Potential impacts on soils at staging areas are expected to be low.

Operation and Maintenance

Activities would include incidental repairs to access roads, which could cause localized soil disturbance. Most vegetation management activities are not ground-disturbing activities. In general, operation and maintenance activities would have a low direct impact on soils because they would be confined to small, localized areas dispersed along the length of the transmission line corridor.

Right-of-Way Easement Acquisition

The acquisition of easements to expand the transmission line ROW would not result in any impact on soils, because it would not alter the construction disturbance footprint of the Proposed Action. In addition, the operation and maintenance activities, including vegetation management, would not be ground disturbing.

Danger Tree Removal

A number of danger trees would need to be removed within 60 feet of the *centerline* of the ROW during construction. These danger trees would be cut at the base and their branches would be lopped and scattered. Impacts on soils would be low and similar to those under existing conditions from maintenance.

Geologic Hazards

There is only one mapped landslide area in the study area, in the general vicinity of line mile 32 (Washington State Department of Natural Resources 2010a). None of the proposed transmission line infrastructure would be placed on this landslide area. Structures proposed along line mile 1 and generally within 100 feet of stream channels could be located in areas with a moderate potential for liquefaction. To assess the potential for these hazards to affect the transmission line, BPA maintenance crews would continue to conduct annual visits to survey for landslide activity or other effects associated with geologic hazards. Any impacts on the transmission line from noted events would be addressed during those surveys (Cook pers. comm.). Impacts are expected to be low.

Highly Erodible Lands

Over 90% of the study area is designated by NRCS as highly erodible lands that, if in crop production subject to federal farm benefits, must be managed under an NRCS-approved soil conservation system. NRCS has recommended that, within its easement on these lands, BPA minimize construction-related erosion by limiting disturbance during the critical erosion period (November through March); avoiding operation of heavy equipment in wet areas to reduce soil

compaction and erosion; and revegetating disturbed areas after construction is complete (Fortner pers. comm.). These prescriptions, which have been incorporated into the mitigation measures below, would reduce the potential for construction-related erosion on highly erodible lands, and would meet the management strategies for these lands provided by NRCS. As such, impacts on highly erodible lands are expected to be low to moderate.

3.3.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the following mitigation measures, used alone or in combination, would reduce impacts on soils, landforms, and other resources.

- As practicable, existing structures within 50 feet of waterways would be cut at the base, rather than excavated, to minimize soil disturbance.
- Structures would be located as far as possible from nearby streams and wetlands.
- Culverts, cross-drains, and water bars would be spaced and sized properly.
- As much work as possible would be conducted during the dry season—when streamflow, rainfall, and runoff are low—to minimize erosion, sedimentation, and soil compaction.
- In disturbed areas, mechanical barriers to erosion would be used, as specified in the stormwater pollution prevention plan.
- Heavy equipment would be operated to minimize soil compaction, particularly during the critical erosion period (November through March).
- Disturbed, non-farmed areas would be revegetated with native seed.
- After construction, access roads, culverts, and other facilities would be inspected and maintained to ensure proper function and nominal erosion levels.
- Revegetation work and sites would be inspected to verify adequate growth, and contingency measures would be implemented as needed.

3.3.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

The mitigation measures described above would reduce impacts to low or low to moderate levels. Although construction BMPs would reduce the potential for temporary increases in erosion, some increased levels would be expected. Long-term impacts after mitigation would be limited to soil compaction, minor erosion of formerly vegetated ground in areas where reseeding is not successful, and loss or elimination of natural biological functions in areas that were formerly undeveloped.

3.3.5 Cumulative Impacts—Proposed Action

The principal past and ongoing activities that affect soils in the vicinity of the Proposed Action are related to farming and grazing (western portion of the study area). In addition, other projects identified in Section 2.4 of this EA have the potential to result in impacts similar to those described above. Implementation of the mitigation measures described above would ensure that the Proposed Action would not contribute significantly to cumulative soil impacts. As such, the contribution of the Proposed Action to cumulative impacts would be considered low.

3.3.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, the Proposed Action would not be constructed and construction-related impacts on soil resources would not occur. Continued operation and maintenance of the existing transmission line would have low impacts on soils resulting from line maintenance and incidental use of access roads to maintain the transmission line infrastructure. Vegetation management activities, including danger tree removal, would have no to low impact, as these are not ground-disturbing activities. No new impacts on soils are expected under this alternative. However, maintenance activities would likely increase as existing structures deteriorate, which could lead to more erosion and compaction than under existing conditions.

3.4 VEGETATION

3.4.1 Affected Environment

The study area for vegetation includes the existing ROW, the danger tree removal area within and adjacent to the ROW, the access road system that extends off-ROW, and any adjacent properties with land uses that could be affected by the Proposed Action. The study area is located on the boundary between the Columbia Basin Physiographic Province and the Blue Mountains Physiographic Province (Franklin and Dyrness 1988). The climate is arid to semiarid with low precipitation, warm to dry summers, and relatively cold winters (Franklin and Dyrness 1988). Agriculture is the dominant land use in the study area, particularly in the western two-thirds where the landscape has been almost completely altered by *dryland* wheat farming. Although generally of low quality, the eastern one-third of the study area has areas of natural vegetation, including *riparian* areas associated with the Touchet River, Patit Creek, and their tributaries, as well as coniferous forests associated with the Blue Mountains.

Vegetation in the study area has been extensively modified by a variety of land uses, including agriculture, livestock grazing, road and utility corridor construction, and residential development, as well as by natural factors such as wildfire. In areas that have not been converted to agriculture, livestock grazing has facilitated the spread of weed species in *upland* and wetland areas. Livestock have extensively trampled many riparian areas. Some previously cultivated areas have been replanted with shrubs and trees.

Although limited in the study area, tall vegetation in and adjacent to the transmission line ROW is subject to periodic cutting by BPA as part of vegetation management activities in compliance with Western Electricity Coordinating Council standards. Most young trees are cut while they are saplings, and mature trees in canyons or along the ROW are removed or topped when they grow near conductors. Vegetation management activities prevent the development of forest in areas that would otherwise revert to forest if not disturbed. However, most of the ROW is vegetated by agricultural fields or shrublands that consist of a mix of native and non-native species. These communities are vulnerable to invasion by weed species, because agricultural fields and shrublands in this area are subject to high levels of disturbance from cultivation and grazing/wildfire, respectively.

The plant communities in the study area are described below. Common plant species in the study area (Table 3-1) were noted during botanical surveys completed in August 2010 (Beck Botanical Services 2010). In general, plant communities vary in quality from site to site depending on land use, elevation, aspect, soil depth, and cover of *nonnative* plants.

Agriculture

Agriculture, primarily dryland wheat farming, is the dominant land use in the study area, particularly in the western portion of the study area (line mile 1 through line mile 31). In the eastern one-third of the study area, wheat fields typically occupy broad ridge tops and some of the more moderate slopes, with other plant communities interspersed.

Riparian Areas

Riparian areas are common throughout the study area, in which they display a range of sizes and disturbance levels. Most riparian areas are lined with dense stands of trees, shrubs, and tall grasses. Many are narrow with relatively steep gradients, and some are dry most of the year. Many riparian areas in the study area have farms, outbuildings, and roads in close proximity to them.

The most common tree associated with riparian areas in the study area is black cottonwood. Shrub species are often dense and diverse, and include black hawthorn, wild rose, blue elderberry, green alder, willow, and common snowberry. Bull thistle, poison hemlock, nettle, and white bryony are common herbaceous species in riparian areas in the study area. Common graminoids include reed canarygrass, smooth brome, Kentucky bluegrass, meadow fescue and tall oatgrass. Reed canarygrass often forms dense, tall swaths along the banks of riparian areas in the study area. The majority of forbs and grasses in these areas are nonnative species.

Shrublands

Shrublands are present on moderate to steep slopes in drainages, ravines, and areas with more northerly aspects in the eastern one-third of the study area. Shrub cover ranges from sparse to dense. Common shrub species include gray rabbitbrush, oceanspray, black hawthorn, common snowberry, mallow ninebark, Lewis' mock orange, and serviceberry. Dominant grasses include bluebunch wheatgrass, Sandberg's bluegrass, cheatgrass, and a number of other weedy annual grass species. Native forb species include balsamroot, sulphur lupine, bracken fern, and yarrow. Weedy forb species are widespread in this plant community, and include yellow starthistle, tall tumbled mustard, and prickly lettuce. In general, shrublands in the study area have been subject to extensive livestock grazing, wildfire, and other forms of disturbance.

Coniferous Forest

Small scattered patches of ponderosa pine and Douglas-fir are present on steep slopes in the eastern one-third of the study area. The understory shrub, herb and graminoid layers have similar plant species as those present in the shrublands plant community described above.

Table 3-1. Common Vascular Plant Species Observed in the Study Area

	Common Name	Scientific Name
Trees	Grand fir	<i>Abies grandis</i>
	Western birch	<i>Betula occidentalis</i>
	Ponderosa pine	<i>Pinus ponderosa</i>
	Cottonwood	<i>Populus balsamifera</i> var. <i>trichocarpa</i>
	Douglas-fir	<i>Pseudotsuga menziesii</i>
	Black locust	<i>Robinia pseudoacacia</i>
Shrubs	Green alder	<i>Alnus viridis</i>
	Serviceberry	<i>Amelanchier alnifolia</i>
	Redosier dogwood	<i>Cornus sericea</i>
	Black hawthorn	<i>Crataegus douglasii</i>
	Gray rabbitbrush	<i>Ericameria nauseosa</i>
	Oceanspray	<i>Holodiscus discolor</i>
	Lewis' mock orange	<i>Philadelphus lewisii</i>
	Mallow ninebark	<i>Physocarpus malvaceous</i>
	Wild rose	<i>Rosa</i> spp.
	Himalayan blackberry	<i>Rubus armeniacus</i>
	Willow species	<i>Salix</i> spp.
	Blue elderberry	<i>Sambucus nigra</i> ssp. <i>cerulea</i>
	Common snowberry	<i>Symphoricarpos albus</i>
	Forbs	Yarrow
Balsamroot		<i>Balsamorhiza sagittata</i>
White bryony		<i>Bryonia alba</i>
Diffuse knapweed		<i>Centaurea diffusa</i>
Yellow starthistle		<i>Centaurea solstitialis</i>
Canada thistle		<i>Cirsium arvensis</i>
Bull thistle		<i>Cirsium vulgare</i>
Poison hemlock		<i>Conium maculatum</i>
Houndstongue		<i>Cynoglossum officinale</i>
Teasel		<i>Dipsacus fullonum</i>
Common St. John's-wort		<i>Hypericum perforatum</i>
Prickly lettuce		<i>Lactuca serriola</i>
Sulphur lupine		<i>Lupinus sulphureus</i>
Bracken fern		<i>Pteridium aquilinum</i>
Tall tumbled mustard		<i>Sisymbrium altissimum</i>
Goldenrod		<i>Solidago</i> spp.
Nettle		<i>Urtica dioica</i>

	Common Name	Scientific Name
Graminoids	Tall oatgrass	<i>Arrhenatherum elatius</i>
	Smooth brome	<i>Bromus inermis</i>
	Cheatgrass	<i>Bromus tectorum</i>
	Meadow fescue	<i>Festuca pratensis</i>
	Reed canarygrass	<i>Phalaris arundinacea</i>
	Kentucky bluegrass	<i>Poa pratensis</i>
	Sandberg's bluegrass	<i>Poa secunda</i>
	Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>

Source: Beck Botanical Services 2010

Noxious Weeds

Noxious weeds are nonnative plants that spread quickly and can be difficult to control. In Washington State, the Washington State Department of Agriculture, Washington State Noxious Weed Control Board, and County and District Noxious Weed Control Boards are responsible for administering applicable noxious weed laws and for determining how noxious weeds should be managed.

In general, noxious weeds are classified in one of three categories:

- **Class A Noxious Weeds.** Class A noxious weeds are nonnative species whose distribution in Washington is still limited. Preventing new infestations and eradicating existing infestations are the highest priority. Eradication of all Class A plants is required by law.
- **Class B Noxious Weeds.** Class B noxious weeds are nonnative species presently limited to portions of the state. Species are designated for control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal.
- **Class C Noxious Weeds.** Class C noxious weeds are nonnative plants that are already widespread in Washington or are of special interest to the state's agricultural industry. A Class C status allows counties to enforce control if locally desired. Other counties may choose to provide education or technical support for the removal or control of these weeds.

No noxious weeds designated as Class A or Class B in Walla Walla or Columbia counties were observed during botanical surveys completed in August 2010 (Beck Botanical Services 2010). Beck Botanical Services (2010) noted, however, that there may be infestations of Class A or Class B weeds in upland areas not included in the botanical survey area (the survey area consisted of riparian and wetland habitats). Class B (non-designate) noxious weeds commonly observed in riparian areas in the study area included white bryony and poison hemlock. Incidental observations of Class B (non-designate) weeds commonly growing in upland areas included yellow starthistle, houndstongue, and diffuse knapweed. Class C noxious weeds commonly observed in riparian areas in the study area included reed canarygrass, bull thistle, Canada thistle, common St. John's-wort, and Himalayan blackberry.

Special-Status Plant Species

Special-status plant *species* are those species that have been identified for protection and/or management under the federal Endangered Species Act (ESA) (U.S. Fish and Wildlife Service 2010a and b) or the Washington State Natural Heritage Program (Washington State Department of Natural Resources 2009). Consultations with the USFWS determined that the study area is within the potential habitat range of one federally listed plant species, Ute ladies'-tresses (*Spiranthes diluvialis*). Potential habitat for this species within the study area (riparian corridors and wetland habitats) was surveyed in August 2010. No populations of Ute ladies'-tresses or suitable habitat for Ute ladies'-tresses were located during that survey (Beck Botanical Services 2010).

Known occurrences of clustered lady's slipper (*Cypripedium fasciculatum*) (federal species of concern; Washington State sensitive species); Sabin's lupine (*Lupinus sabinianus*) (state-listed as endangered); and plumed clover (*Trifolium plumosum*) (state listed as *threatened*) are located within 10 miles of the study area (Washington Natural Heritage Program 2010).

Danger Trees

A total of 217 danger trees have been identified for removal: 110 within the ROW and 107 adjacent to the ROW. Danger trees can be found along most of the length of the transmission line and occur singly and in small groups. Danger tree species include elderberry, walnut, wild cherry, ponderosa pine, Douglas-fir, alder, cottonwood, and willow. Over half of the trees that would be removed are ponderosa pine. The size of danger trees that would be removed, measured in diameter at breast height (dbh), varies from less than 8 inches to 37 inches dbh. The majority of the danger trees are less than 8 inches dbh.

3.4.2 Environmental Consequences—Proposed Action

Removal of Existing Structures and Installation of New Structures

Structure replacement and installation would result in clearing and crushing vegetation, damage to plant roots from compaction of soils by heavy equipment, and soil disturbance. The extent of direct impacts at any particular site would depend on the quality of existing vegetation and soils, as well as site topography. At most two-pole structure sites, an area approximately 50 feet by 100 feet (0.1 acre) could be disturbed. Disturbance at three-pole structures would typically be larger, up to approximately 100 feet by 100 feet (0.2 acre) in size. Disturbance at the two switch platforms would be approximately 20 feet by 20 feet (0.01 acre).

To minimize disturbance in sensitive habitats such as wetlands, the disturbance area would be reduced to 50 feet by 50 feet per structure (0.06 acre), if possible. Signage, fences, or flagging would be installed, where needed, to restrict vehicles and equipment to designated routes outside of sensitive communities and species habitat. Because impacts on vegetation from the Proposed Action would consist mainly of disturbance to managed shrublands and nonnative grasslands, impacts are expected to be low. Implementation of the mitigation measures described below would further reduce construction-related impacts on vegetation.

Access Road Improvements

As described in Chapter 2, Proposed Action and Alternatives, approximately 13.57 miles of existing access roads within the study area would be reconstructed under the Proposed Action. In addition, 0.46 mile of new roads would be constructed and 1.63 miles of existing roads would be abandoned. Road construction/reconstruction would require removal of existing vegetation, grading, compaction, placement of crushed rock as a road base, and construction/replacement of culverts, as necessary. These activities would result in soil compaction and impacts on existing vegetation. As noted above, the majority of vegetation temporarily affected by the Proposed Action would be associated with shrublands and nonnative grasslands; however, in a few areas, the creation of new roads could disturb areas that currently consist of higher quality plant communities with more native species, and that have been subject to lower levels of disturbance in the past. Impacts on these areas would be low, due to the small size of the disturbance area. Implementation of the mitigation measures described below would reduce construction-related impacts on vegetation resulting from access road improvements.

Staging Areas

Staging areas have not specifically been identified for the Proposed Action. However, BPA would require the construction contractor to locate all staging areas outside sensitive areas (streams, wetlands), in level, open, and already developed or disturbed sites. All areas temporarily disturbed during construction would be returned to preconstruction conditions and revegetated as appropriate. Potential impacts on vegetation at staging areas are expected to be low.

Operation and Maintenance

Ongoing vegetation management activities would occur under the Proposed Action, including periodic trimming, cutting, or clearing of trees and shrubs to allow access to transmission facilities and to prevent vegetation from growing too close to conductors. Vegetation maintenance would be conducted under BPA's *Transmission System Vegetation Management Program* (Bonneville Power Administration 2001b), which uses a variety of methods, including manual, mechanical, herbicide, and biological methods to foster low-growing plant communities and keep plants from interfering with transmission lines, (Bonneville Power Administration 2000b). Impacts on vegetation resulting from operation and maintenance of the Proposed Action are expected to be low.

Right-of-Way Easement Acquisition

The Proposed Action would result in future widening of the transmission line ROW through easement acquisition. Appropriate vegetation management techniques would be conducted in the new ROW in accordance with BPA's *Transmission System Vegetation Management Program* (Bonneville Power Administration 2001b). Impacts on vegetation resulting from future ROW acquisition are expected to be low to moderate.

Noxious Weeds

During and following construction, noxious weeds could spread and colonize disturbed areas as a result of the movement of soils and materials contaminated with weed seeds and natural weed

seed dispersal. Areas where the soil is bare are particularly vulnerable to infestation by weeds. Although weeds are already widespread in the general area, the presence and abundance of weed species could increase in the study area as a result of construction. However, implementation of mitigation measures, such as washing equipment before entering construction areas, would reduce the spread of noxious weeds. In addition, frequent weed control activities would reduce the growth and spread of noxious weeds in areas targeted for control of certain weed species. The impact associated with the spread of noxious weeds as a result of the Proposed Action is considered low.

Danger Tree Removal

Danger tree removal would constitute a direct impact on vegetation. Removing groups of danger trees could open up forested area to light, making these areas more vulnerable to invasion by weed species, many of which require light areas to grow. Native understory plants that grow in shaded areas would not thrive in these forest openings. If danger trees removed comprise the outer trees in a larger group, the inner trees could become more exposed to wind and susceptible to falling over. Because trees and shrubs would be expected to grow quickly in any forest openings created by danger tree removal, impacts would be low.

3.4.3 Mitigation—Proposed Action

The following general mitigation measures would be implemented to avoid and minimize potential adverse impacts on vegetation resulting from the construction and operation of the Proposed Action:

- Prior to construction, a noxious weed survey of the study area would be conducted to identify existing locations of noxious weeds. The results of the weed survey would be used to assess if noxious weeds have spread or increased in abundance as a result of construction activities.
- During construction, measures to minimize the introduction and broadcast of weed seeds would be implemented, including washing equipment and vehicles before entering construction areas.
- Construction activities would be restricted to the area needed to work effectively to limit disturbance of native plant communities and to prevent expansion of noxious weed species.
- Following construction, disturbed areas would be promptly reseeded with native, certified weed-free seed to stabilize sites and minimize weed colonization.
- After construction is complete, disturbed areas would be mulched and reseeded using certified weed-free seed (preferably native seeds) to make it less likely that noxious weed infestations would expand within the study area.
- Reseeded sites would be periodically inspected to verify adequate growth. If necessary, contingency measures to ensure adequate growth and vegetation cover would be implemented.
- Weed control efforts would continue to be implemented in the ROW as part of ongoing vegetation management efforts.

3.4.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Although most of the study area supports wheat fields or other types of agriculture, the Proposed Action could result in the loss of native plants, habitat complexity, and species diversity if less disturbed plant communities are cleared to accommodate proposed infrastructure. Replacement of structures and access road work could cause long-term soil compaction and reduced soil productivity around structures and on and along roadbeds. Access road improvements would further reduce vegetation cover, temporarily (reconstructed roads) or permanently (new access roads). Because of the prolific nature of noxious weeds in the study area, and the difficulty of controlling them, their unintentional spread into some areas that are not currently infested is likely to occur. Because replacement of existing structures and the construction of new structures would occur entirely within the existing ROW, and because most access road improvements would occur within a previously disturbed corridor, unavoidable impacts remaining after mitigation are expected to be low to moderate.

3.4.5 Cumulative Impacts—Proposed Action

Agriculture, primarily dryland wheat farming, is responsible for most of the past and ongoing impacts on native vegetation in the study area. Other actions that affect past and ongoing impacts on vegetation in the study area include livestock grazing and vegetation control along roads and utility corridors, as well as wildfire. Presently occurring activities and projects and those that occur in the future will cumulatively affect vegetation. If substantial development occurs on private lands the study area, a more extensive shift away from native vegetation communities could occur.

Vegetation control routinely occurs along highways, county roads, residential roads, and utility corridors in the study area. Vegetation control activities include herbicide applications and mechanical cutting.

The Proposed Action is expected to have a minimal contribution to cumulative impacts on vegetation, compared to the combined impacts of past, ongoing, and future vegetation-altering activities in the study area. The amount of vegetation that would be affected by the narrow transmission line corridor is small compared to the area affected by agricultural activities, livestock grazing, wildfire, and vegetation control along roads and other transmission lines. One exception is the potential effect of the transmission line corridor in a weed-infested area. Because corridors act as a path for the movement of weed species and because of the difficulty of controlling many weed species, the Proposed Action would make a low to moderate contribution to the cumulative impact on the spread of weed species.

3.4.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, the Proposed Action would not be constructed and construction-related impacts on vegetation would not occur. Continued operation and maintenance of the existing transmission line, including danger tree removal, would have low to moderate impacts on vegetation, primarily through implementation of BPA's vegetation management program. No new impacts on vegetation are expected under the No Action Alternative.

3.5 FISH AND WILDLIFE

3.5.1 Affected Environment

Fish and Essential Fish Habitat

The study area for the fish analysis includes all surface waters that traverse the transmission line ROW or access road system, or that are located within 300 feet of any existing or proposed infrastructure. The majority of the study area is located in the Walla Walla River *watershed*, a Middle Columbia River tributary. About 1,500 feet of the northeastern portion of the study area is located in the Tucannon River watershed, which drains to the Snake River. However, there is no fish habitat in the portion of the study area located within the Tucannon River watershed, because the transmission line does not cross or come within 300 feet of fish-bearing streams in the Tucannon River watershed.

In the Walla Walla River watershed, the study area crosses the Mill Creek, Dry Creek, Coppei Creek, and Touchet River subwatersheds (in order from southwest to northeast). These streams provide fish habitat for a number of species, including some streams that are designated critical habitat for Columbia River *distinct population segment* (DPS) bull trout (*Salvelinus confluentus*) (federally listed as threatened) and middle Columbia River *evolutionarily significant unit* (ESU) steelhead (*Oncorhynchus mykiss*) (federally listed as threatened), as well as *essential fish habitat* (EFH) for middle Columbia Chinook salmon (*O. tshawytscha*), a Pacific salmon species protected under the Magnuson-Stevens Fisheries Conservation and Management Act. It is also possible that Pacific lamprey (*Entosphenus tridentatus*, formerly *Lampetra tridentata*) inhabits streams in the study area. Table 3-2 lists fish-bearing streams in the study area, as well as designated critical habitat and EFH in the study area. A complete list of streams in the study area may be found in Appendix C.

Kuttel (2001) describes the habitat conditions in the Walla Walla River basin as they pertain to *salmonid* limiting factors. Mendel et al. (2003, 2007) assess habitat in the basin to provide the WDFW with information needed to manage fish populations and habitats. Selected specific observations on habitat in the fish-bearing streams that cross the study area are described below. Project distances referenced are in miles from the Walla Walla Substation. Stream types listed are based on the WDNR stream typing system (Washington Administrative Code [WAC] 222-16-030), as follows:

- Type S: shorelines of the state
- Type F: fish-bearing waters
- Type N: non-fish-bearing waters
- Type Np: perennial, non-fish-bearing waters
- Type Ns: seasonal, non-fish-bearing waters
- Type U: unidentified water

Table 3-2. Fisheries Resources in the Study Area

Nearest Existing Structures (Line Mile/ Structure Number)		Water Body Name	Next Named Water Body Downstream	Designated Critical Habitat	Essential Fish Habitat	Known Species
West	East					
7/2	7/3	Dry Creek	Walla Walla River	Middle Columbia Steelhead	None	Steelhead, speckled dace, chiselmouth, redbside shiner, northern pikeminnow, sucker
23/2	23/3	Coppei Creek	Touchet River	Middle Columbia Steelhead	None	Steelhead, lamprey, speckled dace, redbside shiner, northern pikeminnow, sucker, Paiute sculpin, margined sculpin
25/3	25/4	Wilson Creek	Touchet River	None	None	Unknown*
25/4	25/5	Wilson Creek	Touchet River	None	None	Unknown*
25/8	26/1	Whiskey Creek	Touchet River	None	None	Steelhead, speckled dace, sculpin
26/2	26/3	Unnamed	Whiskey Creek	None	None	Unknown*
27/6	28/1	Bundy Hollow Creek	Dustin Hollow Creek	None	None	Unknown*
28/3	28/4	Dustin Hollow Creek	Whiskey Creek	None	None	Unknown*
29/5	30/1	Dustin Hollow Creek	Whiskey Creek	None	None	Unknown*
30/2	30/3	Dustin Hollow Creek	Whiskey Creek	None	None	Unknown*

Nearest Existing Structures (Line Mile/ Structure Number)		Water Body Name	Next Named Water Body Downstream	Designated Critical Habitat	Essential Fish Habitat	Known Species
West	East					
30/5	30/6	Hogeye Hollow Creek	Touchet River	None	None	Unknown*
31/5	31/6	Payne Hollow Creek	Touchet River	None	None	Unknown*
32/4	32/5	South Fork Touchet River	Touchet River	Middle Columbia Steelhead, Columbia Bull Trout	Spring Chinook Salmon	Bull trout, steelhead, lamprey, speckled dace, longnosed dace, Paiute sculpin, margined sculpin
35/3	35/4	Wolf Fork Touchet River	North Fork Touchet River	Middle Columbia Steelhead, Columbia Bull Trout	Spring Chinook Salmon	Steelhead, bull trout, lamprey, speckled dace, Paiute sculpin, margined sculpin, mountain whitefish, Chinook salmon
35/5	35/6	Wolf Fork Touchet River	North Fork Touchet River	Middle Columbia Steelhead, Columbia Bull Trout	Spring Chinook Salmon	Steelhead, bull trout, lamprey, speckled dace, Paiute sculpin, margined sculpin, mountain whitefish, Chinook salmon

Nearest Existing Structures (Line Mile/ Structure Number)		Water Body Name	Next Named Water Body Downstream	Designated Critical Habitat	Essential Fish Habitat	Known Species
West	East					
36/2	36/3	North Fork Touchet River	Touchet River	Middle Columbia Steelhead, Columbia bull trout	Spring Chinook Salmon	Steelhead, bull trout, Chinook salmon, lamprey, Paiute sculpin margined sculpin
37/5	38/1	Hatley Gulch Creek	North Fork Touchet River	None	None	Unknown*
38/3	38/4	Unnamed	Hatley Gulch Creek	None	None	Unknown *
38/4	38/5	Unnamed	Hatley Gulch Creek	None	None	Unknown *
41/4	41/5	Unnamed	West Patit Creek	None	None	Unknown *
41/6	42/1	West Patit Creek	Patit Creek	Middle Columbia Steelhead	None	Steelhead
43/6	44/1	North Patit Creek	Patit Creek	Middle Columbia Steelhead	None	Steelhead
45/5	45/6	Unnamed	North Patit Creek	None	None	Unknown *
46/2	46/3	Unnamed	North Patit Creek	None	None	Unknown *
46/4	46/5	Unnamed	North Patit Creek	None	None	Unknown *
46/5	46/6	Unnamed	North Patit Creek	None	None	Unknown *

Sources: Washington Department of Fish and Wildlife 2010b, 2010c; Mendel et al. 2003.

* No data available on fish use of these streams; expected to support rainbow trout\steelhead, sculpin species, and dace species.

Mill Creek

Three tributaries to Mill Creek cross the study area in line miles 1 through 3. All of these channels appear to be Type Ns (seasonal, non-fish-bearing) streams, although they are mapped by WDNR (2010b) as Type U (unknown). Because none of these drainage swales provide any fish habitat in the study area, habitat conditions in the Mill Creek Basin are not discussed further.

Mud Creek

Four unnamed tributaries to Mud Creek cross the study area between line miles 3 and 4. All of these channels have been mapped by WDNR (2010b) as Type U (unknown), although they appear to be Type Ns (seasonal, non-fish-bearing). These streams provide no fish habitat in the study area.

Mud Creek is also mapped by WDNR (2010b) as a Type U (unknown) stream. In the study area Mud Creek has a narrow (10- to 30-foot-wide) strip of uncultivated riparian buffer between the stream and adjacent wheat fields. About 2,900 feet downstream of the existing transmission line crossing, cultivated land abuts the stream banks on both sides with no uncultivated riparian buffer.

At times in 2001, water temperatures in Mud Creek exceeded 75 degrees Fahrenheit (°F), potentially lethal temperatures for salmonids (Mendel et al. 2003). It is not known if salmonids are present in Mud Creek, although steelhead are presumed to be present at least seasonally in lower Mud Creek because this stream is accessible to fish via Dry Creek (Kuttel 2001).

Dry Creek

Dry Creek and its tributary Spring Creek cross the study area and support middle Columbia ESU steelhead. As its name implies, water levels in Dry Creek are known to drop to very low levels during summer months, either through naturally occurring hydrological conditions, water withdrawals, or some combination of both (Kuttel 2001). This stream is deeply incised in places and carries a large *sediment load* that contributes to pool filling and reduced substrate quality downstream (Kuttel 2001).

In the study area, Dry Creek supports a limited riparian buffer between the stream and cultivated fields on both banks; although it appears that a portion of the riparian zone was replanted with rows of trees or shrubs at some point between November 8, 2002, and August 1, 2005 (Google Earth, Inc. 2010). *Large woody debris* in the channel is lacking and summer temperatures can exceed 75 °F (Kuttel 2001, Mendel et al. 2003, 2007). Lack of shade, low gradient, and water withdrawals all likely contribute to the high temperatures common in this stream during the summer (Kuttel 2001).

Touchet River

Several fish-bearing tributaries to the upper Touchet River that provide considerable viable habitat for steelhead are crossed by the transmission corridor. These tributaries include: Coppei Creek, Whiskey Creek, Dustin Hollow Creek, Hogeeye Hollow Creek, South Fork Touchet River, Wolf Fork Touchet River, North Fork Touchet River, West Patit Creek, and North Patit Creek. The South Fork, Wolf Fork, and North Fork Touchet River also support genetically distinct bull trout populations (Kuttel 2001, Mendel et al. 2007, Kassler and Mendel 2007). Large woody debris is generally lacking in the upper Touchet River Basin, especially where these tributaries cross private lands, where large wood has been removed for flood control (Kuttel 2001). Stream banks are generally stable, and *substrate embeddedness* is generally fair to good (Kuttel 2001).

Fish access to the upper Touchet River may be somewhat limited, however, by existing influences that likely adversely affect fish habitat in the lower Touchet River, including erosion,

fine sediment input, high temperatures, inadequate quantities of woody debris, and competition from introduced fish species, including smallmouth bass (*Micropterus dolomieu*) and brown trout (*Salmo trutta*) (Kuttel 2001; Mendel et al. 2007).

Coppei Creek

Coppei Creek provides spawning and rearing habitat for steelhead (Kuttel 2001, Washington Department of Fish and Wildlife 2010b, 2010c). Bull trout have access to this stream from the Touchet River, but their presence in Coppei Creek has not been documented (Washington Department of Fish and Wildlife 2010c).

Lower Coppei Creek might be a thermal barrier for fish in July and August (Kuttel 2001). Temperatures of over 75 °F have been recorded in Coppei Creek (Mendel et al. 2007). Where the transmission corridor crosses this stream, Coppei Creek is included in the Walla Walla River tributaries' *total maximum daily load* (TMDL) allocations for pH, dissolved oxygen, and temperature (Washington State Department of Ecology 2008). Surface water diversions alter the flow regime to an unknown degree (Kuttel 2001).

Much of this stream was historically subject to farming up to the banks of the channel. Kuttel (2001) identified a need for riparian revegetation along Coppei Creek; recent aerial photos of this stream, however, indicate that a considerable portion has been replanted (Google Earth, Inc. 2010). Presumably, this additional riparian vegetation will continue to provide increased shade to Coppei Creek, moderating summer temperatures.

Sediment runoff from agricultural lands and eroding banks has caused considerable sediment embeddedness (Kuttel 2001). Logging and channel modification have reduced recruitment of large woody debris, although some large woody debris installation projects have been completed in Coppei Creek (Kuttel 2001). Channel modification and bank armoring have also reduced off-channel habitat and connectivity (Kuttel 2001). A large portion of the creek is protected by a conservation easement (Kuttel 2001).

Whiskey Creek

Whiskey Creek provides steelhead habitat. Compared to other streams in the Walla Walla River watershed, Whiskey Creek has relatively good temperature control. In 1999, temperature monitoring indicated that temperatures never exceeded 65 °F that year and were commonly lower.

South Fork Touchet River

The South Fork Touchet River provides steelhead and bull trout habitat (Washington Department of Fish and Wildlife 2010b, 2010c). Kuttel (2001) noted that many fords, most of which have been in use for many years, cross the South Fork Touchet River. This river lacks large wood and shade and has had serious bank erosion problems resulting in deeply incised banks (Kuttel 2001). Channel instability has resulted in the covering of steelhead redds. Fine sediment from upstream logging and pool infilling has also been reported as problems in the South Fork Touchet River (Kuttel 2001).

Wolf Fork Touchet River

The Wolf Fork Touchet River provides steelhead and bull trout habitat (Washington Department of Fish and Wildlife 2010c). The reach of this river crossed by the transmission corridor has been subject to the effects of a reduced riparian buffer, including eroding banks, aggraded channel, lack of large wood, and moderate temperatures. Erosion from logging roads has been a significant source of fine sediment in the Wolf Fork Touchet River Basin, and relatively high substrate embeddedness has been reported (Kuttel 2001).

North Fork Touchet River

The North Fork Touchet River provides steelhead and bull trout habitat (Washington Department of Fish and Wildlife 2010b, 2010c). However, high water temperatures downstream have been identified as a factor that has reduced bull trout rearing habitat in the system. Channel modifications have resulted in a loss of wood and bank alterations which have reduced habitat quality (Kuttel 2001). Pools are lacking in the North Fork, although some bedrock pools are present (Kuttel 2001). Temperatures can be somewhat high with daily maximum temperatures frequently reaching 60 °F to 70 °F from June through September (Kuttel 2001).

Wildlife and Their Habitat

The study area for the wildlife analysis includes all areas within 2 miles of the ROW or the access road system. Direct impacts on wildlife and their habitats were assumed to occur in areas within 300 feet of Proposed Action infrastructure (e.g., the transmission line corridor and access roads). Most potential impacts are anticipated to be confined to this area.

Principal land cover types in the study area include interior grasslands and interior riparian wetlands (Walla Walla County and the Walla Walla Basin Watershed Council 2004). Local cover types include ponderosa pine and interior white oak forest and woodland. In general, habitat outside of riparian areas is not forested, with most wildlife species adapted to such habitats. Common species in these areas include birds such as magpie (*Pica pica*), common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), and red-tailed hawk (*Buteo jamaicensis*). Mammals in these areas include rodents (order Rodentia), coyotes (*Canis latrans*), rabbits (*Lepus* spp. and *Sylvilagus* spp.), mule deer (*Odocoileus hemionus*), and elk (*Cervus elaphus*). Within riparian areas, moist-site songbirds, such as eastern kingbirds (*Tyrannus tyrannus*) and warblers (e.g., *Dendroica* spp.), are common, as are game birds, including ring-necked pheasant (*Phasianus colchicus*) and wild turkey (*Meleagris gallopavo*) (both introduced species). Riparian mammals are primarily bats and rodents, along with the species named above.

State Priority Habitat and Species of Concern

A search of the WDFW Priority Habitats and Species (PHS) Database was performed to identify special-status wildlife species and **priority habitats** in the study area (Washington Department of Fish and Wildlife 2010b). Special-status wildlife species with the potential to occur in the study area are listed in Table 3-3. All identified species except Swainson's hawk (*Buteo swainsoni*) are expected to be associated with aquatic, riparian, or wetland habitats. Swainson's hawk is expected to forage, but not nest in the study area. It is a migrant species, spending winters in South America and summers in North America; southeast Washington is at the northwest limit of

its distribution west of the Rockies. It forages over grasslands and shrub-steppe for small mammals and insects (U.S. Bureau of Land Management 2006).

Although no known golden eagle (*Aquila chrysaetos*) roosts, nests, or occurrences were identified within the study area, the study area is within the range of the golden eagle—which is typically measured in tens of square kilometers—and golden eagles may be expected to forage for their preferred prey (primarily rabbits and ground squirrels) throughout the study area (DeLong 2004).

Federal Threatened and Endangered Wildlife Species

The USFWS provided BPA with lists of wildlife species protected under the ESA that may occur in Walla Walla and Columbia counties. One wildlife species under USFWS jurisdiction, the Canada lynx (*Lynx canadensis*; federally listed as threatened) may occur in Walla Walla or Columbia counties. In Washington, Canada lynx require forested, high altitude (higher than 4,000 feet) habitat with an adequate prey base (e.g., snowshoe hare) and suitable denning sites (e.g., large stumps or snags). The closest potential habitat for Canada lynx to the study area is located more than 4 miles southeast of the transmission line in the Umatilla National Forest. In addition, there is no designated critical habitat for Canada lynx nor are there records of Canada lynx in Walla Walla County or Columbia County (Washington Department of Fish and Wildlife 2010b). Therefore, it is extremely unlikely that Canada lynx are present in the study area.

3.5.2 Environmental Consequences—Proposed Action

Fish and Essential Fish Habitat

Proposed Action activities that have the potential to affect fish and fish habitat are those activities that result in changes to water quality or quantity (see Section 3.6, Water Resources and Water Quality); changes in riparian vegetation that affect shade, cover, and recruitment of wood into streams; or activities that directly result in death of or disturbance to fish.

Removal of Existing and Installation of New Structures

As described in Section 3.6, replacement of support structures would require temporary ground disturbance. However, the potential for associated water quality impacts and subsequent injury to fish or fish habitat would be low with the implementation of erosion control BMPs described as mitigation measures below.

A reconstructed access road leading to Structure 7/2 would be located within 300 feet of Dry Creek, which supports federally listed middle Columbia steelhead. Because no work would take place within the bed or banks of the river, the potential for sediment-related impacts would be low.

Replacement Structures 23/2 and 23/3 would be located within 300 feet of Coppei Creek, which supports federally listed middle Columbia steelhead. However, because construction would take place on the opposite side of U.S. 12, the highway would act as a barrier to sediment transport from ground disturbance so that no impact on steelhead would occur.

Table 3-3. Priority Species and Habitats Occurring in the Study Area

Common Name	Scientific Name	Status	Occurrence	Likely in Study Area?
Priority Species				
Swainson's hawk	<i>Buteo swainsoni</i>	State monitor	One record, 1.8 miles west of Structure 7/2. Forages in grasslands, sagebrush-steppe, and juniper woodlands; nests in trees.	Yes
Ring-necked pheasant	<i>Phasianus colchicus</i>	Game species	Priority Habitat Species habitat polygons are associated with swales or riparian areas that are crossed near Structures 7/2, 23/2, and 24/3; habitat polygons also occur 0.2 to 1.2 miles south of the ROW from Structures 19/2 to 20/6, and northwest of the ROW near Structure 26/2.	Yes
Merriam's and Rio Grande wild turkey	<i>Meleagris gallopavo</i>	Game species	Recorded 0.6 mile downstream of the stream crossing near Structure 23/2, and in the Tucannon River valley 0.75 mile east of the Tucannon River Substation.	Yes
Columbia spotted frog	<i>Rana luteiventris</i>	No federal status, state candidate	Multiple records in Robinson Creek, both the North and South Forks of the Touchet River, and in the Tucannon River 0.75 east of the Tucannon River Substation. Occupies and breeds in aquatic, riparian and floodplain habitat.	Yes
Northern leopard frog	<i>Rana pipiens</i>	Federal species of concern, state endangered	One record in Mill Creek about 1.1 miles southwest of the Walla Walla Substation. Not recorded in any streams crossed by the ROW.	No
Rocky Mountain tailed frog	<i>Ascaphus montanus</i>	Federal species of concern, state candidate	Three records in the North Fork Touchet River about 2 miles downstream of the ROW. Inhabits fast-moving, coldwater streams.	Yes
Western toad	<i>Bufo boreas</i>	Federal species of concern, state candidate	Recorded 0.5 mile south of the ROW near Structure 28/4; five records in Robinson Creek and the North Fork Touchet River between Structures 35/1 and 36/3. Likely to occur in ponds and slow-moving streams within the action area.	Yes

Common Name	Scientific Name	Status	Occurrence	Likely in Study Area?
Priority Habitats				
Riparian Zone		State priority habitat	Designated riparian habitat occurs on the ROW between the following existing structures: <ul style="list-style-type: none"> • 7/2 and 7/3 • 23/2 and 23/3 • 32/4 and 32/5 • 35/3 and 35/4 • 35/5 and 35/6 • 36/2 and 36/3 • 40/1 and 40/2 • 41/4 and 41/5 • 41/6 and 42/1 • 43/6 and 44/1 	Yes
Cliff/bluff habitat		State priority habitat	On the west side of the Robinson Creek-North Fork Touchet River confluence near existing Structure 35/5, not in the ROW but facing toward it.	No
Mule deer habitat		State game habitat	The ROW traverses mule deer habitat from approximately Structures 37/2 to 45/3.	Yes

Source: Washington Department of Fish and Wildlife 2010b

Structure 35/3 would be replaced in its existing location, which is within 300 feet of the Wolf Fork Touchet River. The Wolf Fork Touchet River supports two federally listed fish species, middle Columbia steelhead and Columbia River bull trout. Because no work would take place within the bed or banks of the river, the potential for sediment-related impacts would be low.

An existing hardened ford across Wolf Fork Touchet River would be used by construction vehicles to access structures located in line mile 34 and line mile 35, and a ford across South Fork Touchet River would be used to access Structure 32/5. Likewise, a ford on North Patit Creek would be used to access Structures 43/6 and 44/1, a ford on Coppei Creek would be located near Structures 23/2 and 23/3. Use of these fords for construction access has the potential to directly affect steelhead and bull trout, if these species are present at the fords at the time of use, by contributing small quantities of sediment to the creek from vehicle tires and possibly physically disturbing steelhead, bull trout, and other fish in the vicinity of the ford. The use of the ford would be infrequent and of such short duration that it would likely have a negligible effect. Therefore, impacts on federally listed fish species from removal of existing and installation of new structures, including ford use, are expected to be low.

Access Roads

Reconstructing existing access roads would have relatively little potential to affect fish or fish habitat. Culvert replacements would be done in the dry to avoid potential impacts on water quality during installation. New access roads would result in a small incremental increase in precipitation runoff, and the potential for road-related sediment to enter surface waters. However, new access roads would be pervious, allowing stormwater infiltration. Erosion control BMPs, as described under Mitigation Measures below, would be used to minimize impacts on water quality and fish habitat. The impact on fish and wildlife from access roads is considered low.

Road reconstruction would take place on access roads within 300 feet of Dry Creek and North Patit Creek, both of which support federally listed middle Columbia steelhead. However, because the Proposed Action would include the implementation of standard erosion control measures (see Mitigation Measures below), no impacts on steelhead as a result of access road construction or reconstruction are anticipated. Culverts would be replaced as needed on access roads, but all replacements would be done in the dry to prevent water quality impacts. The impact on steelhead from access roads is considered low.

Staging Areas

Staging areas have not specifically been identified for the Proposed Action. However, BPA will require the construction contractor to locate all staging areas outside stream channels in level, open, and already developed or disturbed sites. No impacts on fish, including federally listed fish species, or fish habitat are anticipated as a result of staging the Proposed Action.

Tensioning Sites and Counterpoise

Tensioning sites are required at various points in a specific alignment with the proposed support structures and conductor alignment. Since the tensioning equipment would likely be vehicle- or trailer-mounted, these sites would need to be accessible to vehicles. Tensioning sites would pose

no special concerns for fish. There would be no impact on fish, including federally listed fish species, or fish habitat from installing tensioning sites and counterpoise.

Operation and Maintenance

Maintenance activities would require access by vehicles during line inspections a few times each year. Occasionally, equipment such as insulators may need replacement. Vegetation management activities, including removal or pruning of danger trees and control of noxious weeds in the ROW, would continue. Weed control would include the use of herbicides by an individual licensed to apply these chemicals and in compliance with all legal requirements and herbicide manufacturers' recommendations. Only approved herbicides would be applied near streams or wetlands, and buffer distances would be observed in accordance with BPA's *Transmission System Vegetation Management Plan* (Bonneville Power Administration 2000b)

Impacts on fish and fish habitat, including federally listed fish species, from operation and maintenance of the Proposed Action are considered low.

Right-of-Way Easement Acquisition

The Proposed Action would result in future widening of the transmission line ROW through easement acquisition. Approved BPA vegetation management practices would be implemented in the new ROW, once acquired. As on the existing ROW, impacts on fish and fish habitat, including federally listed fish species, from ROW easement acquisition would be low.

Danger Tree Removal

Riparian vegetation has been identified as an important factor in maintaining temperature in the Walla Walla River watershed streams. Riparian vegetation is also important for recruiting large wood into streams. Large wood is an important component of fish habitat as it provides cover and complexity, protects stream banks, and can cause local scour resulting in pool formation. If trees in riparian corridors within the study area are removed, there is the potential for a reduction in stream shading and habitat functions. However, the smaller tributaries in the study area are either well shaded with low-growing vegetation, or are not shaded at all. Therefore, very few trees would be removed that would have any effect on shading of small streams. In the case of larger streams, trees that would be removed would likely be located some distance from the stream, where their influence on shading would be minimal. Of the trees identified for removal as part of this Proposed Action, only one small tree is located near a larger, fish-bearing stream.

Work associated with danger tree removal activities that would occur in or near fish-bearing streams also has the potential to result in increased erosion and would have the potential to affect fish habitat. Of the 217 danger trees that would be removed, approximately 40 trees would be located within 300 feet of fish-bearing streams. Impacts resulting from the removal of these danger trees would be minimized through mitigation measures to reduce disturbance, erosion, and sedimentation. It should also be noted that danger trees would be removed under the No Action Alternative as part of the vegetation management of the existing line.

Impacts on fish and fish habitat, including federally listed fish species, from danger tree removal are considered low.

Wildlife and Their Habitat

Removal of Existing and Installation of New Structures

Noise and activity associated with construction work would likely result in some short-term behavior modification by area wildlife. Habitat loss associated with structure footprints would only occur within the existing ROW and would result in a temporary loss of vegetation already subject to ongoing vegetation management activities. Clearing would occur before the nesting season, so no nests would be lost. Wildlife would have limited ability to use resources in disturbed areas during the year of construction and likely for 1 or 2 years thereafter.

Indirect impacts from noxious weed infestation of wildlife habitat could occur as noxious weeds establish themselves in the disturbed area surrounding structures; however vegetation management and mitigation measures specific to the spread of noxious weeds (see Section 3.4, Vegetation) within the study area would minimize that impact. As such, impacts on wildlife and their habitat associated with removal of existing and installation of new structures are considered low.

Access Roads

Use of roads during construction would result in a slight increase in noise and activity levels compared to existing conditions. However, no appreciable wildlife response to construction activities would be expected. Overall, less than 0.5 mile of access roads would be constructed and approximately 13.5 miles of access roads would be reconstructed. On roads requiring improvement, reconstruction, or construction, both construction and subsequent use would involve noise and activity levels substantially higher than existing conditions. This would likely result in some short-term behavior modifications by area wildlife. This effect would be considered low with respect to common wildlife species, all of which can be expected to have robust populations that would be minimally affected by the temporary and localized construction activities associated with the Proposed Action. Impacts on wildlife and their habitat from road construction or reconstruction are considered low.

Staging Areas

Potential impacts associated with staging areas would be the same as those associated with removal of existing and installation of new structures, but would differ slightly in magnitude because the affected staging areas would be somewhat larger. Nonetheless, this impact would be low because BPA would attempt to locate staging areas in industrial or paved areas. If these areas are not feasible for the location of staging areas, disturbed or common habitat types outside of sensitive habitat areas would be used for staging areas. These areas would be allowed to return to existing conditions after construction has been completed.

Tensioning Sites and Counterpoise

Potential impacts associated with tensioning sites and counterpoise would be the same as those associated with removal of existing and installation of new structures, but would differ slightly in magnitude because the structures have larger disturbance footprints. Nonetheless, this impact would be considered low because it would only occur in the existing ROW and the sites would be allowed to return to their previous condition.

Operation and Maintenance

The updated transmission line would likely require less maintenance work, compared with the existing transmission line, due to the newer condition of the facilities and structures once installed. The types of activities (e.g., vegetation management, roadway maintenance activities, culvert maintenance activities, and transmission line maintenance activities) would be the same as those that currently occur; however the frequency may be less. Maintenance activities could remove trees and temporarily displace wildlife from work areas, but impacts are expected to be low.

Certain bird species are relatively more prone to collisions with power lines, especially the ground wires located at the top of the structures (Meyer 1978; James and Haak 1979; Beaulaurier 1981; Beaulaurier et al. 1982; Faanes 1987). Smaller migratory birds are at risk, but generally not as prone to collision because of their small size, their ability to quickly maneuver away from obstacles, and the fact that they often migrate high enough above the ground to avoid transmission lines. Raptor species are less likely to collide with power lines, possibly because they have excellent eyesight and tend to not fly at dusk or in low visibility weather conditions (Olendorff and Lehman 1986).

The principal bird species that could be prone to collide with power lines is Swainson's hawk, which is known to nest within 2 miles of the ROW and likely forages in and along the ROW.

Bird mortality as a result of collisions with conductors and structures would remain at current levels, because the lines would remain in the same location with the same type of structures. Additionally, new overhead ground wire would not be installed on new sections of the line. Birds tend to be more likely to strike ground wires, which are much smaller in diameter than conductors and normally span the top of the structure.

Overall, operation and maintenance impacts on wildlife are considered low.

Right-of-Way Easement Acquisition

The Proposed Action would result in future widening of the transmission line ROW through easement acquisition. Approved BPA vegetation management practices would be implemented in the new ROW, once acquired. These practices are not anticipated to result in a substantial reduction in available habitat. Impacts on wildlife from ROW easement acquisition are considered low.

Danger Tree Removal

Danger trees of various sizes and species would be removed. Some of these trees are located in riparian areas. Wildlife, especially nesting birds, could be harmed or killed during tree felling or could be temporarily displaced by the removal of the trees. Indirect impacts could occur as a result of habitat loss and modification, including habitat degradation; however, given the relatively small number of trees to be removed, it is unlikely that wildlife habitat would be limited by danger tree removal activities. Impacts on wildlife and their habitat from danger tree removal activities are considered low.

State Priority Habitat and Special-Status Wildlife Species

Impacts on state priority species and habitats (Table 3-3) would be similar to those described above for wildlife species in general. Swainson's hawk would likely avoid areas where construction activities are ongoing because of the noise and increased human presence. The three amphibian species potentially present in the study area (Columbia spotted frog, Rocky Mountain tailed frog, and western toad) would only be found within or closely associated with aquatic habitat. Minimization measures incorporated into the design of the Proposed Action (i.e., limiting the disturbance area near aquatic habitats, minimizing the use of access roads in such habitats, and implementing temporary erosion and sediment control measures to protect water quality) would minimize the potential for impacts on these species.

Although no golden eagle roosts, nests, or occurrences have been identified within the study area, the study area is within the range of the golden eagle, and golden eagles may be expected to forage for their preferred prey (primarily rabbits and ground squirrels) throughout the study area.

Noise and activity associated with construction would likely exclude golden eagles from their customary foraging areas, if any eagles were present in the vicinity. Any such exclusion would be localized, temporary, and would affect, at most, a very small fraction of any eagle's home range (DeLong 2004). Thus, direct effects of the Proposed Action on golden eagles would be temporary and low. The Proposed Action could indirectly affect eagles through the risk of collision or electrocution following project completion; however, this probability is low, and would not be higher than the risk associated with present conditions.

Limited tree removal and/or modification of aquatic or riparian habitat associated with access road reconstruction or construction would have a low likelihood of affecting priority habitat species because of the following conditions:

- Bird species make only limited use of this habitat as part of a mosaic of multiple habitat types and would not experience distribution or population limitations because of the proposed impacts, which are temporary and limited in spatial extent.
- The Columbia spotted frog and western toad use ponds and low-energy streams that would not experience appreciable disturbance due to the proposed work in aquatic habitats.
- The Rocky Mountain tailed frog would experience only a temporary habitat fragmentation in association with culvert and related work in aquatic habitat, effects which do not alter breeding activities and are temporary in duration.

In consideration of these measures, impacts on state priority species and habitats are considered low.

As described above, there is no potential for any federally listed wildlife species to be affected by the Proposed Action. Potential impacts on threatened or endangered fish species are described in the Fish and Essential Fish Habitat section above.

3.5.3 Mitigation—Proposed Action

The following mitigation measures and BMPs would be implemented to minimize potential construction-related water quality impacts and to protect fish and wildlife habitat.

- To minimize impacts on federally listed salmonids, the use of fords would be avoided wherever an alternative route is available.
- BPA would implement the USFWS BMPs to minimize adverse effects on the Pacific lamprey to the extent practicable.
- All culvert replacement work would be done in the dry to avoid impacts on fish species.
- When working in or near water bodies and wetlands (including buffer areas), disturbance would be kept to the minimum necessary, and staking or flagging would be installed to restrict vehicles and equipment to designated routes and areas.
- A stormwater pollution prevention plan would be prepared, addressing measures to reduce erosion and runoff and stabilize disturbed areas.
- As practicable, existing structures within 50 feet of waterways would be cut at the base rather than excavated to minimize soil disturbance.
- Vegetative buffers would be retained, where possible, to prevent sedimentation into water bodies.
- To minimize erosion, sedimentation, and soil compaction, as much work as possible would be conducted during the dry season, when streamflow, rainfall, and runoff are low.
- Sediment barriers and other suitable erosion- and runoff-control devices would be installed, where needed, prior to ground-disturbing activities at construction sites to minimize offsite sediment movement.
- No construction vehicles or equipment would be placed within 50 feet of any stream or wetland unless authorized by a permit or on an existing road.
- Tensioning sites would not be located within 50 feet of streams, wetlands, or *floodplains*.
- Roads and structures would be located to avoid wetlands, whenever possible.
- Roads would be designed and constructed to minimize drainage from the road surface directly into water features, including wetlands.
- A spill prevention control and countermeasure plan would be developed to minimize the potential for spills of hazardous materials.
- Spill prevention materials would be on site and with equipment.
- Vehicles and equipment would be maintained in good working order to prevent oil and fuel leaks.

3.5.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Unavoidable impacts on fish and wildlife resources in the study area would be associated with construction noise and activity, temporary loss of vegetation associated with construction work, and temporary impacts on aquatic habitat associated with road work and erosion from unvegetated surfaces. The design of the Proposed Action and implementation of the mitigation measures described above would minimize these potential impacts.

3.5.5 Cumulative Impacts—Proposed Action

Agriculture, primarily dryland wheat farming, is responsible for most of the past and ongoing impacts on wildlife habitat in the study area. Other activities that have affected and continue to affect wildlife habitat include livestock grazing and vegetation control along roads and utility corridors, as well as wildfire. Current and likely future activities and projects are expected to cumulatively affect wildlife habitat.

Vegetation control routinely occurs along highways, county roads, residential roads, and utility corridors in the study area. Vegetation control activities typically include herbicide applications to control vegetation and noxious weeds, and mechanical vegetation removal. BPA performs similar vegetation control activities along its transmission line ROW.

Impacts on fish and wildlife habitat from the Proposed Action are expected to be low compared to the combined cumulative impacts of past, ongoing, and future habitat alteration in the study area. The acreage of habitat affected within the ROW is small compared to the area affected by agricultural activities, livestock grazing, wildfire, and vegetation control along roads and other transmission lines. One exception is the potential impact of the transmission line corridor in weed-infested areas. Because corridors act as a path for the movement of weed species and because of the difficulty of controlling many weed species, the cumulative impact of the potential for the Proposed Action to spread weed species and thereby degrade wildlife habitat, especially with regard to grazing and browsing species like deer and elk, is considered moderate.

3.5.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, construction-related impacts on fish and wildlife would not occur. Continued operation and maintenance of the existing transmission line including the removal of danger trees and other tall vegetation would have impacts on fish and wildlife similar to those described above, although the frequency of maintenance events and the level of associated impact could increase under the No Action Alternative as structures deteriorate over time and more substantial maintenance activities are required. If it were necessary to perform repairs on an emergency basis, it would not be possible to plan or time them to minimize impacts.

3.6 WATER RESOURCES AND WATER QUALITY

3.6.1 Affected Environment

Surface Water

The study area for this section includes all surface waters that traverse the transmission line ROW or access road system, or that are located within 300 feet of any existing or proposed infrastructure. The majority of the study area is located in the Walla Walla River watershed, a Middle Columbia River tributary. Within the Walla Walla River watershed, the study area crosses the Mill Creek, Dry Creek, Coppei Creek, and Touchet River subwatersheds (in order from southwest to northeast). About 1,500 feet of the northeastern portion of the study area is located in the Tucannon River watershed, which drains to the Snake River.

Appendix C provides a list of all surface waters located in the study area. Surface waters are delineated relative to their distance in miles from the Walla Walla Substation (e.g., line mile 1 is located in close proximity to the Walla Walla Substation; line mile 47 is located in close proximity to the Tucannon River Substation), as well as their location relative to proposed and existing infrastructure. Surface waters are also classified according to the WDNR stream typing system, in accordance with WAC 222-16-030, as follows:

- Type S: shorelines of the state
- Type F: fish-bearing waters
- Type N: non-fish-bearing waters
 - Type Np: perennial, non-fish-bearing waters
 - Type Ns: seasonal, non-fish-bearing waters
- Type U: unidentified waters

None of the streams in the study area is currently listed as a Category 5 water body (impaired) for any water quality constituents by the Washington State Department of Ecology (Ecology) (2008). The portion of Coppei Creek that is crossed by the transmission line corridor is listed as a Category 4A water body, meaning that it is impaired, but a TMDL addressing that impairment has been developed. Coppei Creek is included in the Walla Walla River TMDL for pH, temperature, and dissolved oxygen, which were approved by the U.S. Environmental Protection Agency (EPA) in 2007 (Washington State Department of Ecology 2008). High summer temperatures have also been noted by Ecology as a water quality concern for the North Fork Touchet River (Washington State Department of Ecology 2008). Stohr et al. (2007) concluded that the North Fork Touchet River and Wolf Fork Touchet River were vulnerable to the effects of near-stream development and that future loss of riparian vegetation, alterations of the stream channel, or changes in sediment load could adversely affect temperature in these streams.

Water quality conditions within the Walla Walla River and Tucannon River watersheds are described below.

Walla Walla River Watershed

Mill Creek

Three small tributaries to Mill Creek cross the study area in the first 3 miles of the alignment. Mill Creek originates in the Blue Mountains and includes area in both Oregon and Washington. Mill Creek joins the Walla Walla River downstream of the City of Walla Walla, and the tributaries that cross the study area are some of the last tributaries before Mill Creek flows into the Walla Walla River. All of these channels appear to be Type Ns (seasonal non-fish-bearing), although they are mapped by WDNR (2010b) as Type U (unknown).

Dry Creek

Dry Creek drains a 239-square-mile basin with elevations ranging from 4,600 feet in the Blue Mountain headwaters to 460 feet at the confluence with the Walla Walla River near Lowdon, Washington (Stohr et al. 2007). Most of this area, including the portion of the watershed located within the study area, is used for wheat agriculture. As its name implies, Dry Creek is known to drop to very low water levels during summer months, either through naturally occurring hydrological conditions, water withdrawals, or some combination of both (Kuttel 2001). This

stream is deeply incised in places, and carries a large sediment load that contributes to substrate embeddedness (Kuttel 2001).

Within the study area, Dry Creek has a limited riparian buffer between the stream and cultivated fields, although a portion of the riparian zone was replanted at some point between November 8, 2002, and August 1, 2005 (Google Earth, Inc. 2010). Large woody debris is lacking, and summer temperatures can exceed 75 °F (Kuttel 2001, Mendel et al. 2006), high enough to be lethal to salmonids. Lack of shade, low gradient, and water withdrawals contribute to the high temperatures common in this stream during summer (Kuttel 2001).

Between line miles 3 and 4, the study area crosses four unnamed tributaries to the Mud Creek subwatershed, which itself is a tributary to Dry Creek. All of these channels have been mapped by WDNR (2010b) as Type U (unknown), although they appear to be either Type Ns (seasonal non-fish-bearing) or Type Np (perennial non-fish-bearing). Mud Creek is also mapped by WDNR (2010b) as a Type U (unidentified) channel, and supports a narrow (10 to 30 feet wide) strip of uncultivated riparian vegetation in the study area. At times in 2001, water temperatures in Mud Creek exceeded 75 °F (Mendel et al. 2003).

Line miles 9 to 20 drain to Spring Valley Creek, which joins Dry Creek just west of the ROW at about line mile 7.

Touchet River

The Touchet River is the largest Walla Walla River tributary in the study area. Line miles 20 to 47 drain to the Touchet River by several Type S (shoreline of the state) and Type F (fish-bearing) streams, including Coppei Creek, Whiskey Creek, South Fork Touchet River, Wolf Fork Touchet River, North Fork Touchet River, West Patit Creek, and North Patit Creek, as well as several small unnamed channels. Ecology conducted water temperature monitoring and modeling in the Upper Touchet River basin in support of the Walla Walla River tributaries temperature TMDL study. That study concluded that a significant increase in shade was required in these streams to lower temperatures for compliance with water quality standards (Stohr et al. 2007).

Coppei Creek

As noted above, in the description of the study area, Coppei Creek is included in the Walla Walla tributaries' TMDL allocations for pH, dissolved oxygen, and temperature (Washington State Department of Ecology 2008). In 2001, Kuttel (2001) identified a need for riparian revegetation along Coppei Creek, as much of the channel was subject to farming up to the banks of this stream. Since that time, a considerable portion of this stream has been replanted and plantings can be seen in recent aerial photos of this stream (Google Earth, Inc. 2010). Presumably, this additional riparian vegetation would continue to provide increased shade to Coppei Creek, moderating summer temperatures. In addition, a large portion of the creek is protected by a conservation easement (Kuttel 2001).

Surface water diversions alter the flow regime to an unquantified degree and Lower Coppei Creek might be a thermal barrier to salmonid fish species in July and August (Kuttel 2001). Sediment runoff from agricultural lands and eroding banks has caused considerable sediment

embeddedness in Coppei Creek (Kuttel 2001). Channel modification and bank armoring have also reduced off-channel aquatic habitat and connectivity (Kuttel 2001).

Whiskey Creek

Whiskey Creek appears to have relatively good temperature control compared to other streams in the Walla Walla River watershed. In 1999, temperature monitoring indicated that temperatures in Whiskey Creek never exceeded 65 °F that year, whereas temperatures at sites further downstream routinely exceeded 65 °F and even reached as high as 78 °F (Kuttel 2001).

South Fork Touchet River

Kuttel (2001) noted that several fords, many of which have likely been in use for years, cross the South Fork Touchet River. This river lacks large wood and shade and has had serious bank erosion problems resulting in deeply incised banks (Kuttel 2001). Fine sediment from upstream logging and pool infilling has also been reported as a problem in the South Fork Touchet River (Kuttel 2001). Ecology found that the South Fork Touchet River has higher stream temperatures than the Wolf and North forks of the Touchet River (Stohr et al. 2007). This was attributed in part to the bedrock condition of the streambed at the South Fork Touchet River sampling site. The lack of cobble and gravel substrate prevents interstitial flow that can help moderate stream temperatures (Stohr et al. 2007).

Wolf Fork Touchet River

The lower reach of the Wolf Fork Touchet River (the portion of the river in the study area) has been subject to the effects of a reduced riparian buffer, including eroding banks, aggraded channel, lack of large wood, and moderately high temperatures. Erosion from logging roads has been a significant source of fine sediment in this basin, and relatively high substrate embeddedness has been reported (Kuttel 2001).

North Fork Touchet River

As with many streams in the Walla Walla River watershed, temperatures in the North Fork Touchet River can be somewhat high with daily maximum temperatures commonly reaching 60 °F to 70 °F from June through September (Kuttel 2001). This stream provides steelhead and bull trout habitat (Washington Department of Fish and Wildlife 2010b, 2010c). High water temperatures downstream have been identified as a factor that has reduced bull trout rearing habitat in this system.

Patit Creek

The study area crosses two branches of Patit Creek: West Patit Creek and North Patit Creek. Both of these branches are designated critical habitat for middle Columbia River steelhead. Temperature monitoring of Patit Creek by Ecology in 2002 detected relatively high maximum and 7-day average daily maximum temperatures of 72.7 °F and 69.4 °F, respectively (Stohr et al. 2007).

Tucannon River Watershed

The Tucannon River, a tributary to the Snake River, originates in the Blue Mountains southeast of the study area. Portions of the Tucannon River are listed under Section 303(d) of the Clean Water Act as impaired for high water temperatures, and lower reaches have also been listed for high pH and *turbidity* (Washington State Department of Ecology 2008). Approximately 1,500 linear feet of the transmission line corridor are located in the Tucannon River watershed. Only one Tucannon River tributary stream originates in the study area. WDNR (2010b) mapped an unnamed tributary as beginning at the Tucannon River Substation (eastern terminus of the study area); however, this stream actually has no defined channel in the vicinity of the Tucannon River Substation east of Hartsock Grade Road. No water resource information is available on this small tributary to the Tucannon River.

Groundwater

The study area for the *groundwater* analysis includes the groundwater basin associated with the Walla Walla River watershed, which underlies the transmission line ROW and access road system.

This section draws from groundwater studies prepared by Ecology to ascertain the availability of groundwater in the Walla Walla River watershed (MacNish et al. 1973), and in support of their load and waste load allocation determinations (Marti 2005). A basalt *aquifer*, more than 2,000 feet thick, underlies the entire Walla Walla River watershed (MacNish et al. 1973). Marti (2005) found that the Walla Walla River, the Touchet River, and Mill Creek had negative hydraulic gradients (i.e., net flow of water flows from the stream to groundwater), and were losing water in their upper reaches. The distribution of coarse and fine sediment material in the confining layers that overly the aquifer influences the movement of groundwater and discharge of groundwater to surface springs (Marti 2005).

There are more than 2,000 wells in the Walla Walla River watershed, mostly used for irrigation (Marti 2005). No designated sole source aquifers are located in the study area (U.S. Environmental Protection Agency 2010a).

3.6.2 Environmental Consequences—Proposed Action

Surface Water

Removal of Existing and Installation of New Structures

The Proposed Action would result in 0.1 to 0.2 acre of ground disturbance from the removal of each existing structure and the installation of a new structure. The two switch platforms that would be required for the connection of the Dayton Tap Line would be installed within the disturbance footprint of the adjacent structures and would not result in additional ground disturbance. In or near sensitive habitats (such as fish-bearing streams), disturbance areas would be reduced to 0.06 acre per structure, where feasible. Although these areas would be revegetated, the structure sites would have a small area of exposed bare soil for a few weeks that could, if unchecked, erode and be a source of sediment to nearby streams. Generally, this would fall within the range of current conditions, as most of the existing and proposed structures are located in cultivated fields that are frequently laid bare for plowing and planting. Implementation of the

mitigation measures below would reduce these potential construction-related water quality impacts. As such, water quality impacts from the removal of existing and installation of new structures would be low.

Access Roads

Access road construction would require clearing and grading that would temporarily expose soil to potential erosion and transport of sediment to surface waters. Implementation of the mitigation measures below would reduce the potential for erosion and adverse water quality impacts associated with access road construction. In addition, new and reconstructed access roads would be composed of a compacted gravel surface, so precipitation would infiltrate the road surfaces. No additional impervious surfaces would be created. Roads would also be constructed with drainage ditches, culverts, and/or water bars, as necessary, to prevent potential surface erosion or other road failure. Access road construction and reconstruction would not require in-water construction. All culvert installations or replacements would occur in-the-dry to avoid potential turbidity impacts on surface waters.

Some access roads include fordable crossings of water bodies. Use of fords along access roads during construction may result in some erosion along the streambed and a transient increase in turbidity levels either at the time of use in perennial streams, or the next time water flows in seasonal stream channels. Implementation of the mitigation measures described below would reduce the potential for construction-related erosion leading to impacts on water quality in these areas and along other portions of the study area. As such, water quality impacts from the construction and reconstruction of access roads in the study area would be low to moderate.

Staging Areas

Staging areas have not specifically been identified for the Proposed Action. However, BPA would require the construction contractor to locate all staging areas outside stream channels in level, open, and already developed or disturbed sites, where feasible. No impacts on surface waters are anticipated as a result of staging the Proposed Action.

Tensioning Sites and Counterpoise

Tensioning sites are required at various points in a specific alignment with the proposed support structures and conductor alignment. Because the tensioning equipment would likely be vehicle- or trailer-mounted, these sites would need to be vehicle accessible. Tensioning sites would pose no special concerns for surface waters.

Buried counterpoise would be replaced as needed at structures in line mile 1 and the last half of line mile 47 (the areas where overhead ground wires are located). Replacement of this infrastructure would have low impacts on surface waters in this area because impacts would be temporary, located in approximately the same location as the existing infrastructure, and small in scale, and revegetation would occur in one growing season. Implementation of the mitigation measures described below would further reduce impacts from placement of buried counterpoise.

Operation and Maintenance

Operation and maintenance activities would not change from existing conditions. Generally, these activities would have no impact on surface waters. Maintenance activities would require access by vehicles during line inspections a few times each year. Occasionally, equipment such as insulators may need replacement. Vegetation management activities would continue, including removal or pruning of danger trees and control of noxious weeds in the ROW. Consistent with BPA's *Transmission System Vegetation Management Program* (Bonneville Power Administration 2001b), trees and brush in riparian zones would be selectively cut to include only those that are in violation of current BPA ground-to-conductor clearance electrical safety standards. Trees would be topped where shrubs are not present to provide shade and a silt buffer. Also, only BPA-approved herbicides using the specified buffer width from the edge of any water resource would be used for stump treatment. Weed control would include the use of herbicides by an individual licensed operator, in compliance with all legal requirements and herbicide manufacturers' recommendations. Only approved herbicides would be applied near streams or wetlands, and buffer distances would be observed in accordance with BPA's *Transmission System Vegetation Management Program* (Bonneville Power Administration 2000b).

Water quality could be directly affected by increased turbidity from erosion and sedimentation associated with danger tree removal as part of maintenance activities. Increased sedimentation could disturb and resuspend fine sediment within the active channel and potentially expose bank soils to erosive hydraulic forces. Sediments that reach downstream areas could fill pools and interstitial spaces in gravel and cobble substrates that may otherwise provide spawning and rearing habitat for native fish species. Temporary increases in turbidity associated with danger tree removal during maintenance activities would not exceed the terms and conditions of permits that would be obtained for the Proposed Action or any regulatory thresholds. Because the disturbance would be isolated to specific locations, would be temporary, and would not exceed water quality parameters, the direct impacts on water quality would be low.

Riparian vegetation has been identified as an important factor in maintaining temperature in water bodies in the Walla Walla River watershed. If trees in riparian corridors are removed, there is the potential for a reduction in stream shading. However, the smaller tributaries are either well shaded with low-growing vegetation, or are not shaded at all. Therefore, very few trees would be removed that have any effect on shading of small streams. The larger streams that are shaded by trees large enough to constitute a hazard to transmission lines are generally located in larger valleys spanned by the transmission line. The reduction in tree cover from danger tree removal would be small relative to the amount of cover along a particular stream corridor.

Impacts on surface waters from operation and maintenance of the Proposed Action would be low.

Right-of-Way Easement Acquisition

The Proposed Action would result in future widening of the transmission line ROW through easement acquisition. Approved BPA vegetation management practices would be implemented in the new ROW, once acquired. Many of the operation and maintenance activities listed above

would be conducted in the widened ROW. Generally, these activities would have low impacts on surface waters.

Danger Tree Removal

During the construction of the Proposed Action, approximately 37 trees would be removed in or near riparian habitats. Surface water quality could be directly affected by increased turbidity from erosion and sedimentation associated with danger tree removal. However, based on the relatively low number of danger trees that would be removed near surface waters in isolated locations, this impact is considered to be low. Danger tree removal could indirectly affect water quality by increasing exposure of surface waters to solar radiation, thereby increasing water temperatures. As discussed in Section 3.5, Fish and Wildlife, smaller tributaries in the study area are either well shaded with low-growing vegetation, or are not shaded at all. Therefore, very few trees would be removed that would have any effect on shading of small streams. In the case of larger streams, trees that would be removed would likely be located some distance from the stream, where their influence on shading would be minimal. Furthermore, the reduction in tree cover from danger tree removal would be small relative to the amount that exists along a particular stream corridor. Indirect impacts on water quality from danger tree removal would be low.

Groundwater

The Proposed Action would have no impact on groundwater during the construction phase. None of the proposed structures or new and reconstructed access roads would affect infiltration of surface water to groundwater, because they would not result in the creation of new, impervious surfaces.

During operation and maintenance, the only potential effect on groundwater would be associated with the application of chemical herbicides for vegetation management. However, only approved herbicides would be used by a licensed applicator and only in quantities that would degrade in the surface soil or plant surfaces in accordance with BPA's *Transmission System Vegetation Management Plan* (Bonneville Power Administration 2000b). With standard application procedures, no measureable transmission of these substances to groundwater would occur.

3.6.3 Mitigation—Proposed Action

Standard BMPs, in accordance with the *Stormwater Management Manual for Eastern Washington* (Washington State Department of Ecology 2004), would be implemented as part of the Proposed Action to manage stormwater from construction sites and minimize potential water quality impacts. BMPs would include, but would not be limited to, the following measures applied wherever they are applicable.

- All culvert replacement work would be done in the dry to avoid impacts on water quality.
- When working in or near water bodies and wetlands (including buffer areas), disturbance would be kept to the minimum necessary, and staking or flagging would be installed to restrict vehicles and equipment to designated routes and areas.
- A stormwater pollution prevention plan would be prepared, addressing measures to reduce erosion and runoff and stabilize disturbed areas.

- As practicable, existing structures within 50 feet of waterways would be cut at the base rather than excavated to minimize soil disturbance.
- Vegetative buffers would be retained, where possible, to prevent sedimentation into water bodies.
- To minimize erosion, sedimentation, and soil compaction as much work as possible would be conducted during the dry season, when streamflow, rainfall, and runoff are low.
- Sediment barriers and other suitable erosion- and runoff-control devices would be installed, where needed, prior to ground-disturbing activities at construction sites to minimize offsite sediment movement.
- No construction vehicles or equipment would be placed within 50 feet of any stream or wetland unless authorized by a permit or on an existing road.
- Tensioning sites would not be located within 50 feet of streams, wetlands, or floodplains.
- Roads and structures would be located to avoid wetlands, whenever possible.
- Roads would be designed and constructed to minimize drainage from the road surface directly into water features, including wetlands.
- A spill prevention control and countermeasure plan would be developed to minimize the potential for spills of hazardous material.
- Spill prevention materials would be on site and with equipment.
- Vehicles and equipment would be maintained in good working order to prevent oil and fuel leaks.
- Whenever possible, Coppei Creek, Wolf Fork of the Touchet River, and Patit Creek would only be crossed once per year by BPA upon completion of construction.
- Where appropriate, the approaches to streams and crossings of streams would be covered in clean cobble rock to minimize erosion and sedimentation from BPA and landowner use. Steel plates and/or grates may also be used for driving surfaces across streams to minimize erosion and sedimentation, where appropriate.

3.6.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Implementation of the Proposed Action would generally result in low, temporary impacts on surface waters; however, because of the nature of the construction activities, these impacts would be unavoidable. Implementation of the mitigation measures described above would mitigate some of these temporary construction impacts.

3.6.5 Cumulative Impacts—Proposed Action

The Proposed Action would result in some construction-related water quality impacts (e.g., increased turbidity) and a less-than-measurable reduction in stream shading that could affect stream temperatures. Because these potential impacts would not result in a measureable change in water quality, however, the cumulative impacts on water resources would be low.

3.6.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, no construction or construction-related impacts on surface waters would occur. Operation and maintenance impacts would be similar to those associated with the Proposed Action. However, as the existing line ages, the frequency of maintenance

activity would likely be increased, as would the potential for unplanned emergency maintenance activities. Increased frequencies of transmission line maintenance may result in increased use of ford crossings, slightly raising the potential for impact on water resources. Regardless, the No Action Alternative would have almost no measureable impact on water resources.

3.7 WETLANDS

3.7.1 *Affected Environment*

Methods

The study area for the wetlands analysis generally includes all areas within 328 feet of the transmission line ROW. Specifically, the study area for wetlands includes a 328-foot radius around each existing and proposed structure and the same distance to either side of a new or reconstructed access road or designated route of travel.

The term wetland describes all identified areas exhibiting one or more wetland parameters that could be viewed during the field reconnaissance survey (hydrophytic vegetation, wetland hydrology, or mapped hydric soil). Some potential wetland areas and their general vegetative classification were identified using the USFWS wetland classification system (Cowardin et al. 1979). All such identified areas should be considered potential wetlands until field delineations are completed and regulatory agencies (i.e., U.S. Army Corps of Engineers [Corps], Ecology, and local governments) confirm the areas as regulated wetlands. A wetland delineation and comprehensive functional assessment will be conducted in areas of unavoidable impact during the project permitting phase.

Other potential wetlands in the study area were identified by reviewing publicly available information such as federal and state maps of wetlands and water bodies, topographic maps, hydric soils databases, city and county wetland inventories, and current and historic aerial photographs. Subsequent to this review, a wetland determination was conducted during the week of October 25, 2010, to confirm the presence or absence of wetland features. The field survey was used to verify previously mapped wetlands (e.g., in the National Wetlands Inventory) and areas identified as potential wetlands during the preliminary wetland inventory (e.g., on aerial photographs), and to look for unmapped wetlands on accessible parcels. Most of the study area was viewable from the ROW or public roads; however, field investigation was not possible in some of the remote areas because of lack of private property access, inaccessible landforms (steep hillsides), or land use (active agricultural use). Although a formal wetland delineation has not been conducted to precisely determine and establish wetland boundaries, approximate wetland size within the study area was estimated. All impact calculations were estimated by comparing the wetland boundaries identified by the determination with GIS layers of the features of the Proposed Action and would need to be refined with formal wetland delineations to be considered precise. The location and extent of these wetlands are depicted in Appendix A of the *Walla Walla–Tucannon River Transmission Rebuild Project Wetland Inventory and Reconnaissance Technical Memorandum* (ICF International 2010).

In order to assess the quality or function of wetlands that might be affected by the Proposed Action, selected wetlands were rated for quality and function using the *Washington State*

Wetland Rating System for Eastern Washington (Hruby 2004) The rating system takes into account both the potential and opportunity for a wetland to provide water quality, hydrology (flood and erosion), and habitat functions and provides a rating of how well the wetland can provide those functions. Wetlands selected for rating were those anticipated to receive a direct impact from structure replacements, access road construction or reconstruction, or construction-related travel as well as those anticipated to receive indirect impacts from project activities outside of the wetland but within the wetland buffer. Functional ratings are preliminary and appropriate for evaluating a wetland's relative level of function.

Wetlands in the Study Area

Using the methods described above, 20 wetlands were identified in the study area. With the exception of two wetland areas currently in agricultural production, all wetlands within the study area are characterized according to their vegetation cover as *palustrine emergent* (PEM), *palustrine scrub-shrub* (PSS), or a mix of PEM/PSS (Cowardin et al. 1979, Hruby 2004). Common plant species observed in the wetland areas include reed canarygrass, quackgrass (*Elymus repens*), bentgrass (*Agrostis* spp.), dock (*Rumex* spp.), cattail (*Typha latifolia*), Pacific willow (*Salix lasiandra*), black cottonwood, Douglas' hawthorn (*Crateaegus douglasii*), redosier dogwood, and sandbar willow (*Salix exigua*). Two wetland areas planted with winter wheat cannot be described in the Cowardin classification system because they had less than 30% vegetation cover. These two areas are considered wetlands because of the presence of increased surface wetness compared to the surrounding areas, a visible drainage path, and the need for culverts to drain these areas. These factors indicate that water may be present for a sufficient duration to meet wetland hydrology criteria.

Soil survey maps of hydric soils were used to assist in determining potential wetlands areas. The soil inventory (Natural Resources Conservation Service 2010) indicates three hydric soils or soils with hydric inclusions underlie the mapped portions of the study area: Ahtanum silt loam, 0 to 3% slopes, Beverly fine sandy loam and Riverwash.

Wetland hydrology is likely provided by the many unnamed creeks, springs, and drainage features scattered throughout the study area along with the South Fork Touchet River, North Fork Touchet River, and Wolf Fork Touchet River and their associated tributaries, as well as Dry Creek, Spring Valley Creek, Coppei Creek, Whiskey Creek, Wilson Creek, West Patit Creek, and North Patit Creek.

All the wetlands in the study area were rated as Category III or Category IV wetlands under the Washington State Rating System (Hruby 2004). Category III wetlands were considered to provide a moderate level of function, and Category IV wetlands were considered to provide a low level of function.

Table 3-4 summarizes the key characteristics of wetlands in the study area.

Table 3-4. Wetlands in the Study Area

Closest Existing Structures		Wetland ID	Cowardin Class	Approximate Size ¹ (Acres)	Identification Methods ²	Functional Level ³
7/2	7/3	A	PEM	2.1	Distant view from public road	Low
7/6	8/4	B	PEM/PSS	9.5	Distant view from ROW	N/A
7/8	8/1	C	Other ⁴	5.4	Viewed within the ROW	Low
8/3	8/4	D	Other ⁴	2.7	Viewed within the ROW	Low
8/7	8/8	E	PEM	1.7	Viewed within the ROW	N/A
20/2	20/4	G ⁵	PEM	0.4	Viewed from access road	N/A
23/8	24/1	H	PEM	2.1	Distant view from public road	N/A
24/4	24/5	I	PEM	0.8	Viewed from adjacent public road	N/A
24/6	25/3	J	PEM/PSS	2.4	Viewed from adjacent access road	Moderate
26/4	27/1	K	PEM/PSS	0.9	Viewed from adjacent access road	Moderate
27/6	28/1	L	PEM	0.4	View within ROW	N/A
30/2	30/3	M	PEM	0.5	View from existing access road	Moderate
35/1	35/2	N	PSS	0.9	Mapped as wetland in the National Wetlands Inventory, mapped as hydric soils, viewed at a distance from public road	Moderate; a WDFW PHS habitat is mapped within 330 feet of wetland (critical habitat for Chinook salmon, brown trout, bull trout, and steelhead trout). ⁶
35/5	35/7	O	PEM	1.4	Partially mapped hydric soil and distant view from public road	Low; a WDFW PHS habitat is mapped within 330 feet of wetland (critical habitat for Chinook salmon, brown trout, bull trout, and steelhead trout). ⁶
41/1	41/2	P	PEM/PSS	0.4	Viewed from existing access roads	Not rated; a WDFW PHS habitat is mapped within 330 feet of wetland (critical habitat for steelhead and rainbow trout). ⁶

Closest Existing Structures		Wetland ID	Cowardin Class	Approximate Size ¹ (Acres)	Identification Methods ²	Functional Level ³
43/6	44/1	Q	PEM/PSS	2.3	Viewed from driveway	Not rated; a WDFW PHS habitat is mapped within 330 feet of wetland (critical habitat for steelhead and rainbow trout). ⁶
45/3	45/4	R	PEM	0.5	Viewed from public road	N/A
46/1	46/2	S	PSS	0.6	Viewed from public road	N/A
46/3	46/5	T	PSS	0.6	Viewed from public road	Not rated; a WDFW PHS habitat is mapped within 330 feet of wetland (priority use area for Rocky Mountain elk). ⁶
46/5	47/1	U	PSS	2.1	Viewed from public road	N/A

Source: ICF International 2010

N/A = Functional level not assessed; no direct impacts; WDFW = Washington Department of Fish and Wildlife;

PHS = Priority Habitat and Species

¹ Approximate size as depicted on maps (i.e., within study area only)

² All wetlands were initially identified using aerial interpretation.

³ Functional level based on preliminary rating using the Washington State Department of Ecology Wetland Rating Form for Eastern Washington (Hruby 2004).

⁴ Currently a farmed wetland, tilled and planted in winter wheat, less than 30% vegetated at the time of the field reconnaissance. If allowed to naturally revegetate, would likely colonize with emergent vegetation similar to adjacent wetlands.

⁵ Wetland not within 328 feet of a structure or reconstructed road, but abuts an existing access road that will be used to access the transmission line under the Proposed Action.

⁶ WDFW PHS within 330 feet increases a wetland's opportunity to provide important habitat functions according to the Washington State Department of Ecology Wetland Rating Form for Eastern Washington (Hruby 2004).

3.7.2 Environmental Consequences—Proposed Action

The Proposed Action could directly affect wetlands as a result of new structure installation, road construction and reconstruction, and use of access roads. Permanent wetland impacts would include ground disturbances that extend beyond the existing footprint of a transmission structure (i.e., replacement of a two-pole structure with a larger, three-pole structure), and construction of new access roads, including drainage features such as culverts for stream crossings. The Proposed Action would directly affect one PEM wetland with relatively low function (Wetland O). This wetland provides water quality and flood flow attenuation functions which, while important functions of wetlands in general, are not rare functions for the wetlands in the study area or region. Wetland O is located in a depression adjacent to a stream channel. The stream is listed as a WDFW priority habitat for fish species. This proximity increases the wetland's functions for wildlife, as does the proximity of adjacent riparian habitat.

Temporary impacts on wetlands would be those impacts that are short in duration, would not require permanent fill and would not permanently change soils, vegetation, or hydrology.

Temporary impacts would result from replacing structures in-kind, temporary vegetation clearing or soil disturbance during construction, driving equipment in wetlands, and construction noise, which can affect the wildlife habitat function of wetlands.

The Proposed Action could indirectly affect wetlands as a result of structure replacement or road construction or use within a 100-foot buffer of an identified wetland. The width of the buffer that would be considered for impact evaluations depends on the wetland's regulatory category, which would be determined by the Corps, Ecology, Walla Walla County, and Columbia County during the permitting phase of the Proposed Action.

Table 3-5 summarizes the potential impacts on each wetland in the study area.

Removal of Existing and Installation of New Structures

The Proposed Action would result in only one structure being replaced directly within Wetland O (Table 3-5). The in-kind replacement of this 2-pole structure is estimated to result in less than 0.1 acre of temporary impact on this wetland area through disturbance to vegetation and potential compaction of the wetland soil. In this case, the old structure would be pulled out and new poles would be placed in the same holes, resulting in minimal, temporary impacts on wetland vegetation and soils if plants are trampled, broken, or crushed by equipment. Any excavated materials would be disposed of in an upland location outside of the wetland and its buffer area. This impact would be low. As described in the mitigation measures below, wetland boundaries would be marked to minimize disturbance in and around wetland areas. Permanent disturbance would be limited to the portions of Wetland O that are already disturbed by the existing structure base. No other structures would be installed in identified wetlands as a result of the Proposed Action.

Approximately 0.2 acre of disturbance would occur outside of physical wetland boundaries, but within 100 feet of wetlands (Table 3-5) as a result of structure replacement. Construction-related erosion or runoff could temporarily affect water quality. This impact would be considered low and temporary. Implementation of the mitigation measures described below would further reduce impacts associated with the removal and replacement of structures in or near wetlands.

Access Roads

Reconstruction of existing roads would occur near Wetlands A and J. The access road reconstructed adjacent to Wetland A is not likely to result in direct impacts on the wetland itself; however, it is likely that there would be a direct impact on the surrounding wetland buffer area. One access road would be reconstructed adjacent to Wetland F and a new access road that crosses the Wetland F would be constructed. No materials would be placed in the wetland as part of the fordable crossing. Construction activity for the access road reconstructed near Wetland J would not occur within the wetland itself.

Table 3-5. Potential Impacts on Wetlands

Wetland ID			Area of Disturbance within 100 feet of Mapped Wetland		Area of Disturbance Directly within Mapped Wetland		
	Structure Type	Road Type	Structures (Acres)	Roads (Acres)	Structures (Acres)	Roads (Acres)	Level of Direct Impact
A	N/A	Reconstructed access road	None	0.3	None	None	No impact
B	N/A	None	None	None	None	None	No impact
C	2-pole	Route of travel	0.1	None	None	Low ^a	Low
D	N/A	Route of travel	None	None	None	Low ^a	Low
E	N/A	None	None	None	None	None	No impact
G	N/A	Existing access road (adjacent)	None	None	None	None	No impact
H	N/A	N/A	None	None	None	None	No impact
I	N/A	N/A	None	None	None	None	No impact
J	N/A	Reconstructed access road	None	1.0	None	None	No impact
K	N/A	Existing road (within 100 feet with broken culvert)	None	None	None	None	No impact
L	N/A	Existing access road	None	None	None	None ^b	No impact
M	2-pole	Reconstructed access road ^c	0.1	0.3	None	None	No impact
N	N/A	Reconstructed access road	None	0.1	None	Existing access road ^d	Low
O	2-pole	Route of travel	<0.1	None	<0.1	Low ^a	Low
P	N/A	Existing access road	None	None	None	None ^b	No impact
Q	N/A	Existing access road	None	None	None	None ^b	No impact
R	N/A	Existing access road	None	None	None	None ^b	No impact
S	2-pole	Existing access road	<0.1	None	None	None ^b	No impact
T	N/A	N/A	None	None	None	None	No impact
U	2-pole	Reconstructed access road	<0.1	0.4	None	None ^b	No impact

N/A = No structures or roads are located within 100 feet of an identified wetland.

^a Temporary impacts from routes of travel have not been quantified, because the size of impact has not been determined.

^b No impacts are anticipated if the existing culvert and bridge crossings are used as built and not improved or widened.

^c Culverts likely present but buried. Condition of road and culvert will need to be evaluated to avoid impacts.

^d Appears to be an unimproved road through the wetland. Possible use was assumed to have temporary impacts, which could not be quantified.

As a result of reconstructed and new access roads, approximately 2.1 acres of disturbance would occur outside of physical wetland boundaries, but within 100 feet of wetlands. Disturbance resulting from access road work that occurs within 100 feet of wetlands could result in a temporary disturbance from removing buffer vegetation adjacent to wetlands and potentially increasing construction-related runoff and erosion. This impact would be considered low and temporary. Implementation of the mitigation measures described below would further reduce impacts associated with access roads in or near wetland areas.

A few routes of travel would also cross wetlands, resulting in low impacts at the following three locations:

- between Structures 7/8 and 8/1 (Wetland C),
- between Structures 8/3 and 8/4 (Wetland D), and
- between Structures 35/5 and 35/7 (Wetland O).

Staging Areas

Staging areas have not been identified for the Proposed Action. However, BPA would require the construction contractor to locate all staging areas at least 200 feet from wetland areas. No impacts on wetlands would occur as a result of staging the Proposed Action.

Tensioning Sites and Counterpoise

The use of tensioning sites would result in low impacts if they were located within 100 feet of wetlands. These impacts would be associated with a low potential for increased construction-related runoff and erosion.

Buried counterpoise would be replaced as needed along the majority of line mile 1 and the last half of line mile 47 (in the areas where overhead ground wires are located). There are no wetlands located within these areas.

Operation and Maintenance

Operation and maintenance of the Proposed Action would have a low impact on wetlands. Maintenance would include occasional trimming or removal of tall vegetation from wetlands and adjacent uplands and road maintenance activities near or within wetlands for transmission line safety. Maintenance of structures or roads in or directly adjacent to wetlands would rarely be needed, but could result in minor disturbance of wetland or adjacent upland vegetation.

Right-of-Way Easement Acquisition

The Proposed Action would result in future widening of the transmission line ROW through easement acquisition. Approved BPA vegetation management practices would be implemented in the new ROW, once acquired. The maintenance activities in the widened ROW could include trimming or removal of tall vegetation in wetlands and adjacent uplands; however, specific activities would be developed in accordance with BPA's *Transmission System Vegetation Management Program* (Bonneville Power Administration 2001b). This impact would be considered low.

Danger Tree Removal

Approximately 40 trees and no brush would be removed within Wetland O as part of danger tree removal activities required for the Proposed Action. Wetland O is considered a low-functioning wetland area. Of these trees, 38 are small trees, less than 8 inches dbh. All felled trees would be removed from the wetland. This would result in a minor disturbance of wetlands. The removal of danger trees would have a low impact on wetlands.

3.7.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the following mitigation activities would be used to reduce impacts on wetlands:

- Roads and structures would be located to avoid wetlands and streams, whenever possible.
- Any construction activities within wetlands would be designed and implemented to minimize unavoidable impacts, and BPA would coordinate with the Corps and Ecology to obtain a permit for any fill placed in wetlands.
- Wetland boundaries in the vicinity of construction areas would be flagged or staked so that wetlands and streams can be avoided during construction.
- No machinery, construction vehicles, or equipment would be placed within 100 feet of any stream or wetland unless placement is authorized by a permit or is on an existing road.
- Tensioning sites would not be located within 100 feet of wetlands.
- When working next to wetlands (including their buffer areas) and water bodies, disturbance would be limited to the minimum necessary.
- During work on structures within 25 feet of wetlands, contractors would avoid deposit of excavated material into wetlands by placing geotextile fabric around the work area, removing all excavated material from the wetland, and stabilizing that material in an upland area.
- Machinery would be refueled and stored at least 200 feet from wetlands and waterways and inspected regularly for leaks.
- An environmental specialist would meet with contractors and inspectors in the field to visit wetlands and waterways near or within construction areas to go over avoidance and mitigation measures and any permit requirements.
- Erosion control measures, including the placement of silt fences along roads during construction or reconstruction, would be used to avoid sedimentation of wetlands and streams.

- When temporary roads are built in wetlands, contractors would underlay temporary fill with geotextile fabric, remove all fill, and revegetate with appropriate native plant species in compliance with required permits.
- Trees cut in wetland areas would be removed from the area.
- Disturbed areas would be revegetated with appropriate native plant species, and specific revegetation guidelines in permits would be followed.
- After construction, disturbed wetlands would be monitored for weed invasion and weeds would be controlled in accordance with BPA's *Transmission System Vegetation Management Program* (Bonneville Power Administration 2000b).

3.7.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

The Proposed Action would result in the placement of one structure in a wetland. The replacement structure construction activities would result in the temporary disturbance of less than approximately 0.1 acre of wetland.

In areas of temporary disturbance, some wetland functions would be lost or impaired until revegetation and other mitigation efforts result in full recovery. Construction-related activities within and adjacent to wetlands could also temporarily increase the discharge of sediment into wetlands. While implementation of the mitigation measures described above would minimize temporary impacts on wetlands, temporal loss of wetland functions would occur as a result of the unavoidable permanent impacts. Compensatory mitigation for any permanent wetland impacts would likely be required by the Corps and Ecology during their required review of the Proposed Action. Compensatory mitigation would also likely include compensation for unavoidable temporal loss by requiring a greater than one-to-one ratio of mitigation area to affected area.

3.7.5 Cumulative Impacts—Proposed Action

Potential cumulative actions are associated with other transmission line or road reconstruction projects in Walla Walla or Columbia counties. Potential cumulative impacts on wetlands in the study area could result from increased compaction, erosion, temporary removal of vegetation, or permanent fill of wetland habitats during infrastructure placement. Cumulative impacts could also result from the loss of wetland functions provided by the two PEM and two PEM/PSS wetlands (water quality improvement, flood flow attenuation, and wildlife habitat). Approximately 2.4 acres of temporary wetland impact are expected (2.3 acres of indirect impacts to wetland buffer areas and 0.1 acre of direct impacts) as a result of access road work and structure replacement. Temporal loss of wetland water quality, flood flow attenuation, and wildlife habitat functions would contribute to the cumulative impact of lost wetland habitat and functions in the study area. This impact would be somewhat reduced by the legal protections afforded wetlands under the federal Clean Water Act and local county codes. Compensatory mitigation would be required for permanent impacts related to the Proposed Action and would typically result in the construction or restoration of more wetland acres than affected acres in order to compensate for the temporal loss of wetland functions while a mitigation site is developing.

Therefore, because permanent wetland impacts would only result on small patches of wetlands and would be offset by compensatory mitigation, cumulative impacts on wetlands within the vicinity of the project area would be low.

3.7.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, impacts on wetlands associated with construction would not occur. Continued operation and maintenance of the existing transmission line would have low impacts on wetlands similar to those described for operation and maintenance of the Proposed Action. Operation and maintenance activities could occur more frequently than under the Proposed Action, because of the deteriorating condition of the existing transmission line. This increased frequency of activities could result in a slightly higher magnitude of impact.

3.8 FLOODPLAINS

3.8.1 Affected Environment

The study area for the floodplain analysis includes all areas within the transmission line ROW and access road system that lie within 200 feet of the mapped extent of a **100-year floodplain**. As defined by the Federal Emergency Management Agency (FEMA), 100-year floodplains include areas with a 1% chance of being flooded in a given year. The study area was defined to include areas within 200 feet of a floodplain to consider the potential indirect impacts such as the inadvertent introduction of construction-related erosion into floodplains downstream of a work area.

Within the study area, FEMA has designated floodplains associated with the following seven creeks or rivers (Figure 3-2): Dry Creek, Spring Valley Creek, Coppei Creek, South Fork Touchet River, Wolf Fork Touchet River, an unnamed tributary to West Patit Creek, and North Patit Creek (Breedon pers. comm.). Many other small creeks and seasonal draws traverse the study area, but no other floodplains have been designated by FEMA within the study area. Mapped floodplains associated with Garrison Creek, Whiskey Creek, Dustin Hollow Creek, and Hogeeye Hollow Creek lie beyond the floodplain study area (Figure 3-2). Similarly, in FEMA data, these areas are labeled as Areas Not Included (ANI), which are defined by FEMA as areas in a community or county that are not mapped on any published Flood Insurance Rate Map (FIRM) (Breedon pers. comm.). These areas are located along the first 2 miles of the alignment surrounding portions of the city of Walla Walla, its landfill, and the city of College Place (Figure 3-2). Areas mapped as ANI in FIRM maps were not included in the floodplain analysis.

Floodplains provide flood storage capacity and can reduce flood flows as they spread across the landscape. Floodplain vegetation provides water quality functions by slowing flood flows and allowing sediments and associated pollutants to settle out. Floodplains and their associated vegetation also provide fish habitat functions by providing shade to stream channels, off-channel refuge, and rearing and foraging habitat, and by contributing organic matter to the aquatic food chain. Similarly, floodplains provide food, water, and shelter to riparian-associated wildlife. Riparian corridors typical of floodplains also provide migration routes and refuge habitat for wildlife as they move across the landscape.

The floodplains associated with Dry Creek and Coppei Creek support federally designated critical habitat for middle Columbia River steelhead (*Oncorhynchus mykiss*). Similarly, the floodplains associated with the South Fork Touchet River and the Wolf Fork Touchet River support federally designated critical habitat for middle Columbia River steelhead and Columbia River bull trout (*Salvelinus confluentus*).

3.8.2 Environmental Consequences—Proposed Action

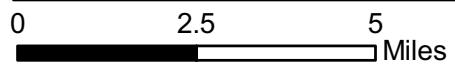
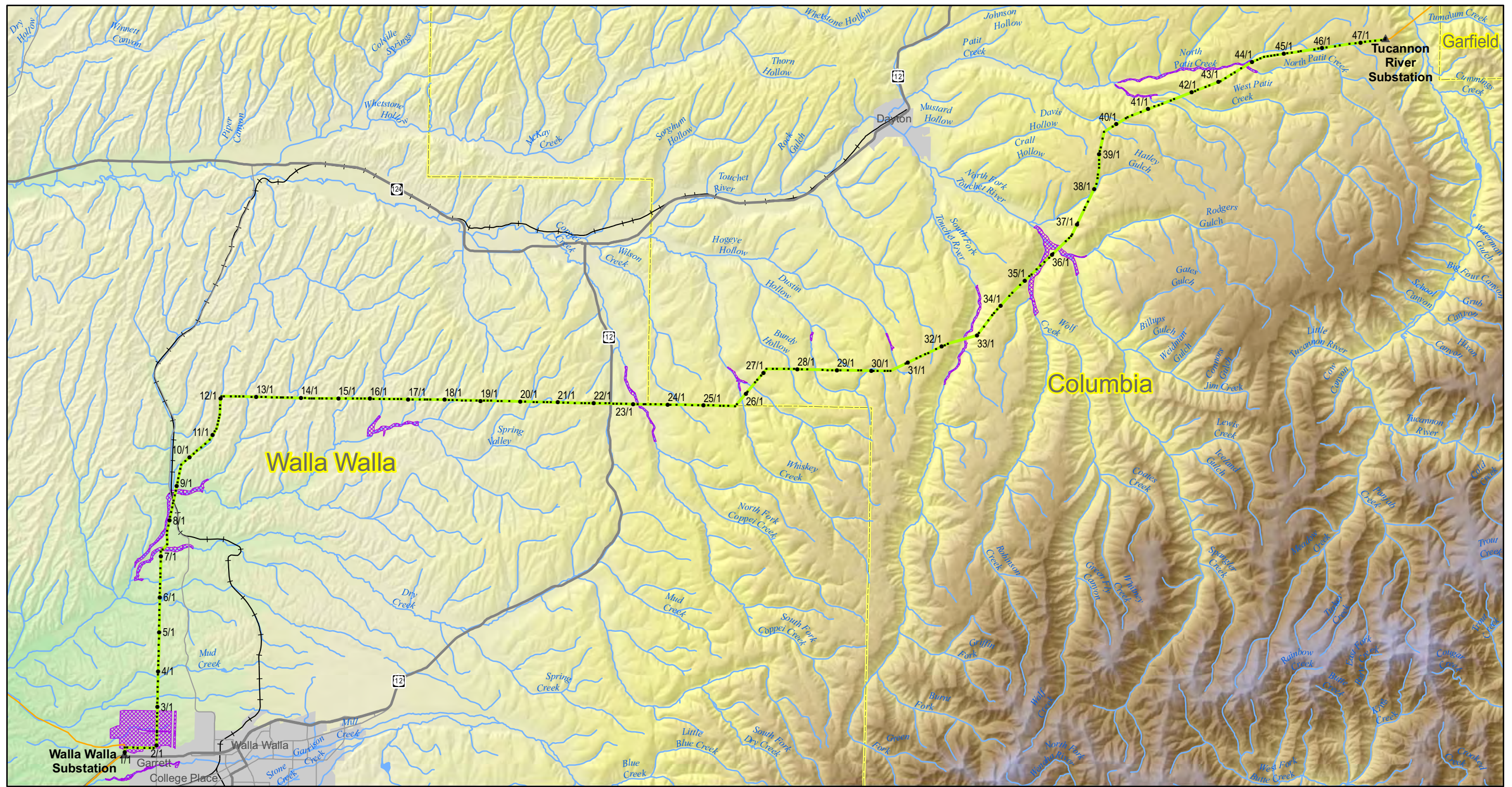
Removal of Existing Structures and Installation of New Structures

The Proposed Action has the potential to directly affect floodplains and impair floodplain functions from construction disturbance associated with structure removal and installation. This would result in soil compaction that could interfere with the subsurface water flow in the floodplain. Removing existing structures and drilling holes for replacement structures would result in the deposition of some excavated soils on the soil surface within the floodplain.

Currently, nine existing structures are located in four floodplains (Dry Creek, Spring Valley Creek, Coppei Creek, and Wolf Fork Touchet River) (Table 3-6). Seven of these structures (7/2, 7/3, 8/8, 23/2, 35/3, 35/5, and 35/6) would be replaced in-kind, in the same location as the existing structures. One structure (35/4) would be relocated approximately 120 feet away from the existing location and in the floodplain. One existing structure located in the floodplain (23/3) would be relocated outside of the floodplain. No new structures would be located in mapped floodplains. About 0.73 acre of land within the floodplain would be affected by ground disturbance during removal and replacement of these structures. These impacts are considered low because the removal and subsequent in-kind replacement of transmission line structures in approximately the same location would be temporary and the footprint would be limited in scale. Replacement of these structures would result in temporary and localized effects on the flood storage capacity, direction of flood flows, or wildlife habitat value of any of the floodplains in the study area because the result would be in-kind replacement of existing structures. Floodplain function would be altered minimally.

Indirect impacts on floodplains could occur as a result of increased sedimentation from erosion associated with ground disturbance and vegetation removal during construction within 200 feet of floodplains. Installation of structures located within 200 feet of floodplains could cause erosion and the deposition of soils in floodplains. In addition to the structures identified above, five additional existing structures (7/7, 7/8, 8/2, 8/3, and 44/1) are located within 200 feet of mapped floodplains and would be replaced in-kind (Table 3-6). These structures are located in the floodplains of five streams: Dry Creek, Spring Valley Creek, Coppei Creek, Wolf Fork Touchet River, and North Patit Creek. About 0.66 acre of land outside of the floodplains themselves, but within 200 feet of the mapped floodplains would be affected by ground disturbance during removal and replacement of structures, which could indirectly affect floodplain function. This impact is considered low because it would be temporary in nature, limited in scale, and would occur outside of the mapped floodplains, and because the disturbed area would revegetate in one growing season. These structures would have no impact on the flood storage capacity, direction of flood flows, or wildlife habitat value of any of the floodplains in the study area.

Figure 3-2. Floodplains and Waterways
 BPA Walla Walla–Tucannon River Transmission Line Rebuild Project



- ▲ BPA Substation
- Structure
- First Structure of Each Mile
- ↗ Walla Walla–Tucannon River No. 1
- ↗ BPA Transmission Lines
- Major Highway
- Major Road
- +— Railroad
- Rivers & Streams
- Water Bodies
- County Boundary
- ▨ FEMA Flood Hazard Areas

Data Source: Bonneville Power Administration Regional GIS Database. All Data Is Best Available as of 11/1/2010. Flood Hazard Areas from FEMA.



Table 3-6. Activities Proposed in or within 200 Feet of 100-Year Floodplains

Floodplain	New Structures Proposed				Access Roads Proposed for Reconstruction			
	Structure in Floodplain	Disturbance in Floodplain (square feet)	Structure within 200 Feet of Floodplain ^a	Disturbance Area within 200 Feet of Floodplain ^a (square feet)	Road in Floodplain	Disturbance in Floodplain (square feet)	Road within 200 Feet of Floodplain ^a	Disturbance Area within 200 Feet of Floodplain ^a (square feet)
Dry Creek	7/2	4,481	7/2	9,948	Reconstruction of approx. 4,600 feet of access road to Structures 7/2, and 7/3	92,050	Reconstruction of approx. 600 feet of access road to Structure 7/2 and 7/3	12,022
	7/3	4,974	—	—				
Spring Valley Creek	—	—	7/7	639	—	—	—	—
	—	—	7/8	4,974	—	—	—	—
	—	—	8/2	229	—	—	—	—
	—	—	8/3	3,004	—	—	—	—
	8/8	4,974	—	—	—	—	—	—
Coppei Creek	23/2	423	23/2	4,551	—	—	Reconstruction of approx. 120 feet of access road to Structure 23/2	2,406
Wolf Fork Touchet River	35/3	1,814	35/3	3,160	Reconstruction of approx. 200 feet of access road to Structures 34/4 through 35/6 from Wolf Fork County Road	3,672	Reconstruction of approx. 500 feet of access road to Structures 34/4 through 35/6 from Wolf Fork County Road	9,767

Floodplain	New Structures Proposed				Access Roads Proposed for Reconstruction			
	Structure in Floodplain	Disturbance in Floodplain (square feet)	Structure within 200 Feet of Floodplain ^a	Disturbance Area within 200 Feet of Floodplain ^a (square feet)	Road in Floodplain	Disturbance in Floodplain (square feet)	Road within 200 Feet of Floodplain ^a	Disturbance Area within 200 Feet of Floodplain ^a (square feet)
	35/4	4,974	—	—	—	—	—	—
	35/5	4,974	—	—	—	—	—	—
	35/6	4,974	—	—	—	—	—	—
Unnamed Tributary to West Patit Creek	—	—	—	—	—	—	Reconstruction of approx. 150 feet of access road to Structure 41/2	2,806
North Patit Creek	—	—	44/1	2,404	Reconstruction of approx. 100 feet of access road to Structure 43/6	1,709	Reconstruction of approx. 500 feet of access road to Structure 43/6	11,390
Total Impacts		31,588 (0.73 acre)		28,909 (0.66 acre)		97,431 (2.24 acres)		38,391 (0.88 acre)

^a Although all project features (including structures and roads) that are within the physical boundaries of the floodplain would also be within 200 feet of the floodplain, these columns indicate if a feature would result in impacts outside but within 200 feet of the floodplain.

Implementation of the mitigation measures described below would further reduce any impacts associated with the removal and replacement of structures on floodplains in or near the study area.

Access Roads

As described in Chapter 2, Proposed Action and Alternatives, three new access roads would be constructed to provide operations and maintenance access near certain structures. No impact on floodplains would result from construction of these new roads, because none of them would be located within 200 feet of 100-year floodplains.

Reconstruction or improvement of existing, access roads would have low impacts on three floodplain areas along the alignment (Dry Creek, Wolf Fork Touchet River, and North Patit Creek) (Table 3-6). Access roads would be reconstructed within 100-year floodplains allowing for access to Structures 7/2 through 7/3, 34/1 through 35/6, and 43/6. These activities would result in about 2.24 acres of floodplain impacts. Direct floodplain impacts from access road reconstruction and improvements within floodplains would result from activities such as grading or rocking the road surfaces, replacing culverts, and removing vegetation. These activities could result in minor soil compaction and erosion. These impacts would not result in significant changes to floodplain capacity nor would they alter flood flows. Therefore, direct impacts from access road work would be low. Implementation of the mitigation measures described below would further reduce direct impacts on floodplains associated with access road reconstruction in the study area.

About 0.88 acre of land outside the physical boundary of the floodplains but within 200 feet of mapped floodplains would be affected by ground disturbance during reconstruction of the access roads. These impacts would occur in five areas along the alignment (Dry Creek, Coppei Creek, Wolf Fork Touchet River, an unnamed tributary to West Patit Creek, and North Patit Creek) (Table 3-6). Construction within 200 feet of a floodplain has the potential to indirectly affect floodplain function through erosion and deposition of soils in floodplains. Indirect impacts on these floodplains are considered low because they would be temporary in nature and limited in scale, and because any disturbed areas would revegetate in one growing season. Reconstruction of these access roads would have no impact on the flood storage capacity, direction of flood flows, or wildlife habitat value. Implementation of the mitigation measures described below would further ensure that any unanticipated indirect impacts on floodplains within 200 feet of the ROW would be minimized.

Staging Areas

Staging areas have not specifically been identified for the Proposed Action. However, BPA would require the construction contractor to locate all staging areas at least 200 feet from FEMA-designated floodplains. As such, no impacts on floodplains would occur as a result of staging the Proposed Action.

Tensioning Sites and Counterpoise

If tensioning sites are placed within any 100-year floodplains, temporary disturbance could occur during construction. This impact is expected to be low because the impact would be temporary

and the footprint would be limited in scale. Implementation of the mitigation measures described below would further ensure that tensioning would result in a low impact on floodplains.

Buried counterpoise would be replaced as needed along most of line mile 1 and the last half of line mile 47 (the areas where overhead ground wires are located). Replacement of this infrastructure would have no impact because floodplains are not mapped along line mile 1 or the last half of line mile 47 (line mile 1 is located within a FEMA designated ANI area).

Operation and Maintenance

Maintenance of access roads and other infrastructure in the study area, including grading or rocking road surfaces, replacing culverts, and removing vegetation, could result in minor soil compaction, erosion, and loss of vegetation within floodplains. These impacts are anticipated to be low because they would be infrequent, temporary, and limited in scope. Impacts on floodplain storage, water quality functions, and fish and wildlife habitat functions would be low for similar reasons.

Right-of-Way Easement Acquisition

The Proposed Action would result in future widening of the transmission line ROW through easement acquisition. Approved BPA vegetation management practices would be implemented in the new ROW, once acquired. These vegetation management activities would not be ground disturbing, so any impacts on floodplains in the widened ROW are anticipated to be none to low. Impacts resulting from the widened ROW on floodplain storage, water quality functions, and fish and wildlife habitat functions would be none to low.

Danger Tree Removal

The removal of danger trees and other vegetation during construction has the potential to affect floodplain functions because vegetation removal can increase soil compaction and erosion, and reduce the capacity of the floodplain to dissipate flood energy and maintain water quality by filtering nutrients and contaminants. A total of 217 trees would be removed along the 47-mile-long transmission line. Of these, approximately 41 are located within the floodplains. Impacts on floodplains from tree and vegetation removal would be low because of the small area that would be affected relative to the overall size of each of the floodplains and the limited number of danger trees that would be removed. Implementation of the mitigation measures described below would further reduce direct and indirect impacts from removal of danger trees and other vegetation during construction.

3.8.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the following mitigation measures would reduce impacts on floodplains.

- Peak construction activities would be conducted during the dry season (between June 1 and November 1) as much as possible; constructing during low streamflow, rainfall, and runoff would minimize erosion, sedimentation, and soil compaction.
- As specified in the stormwater pollution prevention plan, construction limits would be delineated with a sediment fence or straw wattles or similar erosion and stormwater control

BMPs to eliminate discharge into waterways and wetlands. Following construction, erosion and sediment controls would be inspected weekly and maintained as needed, and then removed from the site when no longer needed.

- A spill prevention, control and countermeasures plan would be implemented to minimize the potential for an accidental spill of hazardous material and the impact from accidental spill of hazardous material, should such an accident occur
- Spill prevention materials would be on site and with equipment.
- Seeding of disturbed areas would occur after construction and regrading are complete and at the appropriate time period for germination
- Germination of seeded areas would be monitored with at least three field visits per year until site stabilization (defined as at least 70% cover by native or acceptable nonnative species) is achieved. If vegetative cover is inadequate, contingency measures would be implemented to ensure adequate revegetation of disturbed soils.
- The locations of 100-year floodplains would be included on project maps for contractors and restrict tensioning sites to areas outside floodplains.
- All staging areas would be located at least 200 feet from FEMA-designated floodplains.
- After construction, access roads, culverts, and other facilities would be inspected and maintained to ensure proper function and nominal erosion levels.

3.8.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Implementation of the Proposed Action would generally result in low, temporary impacts on floodplains. Implementation of the mitigation measures described above would further minimize these impacts.

3.8.5 Cumulative Impacts—Proposed Action

Potential cumulative actions are associated with other transmission line and road reconstruction projects in Walla Walla or Columbia counties. Potential cumulative impacts on floodplains in the study area could result from increased compaction, erosion, or temporary removal of vegetation. For the Proposed Action to result in a cumulative impact on floodplains, construction of multiple projects would have to occur in floodplains simultaneously with construction of the Proposed Action. It is unlikely that this would be the case with any of the potential cumulative actions identified in Section 2.4. However, in the absence of construction-specific data on each of these projects, it is possible that one or more may result in temporary construction impacts in floodplains similar to those considered in this analysis.

Nonetheless, because the Proposed Action would result in a low impact on floodplains, and because all impacts would be temporary, the contribution of the Proposed Action to any cumulative change in floodplain qualities and function would be low.

3.8.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, the Proposed Action would not be constructed and constructed-related impacts on floodplains would not occur. Continued operation and maintenance of the existing transmission line would have impacts on floodplains similar to those

described for the Proposed Action as the structures and access roads continue to deteriorate and require repair or replacement. These activities could occur more frequently than under the Proposed Action because of the deteriorating condition of the existing transmission line. Although this impact would still be low, the increased frequency of activities could result in a slightly higher magnitude of impact.

3.9 VISUAL QUALITY

3.9.1 Affected Environment

The study area for visual resources is the Walla Walla Valley in southeastern Washington State. The western half of the study area lies within Walla Walla County and is characterized by gently rolling hills and shallow valleys cultivated for agricultural production. Because of the agricultural nature of the area, there are few forested areas, and the overall visual impression is one of expansive openness. The eastern half of the study area lies within Columbia County and is characterized by steeper, more mountainous terrain. Stream valleys are deeper, hills are higher, and forested areas are more abundant, creating a rugged visual impression that contrasts with the openness of the Walla Walla Valley farm country.

The study area for visual quality includes the existing transmission line ROW, land within 0.25 mile of the transmission line, any properties crossed by access roads proposed to be constructed or improved, and surrounding views to and from the transmission line. Regional visual resources include the Blue Mountains to the southeast of the study area, and views of the Walla Walla Valley itself. Observed from hilltops or from the steeper terrain of the eastern portion of the study area, the agricultural lowlands provide picturesque views enjoyed by outdoor recreational users, motorists, and residents. U.S. 12 is part of the Lewis and Clark Trail Highway, which traces the path of the Corps of Discovery's expedition through southern Washington and northern Oregon (National Scenic Byways Program 2010). This highway is a National Scenic Byway and is designated as a State Scenic Highway by the WSDOT (2010c). The transmission line crosses U.S. 12 in a single location between Structures 22/4 and 22/5.

In the western half of the study area, particularly in the area immediately north of the City of Walla Walla, transmission infrastructure is a prominent component of the visual landscape. The Walla Walla–Tucannon River transmission line is one of several that extend north from the Walla Walla Substation. Because of the low height of hills and lack of screening vegetation in this area, these transmission towers are clearly visible from distances of up to several miles. The general visual character of the western portion of the study area is illustrated in Figure 3-3 and Figure 3-4. In the eastern portion of the study area, more mountainous terrain and a greater amount of tree cover provide some screening of the transmission line by limiting the distance from which the line is visible. The general visual character of the eastern portion of the study area is illustrated in Figure 3-5. The transmission line is also visible from many private residences. As described in Section 3.2, Land Use and Recreation, the transmission line corridor passes near concentrations of homes at the following locations:

- Along Baldwin Road near the Walla Walla Substation (Structures 1/6–1/8)
- Along Bundy Hollow Road (Structures 27/6–28/1)
- Along South Touchet Road (Structures 32/4–32/5)

- Along Wolf Fork Road near its intersection with Touchet River Road (Structures 35/2–36/3).

The largest concentration of residences is between line miles 35 and 36. Figure 3-6 illustrates a view of the transmission line from this rural residential area.

3.9.2 Environmental Consequences—Proposed Action

The Proposed Action would result in permanent visual impacts associated with the installation of 27 additional transmission structures beyond the 295 currently in place⁷. With the exception of the steel lattice towers, it is anticipated that all new structures would be constructed of materials similar to those of the existing structures and that they would share a common visual character. Although additional structures would be added to the corridor and some replacement structures may not be located in exactly the same locations as existing structures, the number of additional structures would be small compared to the total number of structures, and the Proposed Action would not involve construction of structures outside the established ROW.

Structures 32/3 and 33/1 would be replaced as steel-lattice towers and the existing structures 32/4 and 32/5 would be removed and not replaced. The new steel lattice towers would be approximately 80 feet in height and would have four footings.

Permanent changes to the visual landscape would also result from the construction of three new access roads near existing structures 18/2, 39/5, and 41/1. The Proposed Action would result in the construction of less than 0.5 mile of new roads. In general, these new access roads would be located in remote areas with few sensitive viewers. Specific impacts on viewer groups, based on location, are discussed below.

Construction, operation, and maintenance of transmission infrastructure would also have short-term impacts on visual resources. Replacing structures, clearing vegetation, working on access roads, and using and storing construction equipment would temporarily affect visual resources and sensitive viewers in the study area. Operation and maintenance activities would be similar to those already implemented along the transmission line and would not result in any new or different impacts on visual resources.

⁷ Three existing wood-pole structures would not be replaced. As a result, a total of 319 wood-pole and steel lattice towers are associated with the Proposed Action.



Figure 3-3. Harvey Shaw Road Looking South



Figure 3-4. Harvey Shaw Road Looking West



Figure 3-5. Structure 35/6 Looking Southwest



Figure 3-6. Wolf Fork Road Looking South

Motorists

Views of the transmission line from U.S. 12 are confined to the area where the line crosses the highway between Structures 22/4 and 22/5. The transmission line and the highway intersect at an approximate right angle, so the line is visible to approaching motorists for a moderate distance to the north and south of the intersection. Construction activities, such as structure replacement and vegetation removal, could detract from the scenic nature of the U.S. 12 corridor in this location; however, these activities would be short in duration. Because views of the transmission line from U.S. 12 are confined to this single location, and the transmission line is an existing visual element, replacement with similar structures would not significantly alter the visual landscape. Moreover, motorists along this portion of U.S. 12 typically travel at a relatively high speed (50 to 60 miles per hour), which reduces visual sensitivity. Visual impacts on motorists are anticipated to be low.

Residents

Residential viewers are highly sensitive to changes in their visual environment; however, as described in Section 3.9.1, Affected Environment, the existing transmission line corridor is already a prominent element in the visual landscape for nearby residential viewers. Relatively few residences are located in the study area. Although the open landscape and lack of screening vegetation in the western portion of the study area would allow construction activities to be visible to a greater number of residences at greater distances, residential viewers would be

unlikely to be able to distinguish the additional structures at extreme distances from those that are simply replacing an existing tower. Because of this, permanent impacts from the installation of additional structures would be confined to residents in the immediate vicinity of each of the additional towers and are anticipated to be low.

As described in Section 3.2, Land Use and Recreation, the transmission line and its access roads pass closely to a number of residences—along Wolf Fork Road (near Structures 35/2–36/3) and near Structures 5/6, 7/4, and 44/1. Residential viewers at these locations would be directly exposed to construction activities, including removal and installation of the wood poles, tensioning of the conductor, clearing of vegetation, and completion of work associated with access roads.

The construction of new access roads could affect residential viewers at the following location:

- **Near Structure 41/1.** This new access road would cross private property on a steeply sloped hillside. Because of the presence of screening vegetation in the area, it is unlikely this new road would be visible to anyone but the property owner.
- **Near Structure 18/2.** The new access road near Structure 18/2 would not be located near residences and is unlikely to be visible to residential viewers because of the distance and the presence of screening vegetation.
- **Near Structure 39/5.** The new access road near Structure 39/5 would not be located near any residences. It is not likely to be visible to residential viewers because of the distance and screening vegetation.

Project construction activities would temporarily modify the visual landscape for residential viewers through the presence of construction equipment and the potential removal of vegetation, including danger trees, along the ROW. Because of the small number of residences affected, the presence of existing transmission lines, and the temporary nature of the construction activities, temporary impacts on residential viewers are anticipated to be low.

Recreation

As described in Section 3.2, Land Use and Recreation, the transmission lines do not physically cross any parks, campgrounds, or other formal recreational facilities. Visual impacts of the Proposed Action on recreational viewers—recreational bicyclists and sightseers along public roadways, as well as hikers, hunters, or campers on private property—would consist of the temporary exposure to construction activities. For bicyclists and sightseers, the quality of public views is an integral part of their recreational activity; however, because no formal recreational facilities are located in the study area and construction activities would be temporary in nature, impacts on recreation are anticipated to be low.

3.9.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the following mitigation measures would reduce the visual prominence of the transmission line and reduce temporary visual impacts during project construction.

- To the greatest extent possible, BPA would schedule all construction work during daylight hours. Should it become necessary to conduct nighttime or evening operations in residential

areas, all worksite illumination would be shielded to direct light downward and toward the center of the work site.

- To the greatest extent possible, BPA would design replacement structures to be visually similar, including materials, height, and size of footprint, to those they replace. Additional structures would also be designed to appear aesthetically consistent with existing structures.
- Nonreflective conductors and insulators would be used on all replacement structures.
- Construction crews would, to the greatest extent possible, avoid storing construction equipment and supplies on residential streets or access roads that directly abut residential property.
- BPA would incorporate BMPs for the control of erosion and dust associated with construction of new access roads to minimize permanent visual impacts on nearby residential viewers.

3.9.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

If the Proposed Action is implemented, residents, recreational users, and motorists would be exposed to the sight of construction activities, as well as a small number of additional permanent elements (structures, new access roads) in the visual landscape. Although measures would be implemented to reduce visual impacts, visual changes associated with construction would be unavoidable. However, as discussed above, because the number of sensitive viewers would be low and because the above mitigation measures would be implemented, these unavoidable impacts would be considered low.

3.9.5 Cumulative Impacts—Proposed Action

In addition to the Walla Walla–Tucannon River transmission line, BPA operates several transmission lines out of the Walla Walla Substation. As described under Section 3.9.1, Affected Environment, the southwestern portion of the study area is crisscrossed by these lines, which often are located very near the Walla Walla–Tucannon River transmission line, sometimes running parallel within the same ROW. CREA is also proposing to construct and operate a tap line that would connect the Dayton Substation to the Rebuild Project. Any road improvements or maintenance operations associated with these lines would increase the exposure of residents and motorists to the sight of construction activities. However, because of the relatively small area of overlap between transmission line corridors and the temporary nature of the construction activities, cumulative impacts are anticipated to be low.

3.9.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, no construction-related impacts on visual resources would occur. Continued operation and maintenance of the existing transmission line would result in visual impacts on motorists, residents, and recreational users similar to existing conditions. Although the maintenance activities are expected to be more frequent, the impacts would still be low.

3.10 AIR QUALITY

3.10.1 *Affected Environment*

The study area for air quality includes the airsheds of Walla Walla and Columbia counties.

The agencies with primary air quality jurisdiction in Walla Walla and Columbia counties are the EPA and Ecology. The EPA has established national ambient air quality standards (NAAQS) for six criteria air pollutants: carbon monoxide (CO), ozone, particulate matter, lead, sulfur dioxide, and nitrogen dioxide. Ecology has adopted the standards set by EPA. For each of the six criteria pollutants, the NAAQS represent a maximum concentration above which adverse effects on human health may occur. When an area's air quality exceeds these standards, it is designated a **nonattainment area**. Given the rural setting of the project area, the three criteria pollutants of potential interest are CO, ozone, and particulate matter. The remaining three criteria pollutants (lead, sulfur dioxide, and nitrogen dioxide) are not discussed further in this section. No part of the study area is within a designated nonattainment area for monitored pollutants (Washington State Department of Ecology 2010a).

CO is generally associated with transportation sources. The highest ambient CO concentrations often occur near congested roadways and intersections during periods of low temperatures, light winds, and stable atmospheric conditions. Vehicles traveling along U.S. 12 and SR 125 are the primary sources of CO in the study area. Ecology does not monitor CO levels in Walla Walla and Columbia counties (U.S. Environmental Protection Agency 2010b). However, because the traffic volumes on U.S. 12 and SR 125 rarely result in congestion, it is unlikely that CO levels exceed the NAAQS 8-hour standard of 9 parts per million and 1-hour standard of 35 parts per million.

Ozone is primarily a product of more concentrated motor vehicle traffic on a regional scale. It is created during warm sunny weather by photochemical reactions involving volatile organic hydrocarbons (VOCs) and nitrogen oxides (NOx). Because they are components of ozone creation, NOx and VOCs are discussed in this analysis. Small amounts of ozone may be produced by the existing transmission line as a result of the *corona* effect (the breakdown of air at the surface of conductors). Ecology does not monitor ozone in Walla Walla and Columbia counties; however, ozone concentrations in the study area are anticipated to be below the NAAQS 8-hour average standard of 0.075 parts per million because the area is sparsely developed and traffic levels are relatively low.

Particulate matter is generated by industrial emissions, residential wood combustion, motor vehicle tailpipes, and fugitive dust from roadways and unpaved surfaces. The highest ambient concentrations generally occur near emissions sources. Two forms of particulate matter are regulated by EPA: particulate matter less than 10 micrometers in size (PM10) and particulate matter less than 2.5 micrometers in size (PM2.5). PM2.5 has a more severe effect on health than PM10 at locations farther from the emitting source because it remains suspended in the atmosphere longer and travels a greater distance. Within the study area, PM10 is monitored in the City of Walla Walla, which shows no exceedance of the PM10 24-hour standard of 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Ecology does not monitor PM2.5 in Walla Walla and Columbia counties; however, PM2.5 concentrations in the study area are anticipated to be less

than the NAAQS 24-hour standard of 35 $\mu\text{g}/\text{m}^3$ because the area is sparsely developed and traffic levels are relatively low.

3.10.2 Environmental Consequences—Proposed Action

Air quality would be primarily affected during construction, if the Proposed Action were implemented. Construction would last for an estimated 6 months. Construction activities have the potential to temporarily increase particulate matter, CO, NO_x, and VOC levels on a temporary basis in a localized area.

Of the pollutants generated by construction activities, particulate matter would be of the most concern. Fugitive dust could be created during site preparation, including access road work, onsite travel on unpaved surfaces, and soil-disrupting operations. However, construction activities would only increase dust and particulate levels on a temporary basis in a localized area. Implementation of the mitigation measures described below would minimize these impacts.

In addition to increased particulates, the operation of heavy equipment and vehicles during construction of the Proposed Action could result in increases in CO, NO_x, and VOC. However, these tailpipe emissions would also be short term and localized. In addition, vehicle and equipment emissions would be relatively small and comparable to current conditions found in agricultural and urban areas.

Air quality could also be slightly affected as a result of the operation and maintenance of facilities associated with the Proposed Action, including the widened ROW. During operation, the transmission line emits limited amounts of ozone and NO_x as a result of the corona effect. However, these substances would be released in quantities generally too small to be measured or to have an impact on humans, animals, or plants, and would be similar to levels present under existing conditions. In addition, although there would be occasional vehicle emissions during maintenance activities, the number of vehicles trips is anticipated to be low and would also be similar to existing conditions.

For these reasons, impacts on air quality from construction, operation, and maintenance activities would be low.

3.10.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the following mitigation measures would be used to minimize potential construction-related impacts on air quality.

- Water trucks would be used to control dust during construction.
- Construction vehicles would be kept at low speeds (15 miles per hour) on unpaved access roads to minimize dust.
- All vehicle engines would be in good operating condition to minimize exhaust emissions.

3.10.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

As noted above, short-term increases in some criteria pollutants would occur during construction of the Proposed Action and levels of ozone and NO_x similar to existing levels would result from the corona effect throughout operation. Although these impacts are unavoidable, they would not violate air quality standards and would be considered low.

3.10.5 Cumulative Impacts—Proposed Action

Vehicular traffic, agricultural activities, residential wood burning, and other commercial and industrial facilities in the study area have all contributed to ambient air pollutant emissions. These sources of pollutants will continue in the future. In addition, BPA is implementing other projects, including the Central Ferry Substation Project, and WSDOT plans to conduct road and rail improvement projects in the study area. Ongoing activities in the study area do not currently violate NAAQS. While the Proposed Action would contribute a small amount to pollutant levels, it is unlikely that cumulative concentrations would violate the NAAQS; impacts would be low.

3.10.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, there would be no impacts on air quality from construction activities. Low impacts on air quality would continue from the corona effect during operation of the existing line. There is also a possibility that the aging transmission line would require increased maintenance over time, resulting in slightly greater emissions of criteria pollutants from increased vehicle use compared with existing conditions.

3.11 SOCIOECONOMICS AND PUBLIC SERVICES

3.11.1 Affected Environment

The study area for socioeconomics and public services encompasses Walla Walla and Columbia counties, the counties in which the Proposed Action would occur.

Population

In 2008, the estimated populations of Walla Walla and Columbia counties were 58,149 and 3,970, respectively. In Walla Walla County, 76.1% of the population identified themselves as Caucasian, not Hispanic, and 18.5% identified themselves as Hispanic or Latino. The county's Hispanic or Latino population is the only *minority population* that is proportionately larger than in the state as a whole. In Columbia County, 88% of the population identified themselves as Caucasian, not Hispanic, and 7.6% identified themselves as Hispanic or Latino. No Columbia County minority populations recognized by the U.S. Census Bureau are proportionately larger than their statewide counterparts (U.S. Census Bureau 2010).

Economic Characteristics

In 2008, the civilian labor force in Walla Walla County included 32,626 people. Of these people, 30,439 held jobs, resulting in an unemployment rate of 6.7%. In December 2010, the unemployment rate was 7.6%. The leading nonfarm employment sectors were education and

health services (4,614 jobs); trade, transportation, and utilities (3,732 jobs); manufacturing (3,261 jobs); and natural resources and mining (1,663 jobs) (U.S. Bureau of Labor Statistics 2010).

Per-capita income and median household income in Walla Walla County were \$32,546 and \$44,797, respectively, in 2008. On average, 61% of per-capita income consisted of net earnings; 20% was dividends, interest, and rent; and 20% was personal current transfer payments. An estimated 17.7% of the population had income below the poverty level (U.S. Census Bureau 2010).

A total of 929 farms reported production valued at \$344.5 million in Walla Walla County in 2007. These farms were worked by 1,461 farm operators, 30 of whom were of Spanish, Hispanic, or Latino origin. The leading crops, as indicated by market value, were fruits, tree nuts, and berries (\$109.9 million); followed by grains, oilseeds, dry beans, and dry peas (\$82.0 million). Wheat was the predominant grain crop (U.S. Department of Agriculture 2007).

Columbia County's 2008 civilian work force consisted of 1,616 people, of whom 1,417 were employed. The unemployment rate was 9.8%. Leading nonfarm employment sectors were leisure and hospitality (157 jobs); trade, transportation, and utilities (157 jobs); and natural resources and mining (112 jobs) (U.S. Census Bureau 2010).

In Columbia County, 2008 per-capita and median household incomes were \$25,614 and \$41,194, respectively. Of the per-capita income, on average, 59% was net earnings; 18% was dividends, interest, and rent; and 24% was personal current transfer payments. An estimated 14.4% of the population had income below the poverty level (U.S. Census Bureau 2010).

Farming is also an important source of employment and income in Columbia County. In 2007, the county's 283 farms generated a total of \$39.8 million in crop value, of which 86% was accounted for by grains, oilseeds, dry beans, and dry peas. Wheat was the county's predominant grain crop. A total of 452 farm operators work in Columbia County (U.S. Department of Agriculture 2007).

Property

As described in Section 3.2, Land Use and Recreation, the transmission line corridor passes near concentrations of homes at the following locations:

- along Baldwin Road near the Walla Walla Substation (Structures 1/6–1/8),
- along Bundy Hollow Road (Structures 27/6–28/1),
- along South Touchet Road (Structures 32/4–32/5), and
- along Wolf Fork Road near its intersection with Touchet River Road (Structures 35/2–36/3).

With the exception of the homes near the Walla Walla Substation, these are low-density, rural residences, located on large lots outside urban areas. Given the age of the existing transmission line, much of the residential development in the area is likely to have occurred after its construction.

Environmental Justice Populations

All projects involving a federal action (funding, permit, or land) must comply with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and *low-income populations* (collectively, the *environmental justice populations*) to the greatest extent practicable and permitted by law. Low income is defined based on the U.S. Department of Health and Human Services poverty guidelines; for 2009, this was \$22,050 for a family of four (U.S. Department of Health and Human Services 2010). Median household incomes in Walla Walla and Columbia counties substantially exceed this level; however, 17.7% and 14.4% of the populations of Walla Walla and Columbia counties, respectively, have incomes below the poverty level.

Environmental justice refers to the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The President's Council on Environmental Quality's *Environmental Justice: Guidance under the National Environmental Policy Act* (Council on Environmental Quality 1997) indicates that environmental justice concerns may arise from impacts on the natural or physical environment, such as human health or ecological impacts on minority and low-income populations, or from related social or economic impacts.

Public Services

Electricity service in the study area is provided by CREA, which serves members in Walla Walla and Columbia counties, and Pacific Power, Inc. Gas service in the study area is provided by Cascade Natural Gas.

Public water in Walla Walla and Columbia counties is provided by municipal systems and water divisions. Municipal solid waste is disposed of at the Sudbury Road Landfill in Walla Walla, which is managed by the City of Walla Walla Public Works Department.

Fire protection in the study area is provided by either city fire departments or county fire districts. Some portions of the study area are outside of rural fire protection districts. Emergency response services are also provided by the fire departments and districts. Police protection in the study area is provided by the City of Walla Walla Police Department, Walla Walla County Sheriff's Department, Columbia County Sheriff's Department, and the Washington State Patrol.

Columbia County Public Hospital District No. 1 is located in the study area. This public hospital district includes Dayton General Hospital, Columbia Family Clinic, and a number of assisted-living centers. The Walla Walla Veterans Affairs Medical Center is also located in the study area.

Walla Walla County is served by seven school districts and Columbia County is served by five school districts, all providing kindergarten through 12th grade education. Students are transported to schools by an extensive system of school bus routes that traverse most county roads. Whitman College, a 4-year residential liberal arts and sciences undergraduate college, is

located in Walla Walla, Washington, as are Walla Walla University and Walla Walla Community College.

3.11.2 Environmental Consequences—Proposed Action

Employment and Income

The main beneficial socioeconomic impact of the Proposed Action would be the economic activity associated with rebuilding the transmission line. The rebuild would require up to 30 construction workers each working an average of 60 hours per week for approximately 6 months.

The Impact Analysis for Planning (IMPLAN) model is a regional economic impact analysis model that compiles extensive county-level economic data. According to IMPLAN, each job in the nonresidential maintenance and repair construction sector in the two-county study area accounted for an average of \$98,226 of economic output and \$42,012 of labor income in 2011. It is estimated that the Proposed Action would generate \$2.97 million in economic output and \$1.27 million in labor income in this construction sector (Minnesota IMPLAN Group 2007).

Because a portion of construction-related spending would be recirculated repeatedly within the study area, the total regional economic impacts of the Proposed Action would exceed the direct impacts. For example, each dollar spent on nonresidential maintenance and repair construction would result in an estimated increase in total study area's economic output of \$1.44. Overall, the Proposed Action would increase study area's economic output by an estimated \$4.29 million. This construction sector has a labor income multiplier of 1.36, so the Proposed Action would increase labor income within the study area by approximately \$1.73 million (Minnesota IMPLAN Group 2007).

The main adverse economic impact of the Proposed Action would be temporary displacement of crop production resulting from land disturbance from construction activities. Because the Proposed Action would consist primarily of replacing existing transmission structures and lines, relatively little land that does not currently support structures would be disturbed by the construction activities. A total of 295 structures would be replaced and 24 new structures added, which would result in the temporary disturbance of approximately 32 acres currently in use for agricultural production. Two switch platforms could be installed to facilitate the connection to the proposed Dayton Tap Line, but these structures would be constructed within the disturbance footprint of the adjacent structures and would not add to the temporary disturbance of agricultural cultivation. The platforms would each remove an area measuring approximately 20 feet by 20 feet (0.01 acre) from agricultural production permanently. In addition, construction of new access roads would permanently displace approximately 0.4 acre of land that is currently in agricultural production.

The primary crop type that would be displaced or disturbed under the Proposed Action would be dryland grain. In nearby Klickitat County, Washington, each acre of dryland grain generates an average of approximately \$205 in crop value annually (McBride pers. comm.). Thus, the Proposed Action would displace roughly \$6,560 in dryland grain production during the year of construction and approximately \$86 in dryland grain production each subsequent year.

According to the IMPLAN model for Columbia and Walla Walla counties, each dollar of grain production causes a total change in the region's economic output of \$1.37, so crop production lost as a result of the Proposed Action would reduce regional output by approximately \$9,000 during the year of construction and approximately \$118 every subsequent year. Each dollar of grain production results in only \$0.10 in labor income in the grain farming sector and \$0.24 of labor income throughout the regional economy. Thus the displacement of grain production during the year of construction would reduce farming sector labor income and regional economic labor income by approximately \$656 and \$1,574, respectively. In subsequent years, farming sector labor income and regional economic labor income would be reduced by approximately \$9 and \$21, respectively. However, BPA has committed to compensating landowners for all revenue losses they would incur as a result of the Proposed Action. Such compensation would ameliorate both the direct and the region-wide impacts of displaced crop production. In addition, BPA would coordinate with the local farmers and landowners to minimize potential construction-related disruptions.

Because the beneficial economic impacts of additional construction activity in the region would outweigh the adverse impacts of displaced crop production, and because BPA would compensate farmers for displaced crop revenues, the overall economic impact of the Proposed Action would be beneficial.

Property Value

Some short-term impacts on property value and salability could occur on an individual basis during construction; however, the Proposed Action would have no appreciable impacts on property values over the long term. Therefore, property value impacts would be none to low.

Property Taxes

The Proposed Action would not affect the amount of property taxes collected by the counties crossed by the transmission line. Although BPA would purchase easements to widen the ROW as part of the Proposed Action, the underlying land ownership would not change nor would the assessed land value. Property owners would continue to pay property taxes in accordance with existing valuations and no property devaluations would be likely.

Sales Taxes

States cannot tax direct purchases by the federal government; however, Washington State would tax local purchases by government contractors building the line (Excise Tax Bulletin 316.08.193 and WAC 458-20-17001). Workers would also be taxed on all local purchases of goods in the state, unless those individuals' permanent residences are within states or other jurisdictions that are exempt from paying a local sales or "use tax" within the state. State sales tax in Washington is 6.5%. Walla Walla County has an effective local sales tax rate of 2.1% and Columbia County has a local sales tax of 1.4%. Taxes generated as a result of local purchases by contractors would not result in a considerable change in state tax revenues collected. Therefore, the impact on state sale tax revenues would be low.

Environmental Justice Populations

As described above, the Proposed Action would result in a beneficial impact on the economic condition of Walla Walla and Columbia counties. In addition, reconstruction of the transmission line would not occur in an area known to primarily support a minority or low-income population. As a result, the Proposed Action would not result in an adverse or disproportionate impact on minority or low-income populations.

Public Services

The Proposed Action would result in low or no impacts on public services. During construction, guard structures would be placed over local utility lines and roadways to ensure continued service and safe passage in the event that the conductor line or other materials were dropped during construction. Dust suppression and truck washing for weed management would require the use of washing stations and water trucks. Sufficient water supply would be provided by the City of Walla Walla Water Division and the Dayton Water Department. Construction waste would be recycled or taken to the Sudbury Road Landfill. Truck traffic would result in minimal localized delays of only a few minutes. This delay would not disrupt the ability of emergency service personnel to respond to emergencies. Most of the construction would occur from the late spring through early fall, and no impacts on schools or school transportation services would occur.

3.11.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the following mitigation measures would be employed to minimize impacts on agricultural production:

- BPA would coordinate with the local farmers and landowners to minimize potential construction-related disruptions.
- BPA would compensate landowners for all revenue losses they incur as a result of the Proposed Action.

3.11.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

There would be no unavoidable impacts on the socioeconomic environment, public facilities, or environmental justice populations under the Proposed Action.

3.11.5 Cumulative Impacts—Proposed Action

The Proposed Action would result in only short-term socioeconomic impacts; there would be no noticeable long-term beneficial or adverse impacts on population and housing, income and employment, property, public services, or environmental justice populations.

3.11.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, the beneficial socioeconomic impacts of construction activities would not occur. In addition, there would be the potential for greater cost of electrical service and more frequent disruption of service, because the existing transmission line would likely require more frequent maintenance and upkeep.

3.12 CULTURAL RESOURCES

3.12.1 *Affected Environment*

Cultural Resources Surveys and Field Investigations

A *cultural resources* assessment of the potential for historic, archaeological, and Native American resources was completed by Plateau Archaeological Investigations (Plateau) in September 2010. The study area for this cultural resources assessment, referred to and defined in the cultural resources assessment as the Area of Potential Effect (APE), includes a 60-foot-wide corridor extending the length of the transmission line, as well as locations outside this area targeted for access road work and danger tree removal.

The cultural resources assessment was based on a review of known archaeological resources within a 1-mile radius of the study area, as inventoried on the Washington Information System for Architectural and Archaeological Records Data (WISAARD) at the Washington State Department of Archaeology and Historic Preservation (DAHP) in Olympia, Washington (Plateau Archaeological Investigations 2010). As inventoried on WISAARD, over 30 cultural resource surveys have been completed within 2 miles of the study area, including eight surveys that addressed specific components of the Walla Walla–Tucannon River transmission line. Plateau (2010) details the results of each of the eight surveys that cover a portion of the study area.

In addition to a review of WISAARD, Plateau (2010) conducted a cartographic analysis of landform, topography, soils, and proximity to water using topographic maps; reviewed secondary historic resources on file at DAHP and Washington State University in Pullman, Washington; reviewed ethnographies to identify known Traditional Cultural Resources; and completed a pedestrian survey of the study area in August 2010. A complete account of the prefield research conducted in support of the Proposed Action, as well as a detailed description of the regional prehistoric background and historic context, is provided in Plateau (2010).

Archaeological, Historic, and Native American Resources

Plateau's review of WISAARD found 12 archaeological sites recorded within 1 mile of the study area. None of these sites were located within the transmission line corridor or access road work areas. In addition, no Native American or historic-era cultural resources were observed during the August 2010 pedestrian survey (Plateau Archaeological Investigations 2010).

Although there are no known archaeological or Native American resources in the study area, Plateau (2010) notes that the study area and surrounding region were heavily traversed by the Cayuse, Walla Walla, Umatilla, and other neighboring Native American groups, many of which took advantage of the extensive interconnected waterway system in the region, which offered access to abundant floral and faunal resources. It is possible that undiscovered or isolated Native American resources, such as campsites or lithic material, may be found in the study area, particularly around historic and existing stream corridors (Plateau Archaeological Investigations 2010).

In addition, white settlement in the region began as early as the 1830s. Numerous roads are shown on maps dating to 1861, indicating that travel within the region was common at that time.

Although settlement was concentrated in city centers, agriculturally based families and farmsteads were common in wide open flat spaces. Given that the Proposed Action would pass through agricultural fields, range lands, and forested area, it is possible that discarded items, such as broken glass, white ware, nails, or lost farming equipment such as metal pins, wire, or safety glass, may be discovered during construction (Plateau Archaeological Investigations 2010).

Although not currently listed on the National Register of Historic Places (NRHP), the Walla Walla–Tucannon River transmission line is, itself, considered a historic property (older than 50 years) and was determined eligible for listing in 2005 as part of BPA’s Walla Walla–North Lewiston Rebuild Project (Dickinson 2005). Previous work along the transmission line has moved forward with the determination of no adverse effect from DAHP under the condition that materials be replaced in kind (Dickinson 2005).

3.12.2 Environmental Consequences—Proposed Action

With the exception of the transmission line itself, there are no known historic, archaeological, or Native American resources in the study area. However, construction activities, including removal of existing and installation of new structures and construction or reconstruction of access roads, have the potential to affect cultural resources, including human remains, not currently known to exist in the study area. Implementation of the mitigation measures described below would ensure that previously undiscovered cultural resources were managed properly and would minimize both direct and indirect impacts from the Proposed Action.

Although not currently listed, the Walla Walla–Tucannon River transmission line is considered eligible for listing on the NRHP. As noted above, previous work on the transmission line has moved forward with a determination of no adverse effect from DAHP under the condition that materials be replaced in kind (Dickinson 2005). Given that the Proposed Action would replace the majority of the structures at their existing locations, that the heights of the new structures would be similar to the heights of the existing structures, and that only two new structures would deviate in design from the general wood-pole appearance of the existing structures, it is anticipated that the Proposed Action would have no adverse effect on the transmission line as a historic property

No operation- or maintenance-related impacts on cultural resources would occur as a result of the Proposed Action, because these activities are not ground disturbing.

3.12.3 Mitigation—Proposed Action

The following measures would be implemented to minimize potential construction-related impacts if previously unknown cultural resources are discovered during ground-disturbing activities.

- Should ground-disturbing activities reveal any cultural materials (e.g., structural remains, Euroamerican artifacts, or Native American artifacts), all activities in the vicinity of the find would cease. The BPA archaeologist, DAHP, and affected tribes would be notified immediately.
- If human remains, suspected human remains, or any items suspected to be related to a human burial (i.e., funerary items, sacred objects, or objects of cultural patrimony) are encountered

during project construction, operations would cease immediately within 200 feet of the find. The area around the discovery would be secured and the Walla Walla County or Columbia County Sheriff, the BPA archaeologist, the State Historic Preservation Officer, and the affected tribes would be contacted immediately.

3.12.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

All of the potential impacts described in Section 3.12.2 are unavoidable because they are associated with impacts on cultural resources that are currently not known to exist, but that may be discovered during construction of the Proposed Action. Implementation of the mitigation measures described in Section 3.12.3 would minimize those construction-related impacts.

3.12.5 Cumulative Impacts—Proposed Action

Similar to the Proposed Action, other projects occurring in Walla Walla and Columbia counties have the potential to disturb previously undiscovered cultural resources. Given that other projects would likely include similar mitigation measures to minimize the potential impacts of these discoveries, the contribution of the Proposed Action to any cumulative impact on cultural resources would be low.

3.12.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, impacts associated with construction would not occur. Continued operation and maintenance of the existing transmission line, including access road maintenance and vegetation management, would likely not result in ground disturbance and it not expected to affect previously undiscovered cultural resources. Therefore, the No Action Alternative is anticipated to result in no impact on cultural resources.

3.13 NOISE, PUBLIC HEALTH, AND SAFETY

3.13.1 Affected Environment

Noise

Noise is commonly defined as loud, unwanted, or unexpected sound that disrupts normal human activities or diminishes the quality of the human environment. Audible noise is measured in *decibels* on the A-weighted scale. The *A-weighted decibel* (dBA) scale describes sound that corresponds to human perception. Table 3-7 contains examples of common activities and the associated noise level in dBA.

Table 3-7. Common Activities and Associated Noise Levels

Noise Source	Noise Level (dBA)
Loud live band music	110
Truck 50 feet away	80
Gas lawnmower 100 feet away	70
Normal conversation indoors	60
Moderate rainfall on vegetation	50
Refrigerator	40
Bedroom at night	25

Ambient Noise Environment

The study area for the noise analysis includes the noise-sensitive land uses within 1,000 feet of the transmission line corridor or within 500 feet of access roadways (i.e., any road that could be subject to increases in traffic volume from construction vehicles and worker trips). Noise-sensitive land uses within the study area include residences, recreation areas, and other areas where noise can affect how outdoor areas are used or enjoyed.

Within the study area, *ambient noise* levels vary with the proximity of the transmission line corridor to highways and other noise-generating activities. Most of the transmission line corridor is located in rural, undeveloped areas where noise levels are generally very low. In these areas, the predominant sources of noise are agricultural equipment operation and some vehicular traffic. Other sources of noise include maintenance activities along the transmission line corridor. In the more developed areas, traffic and noise associated with human activity are major contributors to background noise. Noise from the existing transmission lines contributes to the noise setting, but is overshadowed by other noise sources in existing developed areas. Sources of audible noise associated with electrical transmission systems include construction and maintenance equipment, transmission line corona (see below), and the hum of electrical transformers.

Audible noise from high-voltage transmission lines (generally 345-kV and above) occurs as a result of conductor corona activity (i.e., the electrical breakdown of air molecules in the vicinity of high-voltage conductors). This corona activity produces a hissing, crackling, popping sound, particularly during wet conditions such as rain or fog. Generally, audible noise from 115-kV lines is so low as to be not noticeable (due to the low amount of corona activity generated at this voltage level) and is usually well below other ambient noise levels in the area. BPA designed this 115-kV transmission line to meet applicable state and federal noise regulations. Historically, public complaints/inquiries of transmission line audible noise at this voltage level are extremely rare.

Public Health and Safety

All electrical wires, from household wiring to transmission lines, produce *electromagnetic fields* (EMF). The primary parameters that impact the EMF levels produced by a power line are line

voltage, current loading, line configuration, and line routing. Exposure to EMF depends on the design of the line and proximity to the line. The State of Washington has no regulations regarding transmission line electric or magnetic fields, and no nationally recognized regulatory standards/limits exist for electric fields from transmission lines except those inferred from the National Electric Safety Code 5-milliamperere criterion for maximum allowable steady-state current in vehicles due to electrostatic effects. BPA designs transmission line projects to meet the National Electrical Safety Code exposure criteria within and outside the transmission corridor ROW.

Radio and television interference from high-voltage power lines can be produced from two general sources: conductor corona activity (see Audible Noise section) and spark-discharge activity on connecting hardware. Interference from these sources is known as *electromagnetic interference* (EMI). In certain circumstances, EMI can affect other types of communication systems and sensitive receivers. Conductor corona activity is primarily a function of the operating line voltage, while spark-discharge activity on connecting hardware is usually associated with the aging condition of hardware (e.g., over time, hardware connections can become loose and corroded causing small spark-gaps). As with corona audible noise, corona EMI is generally associated with lines operating at voltages of 345 kV or higher. Historically, public complaints of radio and television interference from BPA transmission lines operating at 115 kV are rare.

Electric fields from high-voltage transmission lines can cause nuisance shocks when a grounded person touches an ungrounded object under a transmission line or when an ungrounded person touches a grounded object. BPA transmission lines are designed so that the electric field would be below levels where primary shocks could occur from even the largest (ungrounded) vehicles expected under the line.

3.13.2 Environmental Consequences—Proposed Action

Construction Noise

Construction activities would result in short-term and intermittent noise impacts as construction progresses along the transmission line corridor. Noise would come from construction equipment and vehicles used for road work and structure removal and replacement. Noise from truck traffic and increased worker trips would temporarily contribute to existing traffic noise on local roads and highways, but is not expected to result in a significant increase in average traffic noise levels. Noise impacts from construction traffic along local roads would be considered low.

Noise within the study is regulated by local jurisdictions (Walla Walla and Columbia counties) for compliance with WAC 173-60. These regulations specify noise limits according to the type of property where the noise would be heard (the receiving property) as well as land use designation for the area where the noise would be generated (the noise source). Transmission lines are classified as industrial sources for purposes of establishing allowable noise levels at receiving properties. Nighttime noise limits in residential neighborhoods are 50 dBA, in commercial areas 55 dBA, and in industrial areas 60 dBA. The daytime noise threshold for residences is 60 dBA. Construction noise would be limited to daylight hours (7:00 a.m. to 5:00 p.m.).

Helicopters would be used to install conductors at structures. Noise associated with helicopter use would be temporary and intermittent. It would generally take less than 10 minutes to string the conductor at each structure; it is estimated that helicopters would not be in any given line mile for more than 3 hours. Although helicopter noise would likely exceed noise thresholds for some noise-sensitive receptors, the impact would be considered moderate because of the short duration of the disturbance.

Table 3-8 summarizes noise levels generated by typical equipment that would likely be used to construct the proposed action. Noise levels at 50 feet from a construction site would range from 80 to 90 dBA. Noise produced by construction equipment would decrease with distance at a rate of about 6 dBA per doubling of distance from the site. Based on that assumed attenuation rate, noise-sensitive properties within 800 feet of construction sites could be exposed to daytime noise levels higher than the applicable noise threshold for residences (60 dBA).

Table 3-8. Typical Construction Noise Levels

Type of Equipment	Maximum Noise Level (dBA) at 50 Feet
Road grader	85
Bulldozer	85
Heavy truck	88
Backhoe	80
Pneumatic tools	85
Concrete pump	82
Crane	85
Combined equipment	89

Source: Federal Transit Administration 2006

The transmission line corridor is located far from population centers and borders mostly undeveloped land. Noise impacts during construction would be limited to a few residences located near the transmission line corridor. Although construction activities could exceed applicable noise thresholds for some residences, the impact would be considered moderate because construction activities at any given location are expected to be relatively short in duration (approximately 1 to 2 days) and limited to daylight hours (7:00 a.m. to 5:00 p.m.). Implementation of the mitigation measures described below would reduce noise impacts.

Noise from construction vehicles and increased work trips would temporarily contribute to existing traffic noise on local roads, but is not predicted to result in a significant increase in average traffic noise levels. Noise impacts from construction vehicles on local roadways would be considered low.

Maintenance and Operational Noise

Periodic noise impacts would occur during maintenance activities and would typically be associated with equipment used to maintain or repair infrastructure (e.g., wood-pole structures,

access roads) associated with the Proposed Action. In addition, during periodic vegetation maintenance activities, noise could be generated by various cutting devices, such as chainsaws, used to remove vegetation from the transmission line corridor. Given the short-term nature of this noise, this impact would be considered low.

Although not part of the Proposed Action, BPA also conducts routine helicopter inspection patrols of the federal transmission system in the Pacific Northwest, including the transmission lines in the study area. As part of these routine patrols, BPA would continue to use helicopters to fly the line to look for any problems or repair needs. These patrols typically occur two or three times a year, generally in March, July, and/or October. Any noise experienced by receptors on the ground during these flyovers would be extremely infrequent and limited in duration (i.e., only for the few seconds it would take for the helicopter to pass over the receptor).

During stormy or very humid weather, corona noise from a transmission line operating at 230 kV or greater can contribute significantly to ambient noise. BPA design criteria ensure a maximum level of 50 dBA for corona-generated audible noise from transmission lines at the edge of the ROW. Under the Proposed Action, no changes to the operating line voltage of the Walla Walla–Tucannon River 115-kV line are expected. Thus, the audible noise environment along the impacted line sections is not expected to significantly change as a result of the Proposed Action. BPA has calculated audible noise levels (for wet conditions) for the Proposed Action (Table 3-9). The data illustrate that the Proposed Action would reduce the audible environment near the existing ROW. The impacted lines will remain compliant with applicable State of Washington noise regulations. As a result, audible noise associated with the corona effect would be considered a low impact.

Table 3-9. Existing Right-of-Way Audible Noise* (dBA, wet conditions)

ROW Section Description		Western ROW Edge	Maximum on ROW	Eastern ROW Edge
Walla Walla–Tucannon River No.1 115-kV	Before Action	27.3	29.8	27.3
	After Action	20.0	22.6	20.0

* Values developed from BPA modeling programs.

Public Health and Safety during Construction

Potential health and safety impacts would be associated with the use of construction and heavy equipment; potential exposure to hazardous materials, such as fuels and lubricants during construction; construction traffic entering and traveling across the transmission line corridor; potential aircraft hazards; and worker proximity to high-voltage power lines. Standard construction safety procedures would be employed. Implementation of the mitigation measures described below would reduce these potential impacts to a low level.

The presence of a transmission line could also pose a hazard to any low-flying aircraft. However, given the relatively low height of the proposed structures, the risk associated with this potential hazard would be considered extremely low, and would not change from current conditions.

Public Health and Safety during Operation

As described in Section 3.13.2 above, the primary parameters that affect EMF levels produced by a power line are line voltage, current loading, line configuration, and line routing. The Proposed Action would not appreciably change any of these parameters. Therefore, generally speaking, no changes to the EMF environment in the vicinity of the line are expected. In a few isolated cases, pole heights would need to be increased slightly to raise the conductor-to-ground clearances. In these areas, ground-level EMF would decrease slightly within the existing ROW. No changes are expected beyond the existing ROW.

BPA has calculated electric and magnetic field levels for the Proposed Action (Tables 3-10 and 3-11). The data illustrate that the Proposed Action would not significantly change either the electric or magnetic field environment on the existing ROW⁸.

Table 3-10. Existing Right-of-Way Electric Field* (kV/m)

ROW Section Description		Western ROW Edge	Maximum on ROW	Eastern ROW Edge
Walla Walla–Tucannon River No.1 115-kV	Before Action	1.0	1.4	1.0
	After Action	1.1	1.5	1.1

ROW = right-of-way

* Values developed from BPA modeling programs.

Table 3-11. Existing Right-of-Way Magnetic Field* (milligauss, based on annual 2009 line load statistics)

ROW Section Description		Eastern ROW Edge		Maximum on ROW		Western ROW Edge	
		Annual Average	Annual Peak	Annual Average	Annual Peak	Annual Average	Annual Peak
Walla Walla–Tucannon River No.1 115-kV	Before Action	12.4	40.8	27.5	90.3	12.4	40.8
	After Action	12.4	40.8	27.5	90.3	12.4	40.8

ROW = right-of-way

* Values developed from BPA modeling programs

Specific data for the proposed line are not available at this time, but EMF emissions for the transmission line are expected to conform to BPA and National Electrical Safety Code criteria, and are not expected to result in an adverse impact.

⁸ Calculation of annual average and annual peak magnetic field levels reported in Table 3.13-5 were based on historical 2009 annual line loading statistical data obtained from BPA’s SCADA system.

Under the Proposed Action, no changes to the operating line voltage of the Walla Walla–Tucannon River 115-kV transmission line are expected. Additionally, the Proposed Action would result in new, properly installed connecting hardware that would reduce any risk associated with aging hardware spark-discharge activity. As a result, the Proposed Action is expected to either not change or possibly slightly improve radio and television interference performance along the impacted line sections and, based on past performance, interference complaints are not expected. In any case, any legitimate radio or television interference complaint received by BPA will be investigated. If BPA facilities are determined to be the cause of the interference, BPA will take corrective action to eliminate the interference. Therefore, EMI impacts from the Proposed Action would be considered low.

3.13.3 Mitigation—Proposed Action

To reduce the potential for temporary, adverse noise impacts during construction, the following measures would be incorporated into contract specifications.

- Locate equipment as far away as is practical from noise-sensitive uses.
- Require all construction equipment powered by gasoline or diesel engines to have sound-control devices that are at least as effective as those originally provided by the manufacturer.
- Require all equipment to be operated and maintained to minimize noise generation.
- Prohibit gasoline or diesel engines from having unmuffled exhaust.

The following mitigating measures would minimize potential health and safety risks if the Proposed Action is implemented.

- Prior to starting construction, the contractor would be required to prepare and maintain a safety plan in compliance with State of Washington requirements. This plan would detail how to manage hazardous materials such as fuel, and how to respond to emergency situations. It would be kept on site at all times.
- During construction, contractors would be required to hold crew safety meetings at the start of each workday to review potential safety issues and concerns.
- At the end of each workday, the contractor and subcontractors would secure the site, as much as possible, to protect equipment and the general public.
- The contractor would comply with all fire safety laws, rules, and regulations of the State of Washington. The contractor would be required to prepare a fire prevention and suppression plan to meet BPA, local authority, and land manager requirements.
- BPA would construct and operate the new transmission line to comply with the National Electrical Safety Code.
- If a hazardous material is discovered that could pose an immediate threat to human health or the environment, BPA would require that the contractor notify the Contracting Officer's Technical Representative immediately and stop work in that area until the site is properly cleaned up.
- The contractor would ground fences and other metal structures on and near the transmission line corridor during construction to limit the potential for nuisance shocks.

3.13.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Unavoidable noise impacts would include noise that would be experienced by noise-sensitive receptors (residences) during construction activities. With implementation of mitigation, construction noise impacts would be low to moderate and would cease upon the completion of construction activities.

Potential unavoidable public health and safety risks include increased risk of electrical shocks, accidental release of fuels or oils, accidental injury to construction workers, and possible collisions between construction vehicles and vehicles driven by the public. These impacts would be low with implementation of the mitigation measures listed above.

3.13.5 Cumulative Impacts—Proposed Action

Construction noise from the Proposed Action would temporarily contribute to existing noise levels in the area. Noise levels would return to current levels following construction. Cumulative noise impacts typically occur when noise receptors are exposed to more than one noise source at approximately the same time, such as cumulative noise from construction traffic and activities, agricultural activities, and residential uses.

With the possible exception of the Dayton Tap Line, no other construction projects are expected to take place at the same time and in close proximity to the transmission line corridor during construction of the Rebuild Project. One end of the Dayton Tap Line would be constructed adjacent to the Rebuild Project; however, this is the only location where the construction of this or any other project would have the potential to occur at the same time and in close proximity. Therefore, the cumulative noise impacts of the Proposed Action would be low.

The Proposed Action would not cumulatively increase the overall level of EMF exposure along the corridor. The transmission lines with new wood-pole structures would have similar EMF levels to those of the existing lines. There are no known plans to construct additional transmission lines in the study area, so cumulative levels of EMF would not increase above existing levels.

3.13.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, noise associated with construction activities would not occur. Noise associated with maintenance would continue as in the past and could occur more often than under the Proposed Action because of the deteriorated condition of the existing lines and the likely need for more frequent maintenance activities. Potential health and safety risks associated with construction would also not occur under the No Action Alternative. EMF exposure would remain similar to current conditions. Therefore, maintenance of the line would result in low impacts on noise, public health, and safety.

3.14 CLIMATE CHANGE

3.14.1 *Affected Environment*

Greenhouse gases (GHG) are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. When plants decay or are burned, the stored carbon is released back into the atmosphere, available to be taken up again by new plants (Ecological Society of America 2008). In forests, the carbon can be stored for long periods of time, and because they are so productive and long-lived, forests have an important role in carbon capture and storage and can be thought of as temporary carbon reservoirs. There is also a large amount of GHGs stored deep underground in the form of fossil fuels, and soils store carbon in the form of decomposing plant material and serve as the largest carbon reservoir on land.

Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. When forests are permanently converted to cropland, for instance, or when new buildings or roads displace vegetation, the GHG storage capacity of the disturbed area is diminished. Carbon dioxide (CO₂), nitrous oxide (N₂O), and methane (CH₄) emissions increase when soils are disturbed (Kessavalou et al. 1998), and burning fossil fuels releases GHGs that have been stored underground for thousands of years and cannot be readily replaced. The resulting build up of heat in the atmosphere due to increased GHG levels increases temperatures, which causes warming of the planet through a greenhouse-like effect (U.S. Energy Information Administration 2009a). Increasing levels of GHGs could increase the Earth's temperature by up to 7.2 °F by the end of the twenty-first century (U.S. Environmental Protection Agency 2010a).

The principal GHGs emitted into the atmosphere through human activities are CO₂, CH₄, N₂O, and fluorinated gases (U.S. Environmental Protection Agency 2010a). CO₂ is the major GHG emitted, and the burning of *fossil fuels* accounts for 81% of all U.S. GHG emissions (U.S. Environmental Protection Agency 2010a; Houghton 2010; U.S. Energy Information Administration 2009b). CO₂ enters the atmosphere as a result of such activities as land use changes; burning of fossil fuels including coal, natural gas, oil, and wood products; and from the manufacturing of cement. CO₂ levels have increased to 379 parts per million since the industrial revolution, a 36% increase, as a result of human activities (Intergovernmental Panel on Climate Change 2007). A report discussing these specific GHGs in more detail is in Appendix D.

3.14.2 *Environmental Consequences—Proposed Action*

GHG emissions resulting from the Proposed Action were calculated using the methodology described in the GHG technical report (Appendix D). Calculations were done for three types of activities that produce GHG emissions: 1) rebuilding the transmission line, 2) permanently removing vegetation for construction of new roads and installation of the 24 new structures, and 3) ongoing annual operations and maintenance for the estimated 50-year operational life of the

transmission line. GHG emissions associated with construction activities would occur over a period of approximately 7 months.

The Proposed Action would result in an estimated total of 6,828 metric tons of *carbon dioxide equivalent* (CO₂e)⁹ emissions during the first year of implementation (when project construction activities would occur), and a total of an estimated 7,628 metric tons of CO₂e emissions for ongoing operations and maintenance activities over the 50-year lifespan of the line (Table 3-12). Tree removal for new road construction and structure installation would constitute a reduction in the GHG storage capacity of the area. Assuming each affected acre contains the maximum level of carbon storage, the net carbon footprint associated with the removal of trees would be estimated as 11,084 metric tons CO₂e. (Detailed information related to calculations is presented in Appendix D.)

Table 3-12. Net Carbon Footprint over 50-Year Life of the Rebuild Project

Type of Activity	Total CO ₂ e Emissions (metric tons)
Construction	6,828
Operations and maintenance	7,628

To provide context for this level of emissions, the EPA mandatory reporting threshold for large sources of GHGs is 25,000 metric tons of CO₂e emitted annually. This threshold is approximately the amount of CO₂e generated by 4,400 passenger vehicles per year. Comparatively, the emissions during project construction would be equivalent to the emissions generated by about 1,202 passenger vehicles. Operation and maintenance activities would translate into CO₂ emissions about equal to that of about 1,343 passenger vehicles over a 50-year period, or about 27 passenger vehicles per year. Because these activities would be similar to existing conditions, project GHG emissions would not represent a substantial change. Therefore, given these low contributions, the impacts of construction, operations and maintenance, and vegetation removal on GHG concentrations would be low.

3.14.3 Mitigation

If the Proposed Action is implemented, BPA would implement the following mitigation measures to avoid or minimize impacts on GHG emissions. See Section 3.10, Air Quality, for additional mitigation measures that would minimize GHG emissions.

- Implement vehicle idling and equipment emissions measures.
- Encourage carpooling and the use of shuttle vans among construction workers to minimize construction-related traffic and associated emissions.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.

⁹CO₂e is a unit of measure used by the Intergovernmental Panel on Climate Change that takes into account the global warming potential of each of the emitted GHGs using global warming potential factors.

- Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance where practicable.
- Encourage the use of the proper size of equipment for the job.
- Use alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.
- Reduce electricity use in the construction office by using compact fluorescent bulbs and turning off computers and other electronic equipment every night.
- Recycle or salvage non-hazardous construction and demolition debris where practicable.
- Dispose of wood poles in the local area where practicable.
- Use local rock sources for road construction.

3.14.4 Unavoidable Impacts Remaining After Mitigation

Implementation of mitigation measures would help to reduce GHG emissions. However, unavoidable impacts would include slight increases in GHG releases and decreases in GHG storage capacity. These impacts are considered to be low for the reasons discussed above.

3.14.5 Cumulative Impacts

All levels of GHG emissions are significant in that they contribute to global GHG concentrations and climate change. Given this low amount of contribution, however, the Proposed Action's impact on GHG concentrations would be considered low.

3.14.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, the existing transmission line would not be rebuilt, so the impacts related to the construction of the Proposed Action would not occur. Operation and maintenance activities would continue similar to existing conditions, as described in Section 2.1.3. Maintenance activities would likely increase as existing structures deteriorate, and more structure repair and replacement could be required. Maintenance of access roads would be needed and road work would likely need to take place as an operations and maintenance activity. The maintenance activities would result in very minor increases in GHG emissions. Because the increase would be so small, the impacts would be low.

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Chapter 4

Environmental Consultation, Review, and Permit Requirements

4.1 INTRODUCTION

This chapter addresses federal statutes, implementing regulations, and executive orders applicable to the Proposed Action. This EA is being sent to tribes, federal agencies, and state and local governments as part of the consultation process for the Proposed Action. Persons consulted are listed in Chapter 5, Persons, Tribes, and Agencies Consulted.

The BPA prepared this EA pursuant to regulations implementing the NEPA (42 USC 4321 *et seq.*), which require federal agencies to assess the impacts that their actions may have on the environment. NEPA requires preparation of an EIS for major federal actions significantly affecting the quality of the human environment. BPA prepared this EA to determine if the Proposed Action would create any significant environmental impacts that would warrant preparing an EIS.

4.2 STATE, AREAWIDE, AND LOCAL PLAN AND PROGRAM CONSISTENCY

BPA, as a federal agency, is not required to comply with the requirements associated with obtaining state and local land use approvals or permits, because Congress has not waived federal supremacy over these areas. As a federal agency, BPA only obtains those state and local permits for which Congress has clearly and unambiguously waived sovereign immunity. However, BPA will, to the maximum extent practical, strive to meet or exceed the substantive standards and policies of the state and local environmental regulations described below.

4.2.1 *Farmland Protections Policy Act*

The Farmland Protection Policy Act (FPPA) (7 USC 4201 *et seq.*) requires that federal agencies avoid the unnecessary and irreversible conversion (directly or indirectly) of farmland to nonagricultural uses by ensuring that their proposed actions are consistent with federal, state, and local programs and policies designed to protect farmland. The act's purpose is to minimize the number of federal programs that contribute to the unnecessary and irreversible conversion of agricultural land to nonagricultural uses.

For the purposes of the FPPA, farmland includes prime farmland, unique farmland, and farmland of statewide or local importance, as defined below.

- **Prime farmland** is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland may include land that meets these criteria but that currently supports

livestock or timber production, but does not include land already in or committed to urban development or water storage.

- ***Unique farmland*** is land other than prime farmland that is used for production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods.
- ***Farmland of statewide or local importance*** includes land outside of prime or unique farmland that is important for the production of food feed, fiber, forage, or oilseed crops, as determined by the appropriate state or unit of local government with jurisdiction over an area.

Each NRCS field office maintains a list of mapped soil units that meet each of the above definitions.

There are limited exemptions to compliance with the FPPA, including construction within an existing ROW purchased on or before August 4, 1984. Given that that the Walla Walla-Tucannon River transmission line corridor was built in the 1940s, replacement of the infrastructure within the BPA ROW would not be subject to compliance with the FPPA. In addition, there would be no infrastructure or development associated with the acquisition of the additional 20 feet of ROW on each side of the existing ROW. However, construction of new infrastructure on farmland outside of the existing ROW would require an assessment of potential effects on protected farmlands by NRCS.

In January 2011, BPA contacted NRCS to request a soil inventory report for the areas of previously undisturbed farmland outside of the existing BPA ROW that would be affected by the Proposed Action. Specifically, the assessment focused on the two new access roads in Columbia County and one new access road in Walla Walla County, including a 20-foot-wide disturbance buffer around all new roads. In comparing the NRCS soils inventory reports for both counties with the mapped soils classified as prime and other important farmlands, it was determined that 0.1 acre of farmland of statewide importance in Columbia County would be converted to a nonagricultural use during construction of the Proposed Action (Fortner pers. comm.).

Typically, in instances where farmland would be converted to a nonagricultural use, NRCS uses a land evaluation and site assessment (LESA) system to establish a farmland conversion impact rating score to determine if potential adverse impacts on farmland exceed the recommended allowable level. The NRCS-CPA-106 form was submitted to the Dayton County Soils Resource Conservationist on February 28, 2011. The total score for the Proposed Action was 104, which is in accordance with Code of Federal Regulations (CFR), Title 7, Section 658.4(c)2. Further consideration for farmland protection is not required.

4.2.2 Washington State Growth Management Act

The Washington State Growth Management Act of 1990 (GMA) requires that most counties and cities in Washington adopt comprehensive plans, including “a utilities element consisting of the general location, proposed location, and capacity of all existing and proposed utilities, including, but not limited to, electrical lines, telecommunication lines, and natural gas lines.” The 1991 and

subsequent amendments to the GMA added more planning requirements. All of the jurisdictions noted above have adopted comprehensive plans under GMA.

4.2.3 Washington State Shoreline Management Act

The state's Shoreline Management Act (Revised Code of Washington [RCW] Chapter 90.58) identifies "shorelines of the state" and "shorelines of statewide significance" that would be spanned by the Proposed Action. The ROW crosses streams designated shorelines of the state (WAC 173-18).

BPA would take the following measures, where practicable, to assure consistency with the Counties' Shoreline Master Plans:

- Structures near shorelines of the state would be placed in an existing corridor.
- Structures would not be placed in water bodies.
- In shoreline areas, disturbed land would be restored as closely as possible to preproject forms and reseeded with native species.
- Erosion control measures would be implemented to protect the 200-foot shoreline area.

Other mitigation measures that would protect shorelines are listed in Section 3.6, Water Resources and Water Quality, and Section 3.5, Fish and Wildlife.

4.2.4 Critical Areas Ordinances

GMA requires that all local jurisdictions designate and protect critical areas, which are defined as wetlands, critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas. Columbia County, Walla Walla County, and the City of Walla Walla have adopted ordinances and plans protecting critical areas. In most cases, the Proposed Action would be consistent with the provisions of these ordinances and plans because BPA would avoid critical areas and critical area buffers to the maximum extent possible. BPA will submit a detailed project description to these jurisdictions and request comments on the proposal.

4.2.5 Walla Walla County Comprehensive Plan

The *Walla Walla County Comprehensive Plan* (Walla Walla County 2009) designates the areas crossed by the existing transmission line as Primary Agriculture, which has a corresponding zoning designation of Primary Agriculture-40. The Primary Agriculture designation is intended to protect agricultural lands of long-term commercial significance from conversion to non-agricultural uses, such as high-intensity commercial and residential development. Utility facilities are a conditionally permitted use in the Primary Agriculture-40 zone. An applicant for a conditional use permit must demonstrate to the County that a proposed action is compatible with the character of the location, does not pose a health or safety risk, and will comply with all applicable development regulations.

The Proposed Action would use the existing transmission line corridor and would be consistent with this land use plan to the extent practicable.

4.2.6 City of Walla Walla Comprehensive Plan

A small portion of the transmission line crosses land between Structures 2/1 and 2/9 that is owned by the City of Walla Walla in association with its Sudbury Road Landfill. This area is designated as Public in the *City of Walla Walla Comprehensive Plan* (Peter J. Smith & Company 2008) with a corresponding zoning designation of Public Reserve. Areas zoned Public Reserve are intended to be protected for use by civic, educational, cultural, or otherwise public facilities. Regional electric transmission facilities are considered a Level 3 review use (Walla Walla Municipal Code 20.100.040), requiring a quasi-judicial public hearing and final decision by the local Hearing Examiner prior to construction (Walla Walla Municipal Code 20.26).

Title 20, Division VII of the Walla Walla Municipal Code describes provisions for nonconforming situations that apply to lots, structures, and uses of lots or structures which were lawful prior to the adoption of the code (June 8, 1977), but which would be which would be prohibited, regulated or restricted under the terms of the code (Walla Walla Municipal Code 20.212.010). Under Division VII, nonconforming situations that were otherwise lawful on the effective date of the code may be continued.

The removal, installation, and operation of the transmission line as part of the Proposed Action would be consistent with this land use plan to the extent practicable. The future acquisition of easements for the expanded ROW would not affect the underlying land ownership and is not anticipated to change the use of the land in such a way that it would result in noncompliance with the municipal code.

4.2.7 Columbia County Zoning Ordinance

The portion of Columbia County crossed by the transmission line is zoned Agricultural (A-1) and Agricultural-Residential (AR-2) (Benzel pers. comm.). The A-1 zone is intended to protect farms and associated agricultural activities from encroachment by non-agricultural uses. Utility substations are listed as a conditional use in A-1 zones (Columbia County Zoning Ordinance Section 8.D). The AR-2 zone is intended to promote development of small acreage lots for agricultural, residential, and recreational use. Utility facilities that are not accessory uses for a permitted use (e.g., agriculture, residences, forestry, grazing) may require a variance in order to construct (Columbia County Zoning Ordinance Section 12.D).

The Proposed Action would use an existing corridor and would be consistent with these zoning ordinances to the extent practicable.

4.3 GEOLOGY AND SOILS

Although no federal, state, or local regulations specifically and solely govern geology and soils in the study area, considerations and requirements related to this resource area are included in the land use plans and zoning ordinances. Some laws and regulations applicable to public health and safety (see Section 4.13 below) include provisions intended to reduce soil contamination. Regulations applicable to water quality, floodplains, wetlands, and land use also contain some provisions to reduce soil instability, erosion, deposition, and loss.

4.4 VEGETATION

4.4.1 *Washington Forest Practices Act*

The Washington Forest Practices Act (FPA) and Forest Practices Rules and Regulations are the state's principal means of regulating activities on nonfederal forestlands. The FPA rules and regulations are administered by WDNR. The FPA does not apply to federal agencies on nonfederal land; therefore, BPA would not obtain a FPA permit from the state. BPA will attempt to comply with the FPA where possible, and will incorporate many of the BMPs described in the FPA into its proposal. In addition, as required under the FPA, BPA will consult with WDFW to protect critical habitats including riparian areas, wetlands, and habitat for steelhead and bull trout.

4.5 FISH AND WILDLIFE

4.5.1 *Endangered Species Act*

The ESA (16 USC 1536) as amended in 1988, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants, and the preservation of the ecosystems on which they depend. The ESA is administered by the USFWS and, for salmon and other marine species, by the NMFS.

Section 7(a) of the ESA requires federal agencies to ensure that the actions they authorize, fund, and carry out do not jeopardize endangered or threatened species or their critical habitats. Section (7c) of the ESA and other federal regulations require that federal agencies prepare biological assessments (BAs) addressing the potential effects of major construction actions on listed or proposed endangered species and critical habitats.

USFWS provided BPA with lists of species protected under ESA that may occur in Walla Walla and Columbia counties. USFWS identified as threatened the Ute ladies'-tresses (*Spiranthes diluvialis*), the Canada lynx (*Lynx Canadensis*), Columbia River DPS bull trout, and middle Columbia ESU steelhead. BPA has also been in consultation with NMFS regarding the middle Columbia ESU steelhead and the Columbia River DPS bull trout are present in the project area.

BPA is consulting with USFWS on the potential effects of the Proposed Action on the identified threatened species. A BA was prepared addressing potential effects on the two listed species. The BA was submitted to USFWS on January 27, 2011, and formal consultation pursuant to Section 7 of the ESA was formally initiated on February 24, 2011. The BA concluded that implementation of the Proposed Action is likely to adversely affect middle Columbia ESU steelhead and Columbia Basin DPS bull trout (see Section 3.5, Fish and Wildlife). BPA will conclude consultation prior to construction and implement mitigation measures as described in the agency's Biological Opinion.

4.5.2 Fish and Wildlife Conservation Act

The Fish and Wildlife Conservation Act of 1980 (16 USC 2901 *et seq.*) encourages federal agencies to conserve and promote conservation of non-game fish and wildlife and their habitats. In addition, the Fish and Wildlife Coordination Act (16 USC 661 *et seq.*) requires federal agencies with projects affecting water resources to consult with USFWS and the state agency responsible for fish and wildlife resources. The analysis in Section 3.5, Fish and Wildlife, indicates that the Proposed Action would result in a level of impact ranging from no impact to low impact on fish and wildlife resources.

BPA is coordinating with WDFW biologists concerning all actions with the potential to affect fish and wildlife. In August 2010, WDFW provided BPA with data on state-listed PHS. The WDFW biologist will participate in approval of all instream work through the state's Hydraulic Project Approval process. The WDFW biologist was sent the BA (see Section 4.4.1) and the Essential Fish Habitat Assessment (see Section 4.4.3) on January 27, 2011, for review and comment. Formal consultation pursuant to Section 7 of the Endangered Species Act was initiated on February 24, 2011.

4.5.3 Essential Fish Habitat

Public Law 104–297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act. Under Section 305(b)(4) of the act, BPA is required to consult with NMFS for actions that adversely affect EFH. NMFS, in turn, is required to provide EFH conservation and enhancement recommendations.

The Proposed Action has the potential to affect one fishery that is subject to EFH provisions, Chinook salmon. Spring-run Chinook salmon spawn and rear in the South, Wolf, and North forks of the Touchet River, which cross or flow adjacent to the project corridor. Because the Proposed Action has the potential to adversely affect EFH, an assessment of EFH was submitted to NMFS on January 27, 2011. BPA will conclude consultation prior to construction and implement mitigation measures as described in the agency's Biological Opinion.

4.5.4 Migratory Bird Treaty Act

The Migratory Bird Treaty Act implements various treaties and conventions between the United States and other countries, including Canada, Japan, Mexico, and the former Soviet Union, for the protection of migratory birds (16 USC 703–712, July 3, 1918, as amended in 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989). Under the act, taking, killing, or possessing migratory birds, or their eggs or nests, is unlawful. The act classifies most species of birds as migratory, except for upland and nonnative birds such as pheasant, chukar, gray partridge, house sparrow, European starling, and rock dove. The Proposed Action may affect birds. Potential impacts, such as the loss of habitat, are discussed in Section 3.5, Fish and Wildlife.

BPA and USFWS have a memorandum of understanding (MOU) to address migratory bird conservation in accordance with Executive Order 13186, discussed below (U.S. Department of Energy and U.S. Fish and Wildlife Service 2006). The Proposed Action may affect migratory birds through loss of habitat and potential for collisions with the transmission line. Potential impacts are discussed in Section 3.5, Fish and Wildlife, and below.

4.5.5 Responsibilities of Federal Agencies to Protect Migratory Birds

Executive Order 13186 directs each federal agency that is taking actions that may negatively affect migratory bird populations to work with USFWS to develop an agreement to conserve those birds. As described above, BPA and USFWS have an MOU to address migratory bird conservation in accordance with this executive order (U.S. Department of Energy and U.S. Fish and Wildlife Service 2006). The MOU addresses how both agencies can work cooperatively to address migratory bird conservation and includes specific measures to consider implementing during project planning and implementation.

BPA would implement feasible measures, including the design of transmission lines to minimize bird collisions and electrocutions. The larger conductor that would be used could make it more visible to birds, decreasing the potential for collisions. Because no areas along the corridor are known to be particularly problematic for bird collisions, moving structures was not considered. The transmission line would continue to operate at 115 kV. This transmission line is designed with conductors spaced far enough apart to prevent electrocution of raptors.

Other measures recommended under the MOU address migratory bird habitat. One measure advocates for construction outside the nesting season, but it would not be possible to schedule construction activities after nesting season in this area. The occurrence of heavy rains in fall, winter, and early spring make it inadvisable to construct during the rainy season. Compaction and disturbance of wet soils are harmful to habitats and causes roads to deteriorate. Disturbed areas would be reseeded with desirable plant species to encourage migratory bird use, unless specific planting mixes are agreed upon with landowners. The control of weed species to avoid degradation of habitat would also be implemented.

Construction, operation, and maintenance of the Proposed Action would result in a similar level of impact on migratory birds as it would on other birds and wildlife described in Section 3.5.2, Construction, operation, and maintenance of the Proposed Action would result in low impacts on migratory birds, as a result of loss of habitat or direct mortality.

4.5.6 Bald Eagle and Golden Eagle Protection Act

The Bald Eagle and Golden Eagle Protection Act prohibits the taking or possessing of and commerce in bald and golden eagles, with limited exceptions (16 USC 668–668d, June 8, 1940, as amended in 1959, 1962, 1972, and 1978). No bald eagles are known to reside within foraging distance of the project area. No golden eagle nests, roosts, or occurrences have been identified within the study area; however, the transmission line is within the range of the golden eagle, and golden eagles may be expected to forage in the project area. Although disturbances resulting from construction activity may exclude golden eagles from foraging areas, any such exclusion would be localized, temporary, and would affect, at most, a very small fraction of any eagle's home range.

Because the act covers only intentional acts, or acts in “wanton disregard” of the safety of bald or golden eagles, the Proposed Action is not considered to be subject to its compliance because any impacts would not be intentional or result from disregard.

4.6 WATER RESOURCES AND WATER QUALITY

4.6.1 Clean Water Act

The Clean Water Act regulates discharges into waters of the United States. The various sections applicable to the Proposed Action are discussed below.

- **Section 401.** A federal permit to conduct an activity that causes discharges into navigable waters is issued only after the affected state certifies that existing water quality standards would not be violated if the permit were issued. Applicants receiving a Section 404 permit from the Corps are required to obtain a Section 401 water quality certification from Ecology. BPA will consult with Ecology and the Corps to determine the need for permitting.
- **Section 402.** This section authorizes stormwater discharges under the National Pollutant Discharge Elimination System (NPDES). EPA Region 10 has a general permit for federal facilities for discharges from construction activities. BPA would determine the need to issue a notice of intent to obtain coverage under the EPA general permit and is preparing a stormwater pollution prevention plan to address stabilization practices, structural practices, stormwater management, and other controls (Section 3.6, Water Resources and Water Quality).
- **Section 404.** Authorization from the Corps is required in accordance with the provisions of Section 404 when dredged or fill material is discharged into waters of the United States, including wetlands. Impacts on wetlands are described in Section 3.7, Wetlands and other regulations pertinent to wetlands and floodplains are described in 4.7 below. A wetland determination that was conducted in October 2010 located, described, and mapped wetlands in the project area; however a formal delineation has not been conducted. BPA will coordinate with the Corps to determine the need for permitting. If the project activities are covered under an existing Nationwide Permit (30 CFR 330), all conditions of the permit would be followed.

4.7 WETLANDS AND FLOODPLAIN PROTECTION

The U.S. Department of Energy mandates that impacts on floodplains and wetlands be assessed and alternatives for protection of these resources be evaluated in accordance with Compliance with Floodplain/Wetlands Environmental Review Requirements (10 CFR 1022.12) and Executive Orders 11988 and 11990. Evaluation of project impacts on floodplains and wetlands are discussed in detail in Sections 3.7, Wetlands, and 3.8, Floodplains.

Wetland management, regulation, and protection are addressed in several sections of the Clean Water Act, including Sections 401, 402, and 404 (see 4.6 above). Wetlands also are addressed in a combination of other state and federal laws, including the Coastal Zone Management Act, ESA, National Historic Preservation Act (NHPA), Rivers and Harbors Act, and Wild and Scenic Rivers Act.

4.8 VISUAL QUALITY

Although no specific federal, state, or local regulations solely govern visual resource impacts in the study area, visual and aesthetic considerations and requirements are included in the land use plans, comprehensive plans, and zoning ordinances developed by Washington State and the local jurisdictions.

4.9 AIR QUALITY

4.9.1 *Clean Air Act*

The federal Clean Air Act, as revised in 1990 (Public Law 101-542, 42 USC 7401), requires EPA and individual states to carry out a wide range of regulatory programs intended to assure attainment of the national ambient air quality standards. In the state of Washington, EPA has delegated authority to Ecology, which has regulations requiring all industrial activities (including construction projects) to minimize windblown fugitive dust.

There would be no burning of cleared material, due to the small amount of land where tree removal would take place. Vehicles used during construction of the Proposed Action would be maintained so as to minimize emissions. Water trucks would be used to minimize fugitive dust during project construction.

4.10 GLOBAL WARMING

Models predict that atmospheric concentrations of all GHGs will increase over the next century, but the extent and rate of change is difficult to predict, especially on a global scale. As a response to concerns over the predicted increase of global GHG levels, various federal and state mandates address the need to reduce GHG emissions, including the following.

- The Clean Air Act is a federal law that establishes regulations to control emissions from large generation sources such as power plants; limited regulation of GHG emissions occurs through New Source Review.
- The EPA has issued the Final Mandatory Reporting of Greenhouse Gases Rule that requires reporting of GHG emissions from large sources. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHGs are required to submit annual reports to the EPA (U.S. Environmental Protection Agency 2010c).
- Executive Orders 13423 and 13514 require federal agencies to measure, manage, and reduce GHG emissions by agency-defined target amounts and dates.
- In Washington State, Executive Orders 07-02 and 09-05 direct state agencies to work with western states and Canadian provinces to develop a regional emissions reduction program designed to reduce GHG emissions to 1990 levels by 2020 (Washington State Department of Ecology 2010b).

GHG emissions were calculated for Rebuild Project activities that produce GHG emissions: transportation-related direct emissions resulting from construction activities, ongoing operations

and maintenance activities for the estimated 50-year operational life of the transmission line, and permanent vegetation removal for new roads and installation of 24 additional structures. GHG emissions would be below EPA's mandatory reporting threshold. The impact of the Proposed Action on GHG concentrations would be low, as discussed in Section 3.14, Climate Change.

4.11 SOCIOECONOMICS AND PUBLIC SERVICES

4.11.1 Federal Communications Commission

Federal Communications Commission regulations require that transmission lines be operated so that radio and television reception would not be seriously degraded or repeatedly interrupted. While the Proposed Action is not expected to increase electromagnetic interference above existing levels, any complaints about electromagnetic interference would be investigated.

4.11.2 Executive Order on Environmental Justice

In February 1994, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, was released to federal agencies. This order states that federal agencies must identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The Proposed Action would not cause disproportionately high and adverse impacts on minority and low-income populations. See Section 3.11, Socioeconomics and Public Services.

4.11.3 Overhead Power and Communication Lines

WAC 468-34-280 recommends that longitudinal installations of power lines (on public ROWs) be of single-pole construction, and that joint-use single-pole construction is generally desirable and should be used whenever feasible. The Proposed Action design calls for the rebuilt line to be supported by structures composed of two or three wood poles, to replace the existing structures in-kind. It is not feasible to construct the Proposed Action with single-pole structures.

4.11.4 Vertical Clearance and Location

WAC 468-34-290 and 468-34-300 require that vertical clearances for overhead power lines conform to the National Electric Safety Code and/or the clearances identified in the WAC, whichever are greater. The minimum clearance specified for 115-kV transmission lines is 32 feet above the groundline, including roadways. The code also specifies that utility lines be located as near as practicable to the edge of the ROW while still maintaining a reasonably uniform alignment. The Proposed Action would conform to the minimum clearances, as required by the National Electric Safety Code, and would be located as close to the ROW edge as practicable.

4.12 CULTURAL RESOURCES

Several regulations are in place to govern management of cultural resources. A cultural resource is an object, structure, building, site, or district that provides irreplaceable evidence of natural or

human history of national, state, or local significance, such as national landmarks, archeological sites, and properties listed (or eligible for listing) on the NRHP. Established regulations include:

- Antiquities Act of 1906 (16 USC 431–433)
- Historic Sites Act of 1935 (16 USC 461–467)
- Section 106 of the NHPA of 1966 (16 USC 470 *et seq.*), as amended
- Archaeological Data Preservation Act of 1974 (16 USC 469 a–c)
- Archaeological Resources Protection Act of 1979 (16 USC 470 *et seq.*), as amended
- Native American Graves Protection and Repatriation Act (25 USC 3001 *et seq.*)
- Executive Order 13007 Indian Sacred Sites

Section 106 of the NHPA requires federal agencies to consider the effects of their actions on historic properties. The NHPA provides a process, known as the Section 106 process that enables agencies to assess impacts on historic properties along with participation from interested and affected parties such as tribes, and then avoid, minimize, or mitigate for these impacts. Historic properties may be prehistoric or historic sites, including objects and structures that are included in or eligible for inclusion in the NRHP. Historic properties also include artifacts or remains within historic sites and properties of traditional and cultural importance to tribes.

To this end, BPA has provided information about the Proposed Action to and requested input on the level and type of proposed identification and evaluation efforts of the prehistoric resources from the following tribes: the Confederated Tribes of the Colville Indian Reservation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes and Bands Of the Yakama Nation, and the Nez Perce Tribe. Consultation with these tribal organizations was initiated on March 3, 2010, and BPA received letters of concurrence based on their surveys on December 14, 2010.

A cultural resources assessment of the potential for the study area to support historic, archaeological, and Native American resources was completed in September 2010. The cultural resources assessment was based on a review of known archaeological resources within a 1-mile radius of the study area, as inventoried on WISAARD at DAHP in Olympia. Over 30 cultural resource surveys have been completed within 2 miles of the study area, including eight surveys that addressed specific components of the Walla Walla–Tucannon River transmission line.

A cartographic analysis of landform, topography, soils, and proximity to water using topographic maps; reviewed secondary historic resources on file at DAHP and Washington State University in Pullman, Washington was also conducted. It reviewed ethnographies to identify known Traditional Cultural Resources. A pedestrian survey of the study area was completed in August of 2010.

With the exception of the transmission line itself, there are no known historic, archaeological, or Native American resources in the study area. Although not currently listed, the Walla Walla–Tucannon River transmission line is considered eligible for listing on the NRHP. Previous work on the transmission line, which included in-kind replacement of structures, has moved forward with a determination of no adverse effect from DAHP (Dickinson 2005).

4.13 NOISE, PUBLIC HEALTH, AND SAFETY

4.13.1 Toxic Substances Control Act

The Toxic Substances Control Act is intended to protect human health and the environment from toxic chemicals. Section 6 of the act regulates the use, storage, and disposal of polychlorinated biphenyls (PCBs). BPA adopted guidelines to ensure that PCBs are not introduced into the environment. Equipment used for the Proposed Action would not contain PCBs. Any equipment removed that may have PCBs would be handled according to the disposal provisions of this act.

4.13.2 Federal Insecticide, Fungicide, and Rodenticide Act

The federal Insecticide, Fungicide, and Rodenticide Act registers and regulates pesticides. BPA uses herbicides (a kind of pesticide) only in a limited fashion and under controlled circumstances. Herbicides are used on transmission line ROWs and in substation yards to control vegetation, including noxious weeds. When BPA uses herbicides, the date, dose, and chemical used are recorded and reported to state government officials. Herbicide containers are disposed of according to Resource Conservation and Recovery Act (RCRA) standards.

4.13.3 Resource Conservation and Recovery Act

The RCRA, as amended, is designed to provide a program for managing and controlling hazardous waste by imposing requirements on generators and transporters of this waste, and on owners and operators of treatment, storage, and disposal facilities. Each facility owner or operator is required to have a permit issued by EPA or the state. Typical construction and maintenance activities have generated small amounts of the following hazardous wastes: solvents, pesticides, paint products, motor and lubricating oils, and cleaners. Small amounts of hazardous wastes may be generated under the Proposed Action. These materials would be disposed of according to state law and RCRA.

If a hazardous material, toxic substance, or petroleum product is discovered, and may pose an immediate threat to human health or the environment, BPA requires that the contractor notify the Contracting Officer's Technical Representative immediately. Other conditions such as large dump sites, drums of unknown substances, suspicious odors, and stained soil must also be reported immediately. The technical representative will coordinate with the appropriate BPA personnel. In addition, the contractor will not be allowed to disturb such conditions until the technical representative has given the notice to proceed.

The construction contractor and transmission line facilities manufacturers will consult with the WSDOT and with city and county public works departments to secure necessary permits for the transportation of large loads on the roadways.

4.13.4 Maximum Environmental Noise Levels

The federal Noise Control Act of 1972 (42 USC 4901) requires that federal entities, such as BPA, comply with state and local noise requirements. Environmental noise limits relevant to the Proposed Action are regulated by Ecology Maximum Environmental Noise Levels (WAC 173-60), which establish limits on levels and duration of noise. Allowable maximum sound levels

depend on the land use of the noise source and receiving property. In addition, BPA has established a 50-dBA design criterion for corona-generated audible noise from transmission lines at the edge of the ROWs. Ecology has interpreted this criterion to meet its noise regulations. As described in Section 3.13, Noise, Public Health, and Safety, the Proposed Action would have temporary low to moderate noise impacts, and mitigation measures would further reduce these impacts.

4.13.5 Transportation Permits

According to RCW 46.44, oversized or overweight vehicles need transportation permits to travel on highways and local public roads in the state. The construction contractors will consult with WSDOT, Walla Walla County Public Works Department, and Columbia County Public Works Department to comply with state and local requirements. Necessary transportation permits for oversized or overweight vehicles used for project construction and maintenance would be secured as required.

In the project vicinity, there are weight and width restrictions on U.S. 12 at the bridges at mile post 323.06 and 360.28, and on SR 125 from mile post 6.15 to 23.67 (Washington State Department of Transportation 2010d). The construction contractor's engineers and surveyors will consult with WSDOT concerning activities within these control zones.

4.13.6 Uniform Fire Code

The development of a hazardous materials management plan may be required by local fire districts in accordance with the Uniform Fire Code. BPA will develop and implement such a plan, if required.

4.14 CLIMATE CHANGE

Various federal and state mandates address the need to reduce GHG emissions, including the following.

- The Clean Air Act is a federal law that establishes regulations to control emissions from large generation sources such as power plants; limited regulation of GHG emissions occurs through New Source Review.
- EPA has issued the *Final Mandatory Reporting of Greenhouse Gases Rule* that requires reporting of GHG emissions from large sources. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHGs are required to submit annual reports to EPA (U.S. Environmental Protection Agency 2010c).
- Executive Orders 13423 and 13514 require federal agencies to measure, manage, and reduce GHG emissions by agency-defined target amounts and dates.
- In Washington State, Executive Orders 07-02 and 09-05 direct state agencies to work with western states and Canadian provinces to develop a regional emissions reduction program designed to reduce GHG emissions to 1990 levels by 2020 (Washington State Department of Ecology 2010b).

GHG emissions were calculated for the Proposed Action activities that would produce GHG emissions: construction of the transmission line, permanent vegetation removal for new roads and installation of 24 additional structures, and ongoing annual operations and maintenance for the estimated 50-year operational life of the transmission line. GHG emissions would be below EPA's mandatory reporting threshold. The impact of the Proposed Action on GHG concentrations would be low, as discussed in Section 3.14, Climate Change.

4.15 REGULATIONS NOT APPLICABLE TO THIS PROJECT

4.15.1 Permits for Structures in Navigable Waters

The Proposed Action would not involve construction, removal, or rehabilitation of any structures in navigable waters.

4.15.2 Permits for Right-of-Way on Public Lands

The Proposed Action would not cross land administered by another federal agency; therefore, no permits for ROW on such lands would be required.

4.15.3 Safe Drinking Water Act

No drinking water systems are affected by the Proposed Action, and no pollutants are expected to reach drinking water supplies.

4.15.4 Energy Conservation at Federal Facilities

Energy conservation practices are not relevant because no federal buildings would be constructed.

4.15.5 Recreation Resources

BPA used the Wild and Scenic River inventory of listed and proposed rivers (16 USC 1273 (b)) qualifying for Wild, Scenic, or Recreation River to evaluate recreational resources and impacts. The corridor will not cross any listed segments.

No designated wilderness or other areas of national environmental concern are found on or around the project area.

4.15.6 The Spill Prevention Control and Countermeasures Act

The Spill Prevention Control and Countermeasures Act is intended to prevent discharges of oil and oil-related materials from reaching navigable waters and adjoining shorelines. It applies to facilities with total above-ground oil storage capacity (not actual gallons on site) of greater than 1,320 gallons and facilities with below-ground storage capacity of 42,000 gallons.

No onsite storage of oil or oil-related materials would occur under the Proposed Action.

4.15.7 Title III of the Superfund Amendments Act

Title III of the Superfund Amendments and Reauthorization Act provides funding for hazardous materials training in emergency planning, preparedness, mitigation implementation, response, and recovery. Eligible individuals include public officials, emergency service responders, medical personnel, and other tribal response and planning personnel.

No hazardous materials sites are located in the project area.

4.15.8 Notice to Federal Aviation Administration

The Federal Aviation Administration (FAA) requires reporting of structures taller than 200 feet above ground or established within a prescribed distance from an airport listed by FAA. The final locations, structures, and structure heights of the Proposed Action would not meet these criteria and would not be reported to FAA.

4.15.9 Scenic Enhancements

WSDOT has not designated any highways in the project vicinity with a scenic classification as described under WAC 468-330; therefore, BPA does not need to conform to the requirements of this code.

4.15.10 Protected Area Amendments

The Northwest Power Planning Council's Protected Area Amendments to the Pacific Northwest Electric Power Planning Council Designation Act of 1980 are not applicable to the Proposed Action.

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Chapter 5

Persons, Tribes, and Agencies Consulted

5.1 FEDERAL AGENCIES

U.S. Army Corps of Engineers

U.S. Fish and Wildlife Service

National Oceanic and Atmospheric Administration, National Marine Fisheries Service

Federal Emergency Management Agency

U.S. Department of Agriculture, Natural Resources Conservation Service, Dayton Service Center

5.2 STATE AGENCIES

Washington State Department of Ecology

Washington Department of Fish and Wildlife

Washington State Department of Natural Resources

Washington State Department of Transportation, South Central Region

Washington State Department of Archaeology and Historic Preservation

5.3 TRIBES

The Confederated Tribes of the Colville Indian Reservation

The Confederated Tribes of the Umatilla Indian Reservation

The Confederated Tribes and Bands of the Yakama Nation

The Nez Perce Tribe

5.4 LOCAL GOVERNMENTS AND UTILITIES

5.4.1 County

Columbia County

Mayor Craig George

Commissioner Kathy Berg

Commissioner William B. Graham, Mayor Pro-tem

Commissioner Micki Varney

Commissioner Shelly Franklin

Commissioner Merle Jackson
Commissioner Leslie Sweetwood
Richard Hendricksen, Planner

Walla Walla County

Commissioner Gregg C. Loney
Commissioner Perry L. Dozier
Commissioner Gregory (Greg) A. Tompkins
Public Works Department
Lauren Prentice, Planner

5.4.2 City

City of Walla Walla

5.5 LANDOWNERS

5.5.1 Columbia County

Add Cahill Farms, Inc.	Buman, Cindy
Allen Family Ranch, LLC	Butler, Matthew
Anderson, Donald Jay	Butler, Nancy
Anderson, Martha J.	Carbonnier, Loic
Ankeny, Elizabeth Estate	Colter Ridge Properties, Inc.
Barbour, Jessie Estella	Columbia County
Barton, Richard E.	Compau Family Trust
Bayer, Daniel G.	Conover, Ellsworth
Bernard, Jerry R.	Conover, Larry
Bernard, Kathy E.	Corbonnier, Benedicte
Bonneville Power Administration	Dayton Historical Depot Society
Broughton L& Company	Department of Fish and Wildlife Real Estate Division
Bowen, Joushua D.	Dobson, Froy III
Bowen, Miranda L.	Dobson, Sharon K.
Bowman Farms Partnership	Durham, Doris L Life Estate
Brown, Evelyn A.	Dwyla Donohue Ent, Inc.
Brown, Kenneth E.	Eaton, Jana

Eaton, Lester A Jr.
Eaton, Lester III
Eaton, Louise K.
Eaton, Maurice J., Est.
Edit, D. Jane
Edit, Laurence A.
Elkins, David
Fairchild, Larry E.
Fletcher, Michael L.
Flying S, Inc.
Frankie, Carson B.
Frankie, Gail E.
Fritze, Tamara
Fulton, Carl C.
Fulton, Floyd L.
Fungem, Ruth, Est.
Gibbons, P & M Living Trust
Gibbons, R & C Living Trust
Glory B Farms Living Trust
Graham, Bonnie K.
Graham, Edwin Doyle
Graham, Robert B.
Greenough, Deborah J.
Greenough, Jesse III
Hagwell, Richard
Harri, Edward John
Harrison, Candice
Harrison, Cecil A.
Harting, John Trust
Hawks, William F. Trust
Heidelbauer, R. Jeff
Hendrickson Teresa D.
Hendrickson, Stephen C.
Henrich, Dianne L.
Henrich, Robert T.
Higley, Teresa J.
Holmberg, Henry M.
Hopwood, Theodore N.
Hopwood, Tonia L.
Hoskins, Judith A.
Hoskins, Timothy J.
Hoskins, W. Conrad
Hosticka, Paul J.
Hosticka, Susan
Hovde, David R.
Hovde, Donna R.
Huff, Barbara
Jewett, George T.
Jewett, Linda
Juris, Kathleen
Kathren, Ronald and Susan Trust
Keeney, Donna Price
Keller, Frederick W.
Keller, Miriam L.
Kessinger, Rebecca
Krueger Trust
Krueger, Douglas and majority trustees
Lambert, Andrew D.
Lambert, Katie C.
Leid, Mickey R. Testament Trust
Lyons, Matt "Rusty"
Mann, Randall E.
Marvin, Earle D.
Maxey, Debra
Maxey, Doug
McGee, Rebecca J.

Mercer, Maxine
Michels, Andrew A. Family Trust
Naylor, Elizabeth B.
Naylor, Paul K.
North, Brenda E.
North, Ronald E.
Nysoe Enterprises, Inc.
Phillips, Paul J.
Price, Harold Estate
Price, Vance H.
Rath, Lois Adelle
Rath, Russel K.
Rickords, Dennis F.
Rickords, Jolyn G.
Rittenhouse, Don
Rittenhouse, Suzanne
Roberts, Lynne E.
Roberts, Patricia A.
Robinette Ranches, Inc.
Rohrbough, Marcia L.
Rohrbough, Steven
Rosebud, LLC
Rushton, Evelyn J.
Rushton, Jack D.
Sage, Barbara L.
Savage, Darlene Schroder
Seagraves, Elmer
Seagraves, Kurt L.
Seagraves, Maria
Sherry, Elanor
Shoun, Michelle
Shoun, Steven
Sitwell, Craig

Smith, Glen A.
Startin, Bev
Startin, Jim L.
Stearns, William
Stedman-Bayer Michelle M.
Stobie, M Monica
Stonecipher, William D.
Strohbehn, Jan
Strohbehn, Paul
Takemura, Kristine Juris
Talbott, Jaqueline, M.
Talbott, Melvin Lewis
Thorn, Eric
Thorn, Inc.
Thornson, Inc.
Tidemarsh, Donna R.
Tidemarsh, Larry L.
Tracy, Ray
Trump, Carmen, J.
Trump, Larry M.
Underhill, Donald
Walker-Marvin, Shirley K.
Walla Walla Mills
Walter, Damian
Walter, Jeanne
Warren Farms, Inc.
Warren L& Co., LLC
Warren, Glen P.
Webster, Jerry R.
Whiskey Creek Group, LLC
Whitman College
Wilcox Revocable Living Trust

5.5.2 Walla Walla County

Allen Family Ranch LLC

Bernard, Jerry R.

BNSF Railway Company

Broughton L& Company

Brown, Kenneth E.

Brown, Sharon L.

Buman, Cindy

Catholic Bishop of Spokane

Cochran, Edward R.

Compau Family Trust

Conkey, George T.

Crow's Nest Inc.

Dayton Historical Deport Society

Dobson, F. Roy III

Donovan (Johnson) Amy E. Trust

Drayton, Marilyn J.

Dunham, David D.

Dunham, Douglas D. Stacey

Eaton, Lester A., Jr.

Eaton, Maurice J Estate *et al.*

Eaton, Ruth and Gladys Trust *et al.*

Fletcher Livestock LLC

Fletcher, Michael L.

Flying S., Inc.

Foundation Farm, Inc.

Frazier Cattle Co.

Fulton, Floyd L. Etux

Gage, Frank and Mary Trust

Ganguet Farms, LLC

Ganguet, Adelle

Gardea, Victor M.

Geisinger, J. Wesley and Carol J.

Gibbons, P and M Living Trust

Glory B Farms Living Trust

Hagwell, Richard

Harri, Edward John *et al.*

Harris, Fred Testamentary Trust

Hawks, William F. Trust

Higley, Teresa J.

Hoskins, W Conrad

Huntington-Price LLC

J P Farms, Inc.

Keller, Fredrick

Kimball, J Eric *et al.*

Krueger, Veronica

Leid, Mickey R. Testamentary Trust

Lyons, Matt, Inc.

Mann, Randall E.

Marvin, Earle D.

McGee, Rebecca

Meyer, Y. L. and Krista M.

Morel Partners

Nelson Stirrup T Farms, Inc.

Nielsen, Roger S.

Nysoe Enterprises, Inc.

Olson, Robert J.

Payne, Helen W. Morse

Price, Harold W. Trust

Price, Vance

Reilly, Thomas K. and Peggy A.

Rittenhouse, Don

Robinette Ranches, Inc.

Rosebud LLC
Rushton, Jack D.
Savage, Darlene Schroder
Schulke, Jane Seavey *et al.*
Segraves, Elmer
Segraves, Maria
Shepherd Farms
Shoun, Steven
Shriners Hospital
Smith, Glen and Adelle
Soper, Eugene N. and Elizabeth K.
Startin, Jim L.
Stillwell, Craig *et al.*
Stonecipher & Sons Inc.
Stonecipher, Chester Trust

Stonecipher, Edgar and Margaret
Stonecipher, Linda A.
Thorn, Eric
Thorn, Inc. *et al.*
Tidmarch, Larry L
Tracy, Ray
Trump, Carmen and Larry
Underhill, Donald G.
Walter, Damian and Jeanne
Warren Farms
Warren L and Company LLC
Warren, Glen P 1/2 Interest
Whiskey Creek Group LLC
Whitman College Board of Trustees
Whitman Group LLC

Chapter 6

Glossary and Acronyms

6.1 GLOSSARY

Access road – roads and spurs that provide access to the transmission line corridor and structure sites during construction and operation and maintenance.

Ambient noise – background noise generated by existing noise sources in the surrounding area.

Angle structures – structures that support the transmission line at points where it changes direction at an angle of 15 degrees or more.

Aquifer – underground bed or layer of permeable rock, sediment, or soil that contains groundwater.

Average daily traffic – the average number of vehicles that pass a specific point going both directions over a 24-hour period.

A-weighted decibels – logarithmic measurement of sound based on the decibel but weighted to approximate the human perception of sound. Commonly used for measuring environmental and industrial noise levels.

Best management practices – the practices determined by the discipline to be the most effective at achieving a specific goal.

Capacity – the ability to store an electrical charge.

Carbon dioxide equivalent – a measurement used to compare the global warming potential of a typical greenhouse gas, based on concentrations of carbon dioxide.

Centerline – the line that bisects the transmission corridor, dividing it into two bilateral halves.

Circuit – the pathway for an electrical current.

Compaction – the compression of soils by heavy equipment, which degrades soil structure and increases the risk of sheet erosion.

Conductor – the wire cable strung along a transmission line through which electricity flows.

Counterpoise – a weight that counterbalances the weight of the transmission lines, typically underground wires that extend horizontally from each structure and that connect with ground wire to provide lightning protection.

Corona – an electrical field around the surface of a conductor, insulator, or hardware caused by ionization of the surrounding air.

Cultural resources – historic, archaeological, or paleontological resources that are protected under federal statutes, regulations, and executive orders.

Culvert – a device used to carry or divert water from a drainage area in order to prevent erosion.

Cumulative impacts – impacts caused by the incremental effect of a specific action when considered in the context of past, present, and reasonably foreseeable future actions.

Current – the flow of an electrical charge through the transmission line conductor.

Dampers – devices attached to insulators in order to minimize vibration of the conductors in windy conditions.

Danger trees – trees or tall brush located along the transmission line corridor that pose a threat to the safety and integrity of the transmission line should they fall.

Dead-end structure – a structure that can independently carry the weight and tension of conductors and is typically used on a straight alignment, at angles greater than 15 degrees, or over river crossings.

Decibel – a logarithmic ratio of sound relative to a reference level.

Distinct population segment – a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. The ESA provides for listing species, subspecies, or distinct population segments of vertebrate species.

Dryland – land that receives little precipitation; used in reference to agricultural production without irrigation.

Electromagnetic field – the physical field around the electric wire or conductor that is produced when electric transmission is occurring.

Electromagnetic interference – interference of an electrical device caused by the presence of an electromagnetic field.

Environmental justice populations – low-income and minority populations protected under Executive Order 12898 from disproportionate adverse effects of federal projects.

Erosion – the movement of soil and surface sediments caused by wind and water.

Essential Fish Habitat – the environmental conditions that are necessary for the spawning, breeding, growth, and nurture of specific fish species.

Evolutionarily significant unit – a population of fish that is considered distinct, either because it is geographically separate or genetically different from others of the same species, or locally adapted.

Flash flood – a rapid flood of a low-lying area such as a steep wash or canyon that results from intense rainfall.

Floodplain – the flat land that is adjacent to a surface water that is periodically flooded.

Fossil fuels – fuels derived from hydrocarbon deposits in the Earth’s crust; typically combusted for energy (e.g., natural gas, oil, and coal).

Greenhouse gas – chemical compounds that absorb and trap infrared radiation as heat (e.g., carbon dioxide, nitrous oxide, methane, and fluorinated gases).

Ground wire – wires placed above the conductors to route lightning-strike electricity to the ground.

Groundwater – water that is stored beneath the Earth’s surface in soil pores or rock formations.

Guy wire – a tensioned cable that anchors a structure to the ground to provide extra stability.

Insulator – a component made of non-conductive materials that connects the conductor to the suspension structure and prevents the transmission of electrical current from the conductor to the ground.

Kilovolt– one thousand volts of electrical power.

Landslide – the movement of surface soil and other matter down a steep slope.

Large woody debris – large woody matter that falls into surface waters and provides channel stability and habitat complexity for aquatic species.

Liquefaction – a process whereby waterlogged soil becomes soft and liquid as a result of ground shaking.

Low-income population – a group of low-income residents who live in geographic proximity that could be disproportionately affected by a federal action.

Minority population – a group of minority persons who live in geographic proximity that could be disproportionately affected by a federal action.

Mitigation –measures that would reduce the impacts of the Proposed Action on a resource by reducing the impact, avoiding it completely, or compensating for the impact.

Nonattainment area – an air basin that is not in compliance with applicable air quality standards for a specific pollutant.

Nonnative – a species that has been introduced and has acclimated to an area outside of its normal distribution range.

Noxious weeds – nonnative plants that have been identified by state law as damaging to natural or human resources.

100-year floodplain – areas that have a 1% chance of being flooded in a given year, as designated by the Federal Emergency Management Agency.

Outage – the loss of electric power to an area caused by a natural or human disturbance to the electrical system.

Palustrine emergent – a freshwater wetland dominated by grasses, forbs, and herbaceous plants; may also occur in tidal areas where marine-based salinity is below 0.5 parts per thousand.

Palustrine scrub-shrub – a freshwater wetland dominated by scrub and shrub plants; may also occur in tidal areas where marine-based salinity is below 0.5 parts per thousand.

Perennial – refers to streams or waterways with continuous, year-round water flow.

Priority habitats – a habitat designated for protection because of its rarity or functional significance.

Pulling and tensioning – the process of installing and tightening new conductors.

Right-of-way – the corridor of land in which transmission structures and conductors are established, operated, and maintained.

Riparian – refers to vegetation or habitat situated on the banks of rivers and streams.

Salmonid – member of the family of soft-finned fish that includes salmon and trout. Most are anadromous: they spawn in fresh water, but spend their life in the marine environment.

Sediment load – the sediment that is transported by wind, water, or ice.

Sheet erosion – the removal of a uniform, thin layer of soil by raindrops or water runoff on bare soil.

Sock line – the line or rope connected to a steel wire that is used to pull the conductors through the structures during installation.

Special-status species – plant or wildlife species that have been identified for protection and/or management under federal or state law.

Staging area – the area cleared and used to store and assemble materials and equipment.

Steel-lattice structure – a square or triangular transmission tower constructed steel poles.

Stormwater runoff – precipitation water that runs off non-permeable surfaces into a drainage, sewer, or stormwater system.

Structure – a type of support used to hold up transmission or substation equipment.

Substation – the fenced site that contains the terminal switching and transformation equipment that transforms voltage.

Substrate embeddedness – the degree to which coarse sediments on the surface of a streambed are surrounded by fine sediments. A higher level of embeddedness reduces the habitat and cover for small aquatic organisms.

Surface water – open water bodies such as rivers, lakes, and streams.

Threatened species – a plant or animal species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. The U.S. Fish and Wildlife Service and states determine this designation.

Total maximum daily load – the maximum amount of a pollutant that can be introduced to a water body while still being compliant with water quality standards.

Turbidity – the amount of particulate matter, such as suspended sediment, per unit volume of water.

Unconsolidated sediments – sediments such as soil, sand, or organic matter that are not bound together and are susceptible to wind and water erosion.

Unincorporated land – land that is not part of or governed by a municipality.

Unique farmland – land other than prime farmland that is used for the production of specific high value food and fiber crops. Such land has a special combination of soil quality, location, growing season, and moisture supply that is required to economically produce sustained high quality of a specific crop when treated and managed according to acceptable farming methods.

Upland – land above the floodplain that supports precipitation-dependent vegetation.

Watershed – a geographic area that is drained by a river and its tributaries. Separated from other watersheds by an elevated boundary such as a mountain.

Wetland – land that is permanently or periodically saturated with water. May be connected to a surface water or groundwater source. Indicators of wetlands include plant species adapted to such conditions, characteristic soil colors and chemical properties, and physical evidence of flooding or waterlogged soils.

6.2 ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
A-1	Agricultural zone
ADT	average daily traffic
ANI	Areas Not Included
APE	Area of Potential Effect
AR-2	Agricultural-Residential zone
BA	biological assessment
BMP	best management practice
BPA	Bonneville Power Administration

CFR	Code of Federal Regulations
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
Corps	U.S. Army Corps of Engineers
CREA	Columbia Rural Electric Association
DAHP	Washington State Department of Archaeology and Historic Preservation
dBA	A-weighted decibel
dbh	diameter at breast height
DPS	distinct population segment
EA	Environmental Assessment
Ecology	Washington State Department of Ecology
EFH	essential fish habitat
EIS	environmental impact statement
EMF	electric and magnetic fields
EMI	electromagnetic interference
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
ESU	evolutionarily significant unit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FPA	Forest Practices Act
FPPA	Farmland Protection Policy Act
GHG	greenhouse gas
GMA	Washington State Growth Management Act of 1990

I	Interstate
IMPLAN	Impact Analysis for Planning
kV	Kilovolt
LESA	land evaluation and site assessment
MOU	memorandum of understanding
N ₂ O	nitrous oxide
NAAQS	national ambient air quality standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PCBs	polychlorinated biphenyls
PEM	palustrine emergent
PHS	Priority Habitats and Species
Plateau	Plateau Archaeological Investigations
PM ₁₀	particulate matter less than 10 micrometers in size
PM _{2.5}	particulate matter less than 2.5 micrometers in size
PSE	Puget Sound Energy
PSS	palustrine scrub shrub
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
ROD	record of decision
ROW	right-of-way
SR	state route

TMDL	total maximum daily load
Type F	fish-bearing waters
Type N	non-fish-bearing waters
Type Np	perennial, non-fish-bearing waters
Type Ns	seasonal, non-fish-bearing waters
Type S	shorelines of the state
Type U	unidentified waters
U.S. 12	U.S. Highway 12
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VOCs	volatile organic hydrocarbons
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WISAARD	Washington Information System for Architectural and Archaeological Records Data
WSDOT	Washington State Department of Transportation
µg/m ³	micrograms per cubic meter

Chapter 7

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7.2 PERSONAL COMMUNICATIONS

- Benzel, Lisa. GIS Technician. Columbia County Public Works. August 2, 2010—Email correspondence with Kevin Gifford, ICF International, regarding zoning in project area.
- Breeden, Stephanie. Environmental Project Lead. Bonneville Power Administration. June 24, 2010—CDROM data delivered to Christopher Moelter, ICF International, containing resource information for the Proposed Action.
- Cook, Kerry. Geotechnical Engineer. Bonneville Power Administration. July 19, 2010—Email communication with Stephanie Breeden, BPA, regarding soils and geologic conditions along the Walla Walla–Tucannon River Transmission Line.
- Daily, Tracy. Soil Scientist. NRCS Walla Walla Service Center, Walla Walla, WA. January 4, 2011—Email correspondence with April Zohn, ICF International, regarding highly erodible soils in Walla Walla County, Washington, and generation of a Soils Inventory Report for the study area.
- Fortner, Debbie. Soil Scientist. NRCS Dayton Service Center, Dayton, WA. January 4 and 11, 2011—Email correspondence with April Zohn, ICF International, regarding highly erodible soils and farmland in Columbia County, Washington, and generation of a Soils Inventory Report for the study area. Vegetation
- Hendricksen, Richard. Planner. Columbia County. July 8, 2010—Telephone conversation with April Zohn, ICF International, regarding ongoing and future projects in Columbia County.
- McBride, Mike. Chief Appraiser. Klickitat County, Goldendale, WA. January 13, 2010—Telephone conversation and email regarding crop value of dryland grain in Klickitat County.
- Prentice, Lauren. Planner. Walla Walla County. July 9, 2010—Telephone conversation with April Zohn, ICF International, regarding ongoing and future projects in Walla Walla County.

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APPENDIX A

Danger Tree List

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PROJECT:		Walla Walla-Tucannon No. 1 (W-L)		WO: 192487		DATE: 9/14/10	
NUMBER of TREES	DBH	SPECIES	DIRECTION FROM C. L. (A. O. L.)	DISTANCE FROM CENTER LINE	DISTANCE FROM TOWER +/-	DISTANCE TO TOWER +/-	NOTES:
					TOWER ID. Æ	WAWA TUCR 1	Total Trees: 217
32	-8"	Elderberry	Right	0-30'	-200' 1/7	-115' 1/7	C-Trees 18' tall 35' of miss without sag.
9	-8"	Walnut	Right	0-30'		-385' 20/5	C-Trees
4	8"	"	"	"		"	"
			Left	0-30'	-280' 20/5	-200' 20/5	High brush
2	-8"	Wild Cherry	Left	0-30'		+360' 20/7	C-Trees
1	8"	Wild Cherry	Left	30-40'		+360' 20/7	DTs
						-100' 23/3	High brush
1	8"	Pine	Left	0-30'		-80' 23/3	C-Tree
					30/2	30/3	High brush
34	-8"	Ponderosa Pine	Left	0-30'	-325' 30/6	+335' 30/6	C-Trees
14	-8"	Ponderosa Pine	Right	0-30'	-340' 30/6	+300' 30/6	C-Trees
2	-8"	Douglas Fir	"	"	"	"	"
					32/4	32/5	C-Trees along river 90' of miss without sag
27	-8"	Alder	Right	30-55'	-375' 35/6	-325' 35/6	DTs
2	-8"	Cottonwood	"	"	"	"	"
5	8"	"	"	"	"	"	"
1	10"	"	"	"	"	"	"
1	14"	"	"	"	"	"	"
4	-8"	Willow	"	"	"	"	"
1	-8"	Ponderosa Pine	Left	0-30'		+125' 40/4	C-Tree
						+550' 43/6	High brush
1	26"	Ponderosa Pine	Right	30-55'		+430' 43/6	DTs
1	37"	Ponderosa Pine	Left	30-50'		-240' 44/6	DTs
1	15"	Ponderosa Pine	Right	30-50'		-160' 44/6	DTs
3	-8"	Ponderosa Pine	Right	30-50'	-60' 44/7	+30' 44/7	DTs
3	8"	"	"	"	"	"	"
1	9"	"	"	"	"	"	"
1	10"	"	"	"	"	"	"
1	11"	"	"	"	"	"	"
1	12"	"	"	"	"	"	"
2	13"	"	"	"	"	"	"
1	15"	"	"	"	"	"	"
1	16"	"	"	"	"	"	"
1	17"	"	"	"	"	"	"

PROJECT:		Walla Walla-Tucannon No. 1 (W-L)		WO: 192487		DATE: 9/14/10	
NUMBER of TREES	DBH	SPECIES	DIRECTION FROM C. L. (A. O. L)	DISTANCE FROM CENTER LINE	DISTANCE FROM TOWER +/-	DISTANCE TO TOWER +/-	NOTES:
					TOWER ID. Æ	WAWA TUCR 1	Total Trees: 217
1	18"	"	"	"	"	"	"
1	19"	"	"	"	"	"	"
1	25"	"	"	"	"	"	"
4	-8"	Ponderosa Pine	Left	0-30'	-395' 45/1	-265' 45/1	C-Tree
2	8"	"	"	"	"	"	"
4	10"	"	"	"	"	"	"
1	20"	"	"	"	"	"	"
						-255' 46/3	High brush
14	-8"	Ponderosa Pine	Left	30-60'	-25' 46/3	-275' 46/4	DTs
6	8"	"	"	"	"	"	"
3	10"	"	"	"	"	"	"
7	12"	"	"	"	"	"	"
4	14"	"	"	"	"	"	"
4	16"	"	"	"	"	"	"
2	20"	"	"	"	"	"	"
3	22"	"	"	"	"	"	"
1	24"	"	"	"	"	"	"
1	26"	"	"	"	"	"	"

APPENDIX B

Walla Walla-Tucannon River Transmission Line Rebuild Project Impact Significance Criteria

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INTRODUCTION

The following impact significance criteria been prepared in support of the Bonneville Power Administration's Environmental Assessment for the proposed Walla Walla-Tucannon River Transmission Line Rebuild Project.

LAND USE AND RECREATION

There would be a *high impact* when project activities result in the following outcomes:

- Displacement of several residences.
- Substantial permanent reduction in timber land base (more than 0.5% of the county's timber land base).
- Substantial permanent disturbance of Prime Farmland or Farmland of Statewide Importance (more than 1.0% of countywide base).
- Permanent interference with legally established or officially recognized recreational activities.
- Frequent interference with traffic during project operations and maintenance.

There would be a *moderate impact* when project activities result in the following outcomes:

- Frequent interference with residential or legal recreational use during construction and intermittently during operation and maintenance.
- Moderate reduction in timber land base (0.1 to 0.5% of county's timber land base).
- Moderate permanent disturbance of Prime Farmland or Farmland of Statewide Importance (0.5 to 1.0% of countywide base).
- Frequent interference with traffic, generally due to slowing or delays, during construction, operation, and maintenance.
- Impacts that may be partially mitigated.

There would be a *low impact* when project activities result in the following outcomes:

- Nuisance impacts on residential or legal recreational use, such as noise and dust associated with construction and operation/maintenance (no direct interference).
- Small reduction in timber land base (less than 0.1% of county's timber land base).
- Small permanent disturbance of Prime Farmland or Farmland of Statewide Importance (less than 0.5% of countywide base).
- Infrequent and temporary interference with traffic during construction, operation, and maintenance.
- Impacts that may be mostly mitigated.

There would be *no impact* when land use is not affected.

GEOLOGY AND SOILS

There would be a *high impact* when project activities result in the following outcomes:

- Widespread, long-term, or permanent clearing, grading, excavation, or compaction of soils resulting in increased stormwater runoff or erosion.

- Severely eroded slopes with large amounts of sediment being deposited into streams or wetlands on a permanent basis. Severe erosion may be attributed to construction disturbance (short term) or alignment design (long term).

There would be a *moderate impact* when project activities result in the following outcomes:

- Limited grading, clearing, excavation, or compaction of soils resulting in temporary increases in erosion or stormwater runoff.
- Moderate erosion that is largely intercepted before reaching streams and wetlands.
- Impacts on soils that can be partially mitigated.

There would be a *low impact* when project activities result in the following outcomes:

- Clearing, grading, excavation, and compaction of soils are minimal and lead to little or no stormwater runoff.
- Erosion of slopes is limited to minor sheet erosion and would remain largely similar to present levels during and following construction.
- Impacts on soils can be substantially mitigated.

There would be *no impact* when there is no clearing, compaction, or other disturbance of soils.

FISH AND WILDLIFE

There would be a *high impact* when project activities result in the following outcomes:

- Long-term declines in the quality or quantity of existing fish or wildlife habitat within or near the study area.
- Fish or wildlife mortality or injury that contributes to the need for the state or federal listing of a species.
- Long-term or continued intermittent destruction of local populations of prey species.
- Mortality or injury to a species protected under the federal Endangered Species Act (ESA) that would jeopardize the continued existence of that species or that would result in the destruction or adverse modification of their critical habitat.

There would be a *moderate impact* when project activities result in the following outcomes:

- Short-term declines in the quality or quantity of existing fish or wildlife habitat within or near the study area.
- Mortality or injury of fish or wildlife individuals that would do not cause a risk of endangering a population or contributing to the need for federal listing.
- Impacts on fish or wildlife that may be partially mitigated.

There would be a *low impact* when project activities result in the following outcomes:

- Short-term degradation in the quality or quantity of existing fish or wildlife habitat located within or near the study area.
- Temporary disturbance of fish or wildlife individuals that do not result in injury or mortality.
- Short-term reduction of local habitat use or feeding.
- Impacts on fish or wildlife species that are mostly mitigated.

There would be *no impact* when there is no degradation of existing habitat, or disturbance, injury, or death of any fish or wildlife.

WATER RESOURCES AND WATER QUALITY

There would be a *high impact* when project activities result in the following outcomes:

- Extensive and permanent alteration of a water body that supports fish populations such that its use or integrity is adversely affected.
- Permanent exceedance of state or federal ambient water quality criteria for weeks or longer in a large portion of the regulated water body or nearby tributary.

There would be a *moderate impact* when project activities result in the following outcomes:

- Alteration of the use or integrity of a water body that supports fish, wildlife habitat, or human uses, on a local level (within the study area only).
- Temporary (e.g., during and shortly after construction) exceedance of state or federal ambient water quality criteria such as exceeding federal or state ambient water quality criteria confined to within the study area.
- Impacts that would be partially mitigated.

There would be a *low impact* when project activities result in the following outcomes:

- Alteration of water quality criteria within normal background parameters such that state or federal ambient water quality criteria are not exceeded.
- Impacts that may be mostly mitigated.

There would be *no impact* when surface water and groundwater are unaffected by construction or operation and maintenance activities.

WETLANDS

There would be a *high impact* when project activities result in the following outcomes:

- Extensive disturbance of wetland hydrology, vegetation, or soils.
- Permanent and substantial loss or impairment of wetland functions beyond recovery in extensive area of high-quality wetlands.

There would be a *moderate impact* when project activities result in the following outcomes:

- Slight disturbance of wetland hydrology, vegetation, or soils.
- Moderate loss or impairment of wetland functions.
- Partial filling of wetlands resulting in temporary loss of functions or habitat.
- Impacts that may be partially mitigated through recovery of vegetation and wetland functions or through off-site mitigation.

There would be a *low impact* when project activities result in the following outcomes:

- Temporary loss or disturbance of wetland hydrology, vegetation, or soils affecting only small patches of wetlands.

- Permanent loss of small patches of low quality wetland habitat that may be offset through compensatory mitigation.
- Minimal and temporary impairment of wetland function.
- Temporary degradation of waterway function or habitat from adjacent activities.
- Impacts that may be mostly mitigated.

There would be *no impact* if wetland habitats are avoided during construction.

FLOODPLAINS

There would be a *high impact* when project activities result in the following outcomes:

- Long-term alteration of flood-storage capacity over a large area within floodplains and substantial alterations to the course of flood waters.
- Significant permanent loss of natural resources, such as the permanent removal of large areas of vegetation within floodplains, affecting fish and wildlife habitat value.

There would be a *moderate impact* when project activities result in the following outcomes:

- Minimal decrease in flood-storage capacity within the floodplain and no alterations to the course of flood waters.
- Minimal loss of natural resources within floodplains, such as the permanent removal of small areas of vegetation that result in little loss of fish or wildlife habitat value.
- Impacts that may be partially mitigated.

There would be a *low impact* when project activities result in the following outcomes:

- Only minimal and temporary alteration of flood-storage capacity within floodplains on a localized scale and no alteration of the course of flood waters.
- Minimal loss of natural resources within floodplains, such as the short-term loss of small areas of vegetation that result in little or no loss of fish or wildlife habitat value.
- Impacts that may be mostly mitigated.

There would be *no impact* when project activities would not take place in or near floodplains.

VISUAL QUALITY

There would be a *high impact* when project activities result in the following outcomes:

- Substantial visual changes affecting a large number of highly sensitive viewers (compared with existing conditions) where views of the transmission line are highly visible in the foreground or middle ground on a permanent basis.
- Severe erosion from new or improved access roads or clearing that would adversely affect visual resources over a long time period.
- Views of an officially recognized scenic or recreational resource adversely affected for a large number of people on a permanent basis.

There would be a *moderate impact* when project activities result in the following outcomes:

- Substantial visual changes affecting a large number of additional people, but such that the transmission line would not be a dominant element in the landscape because views would be partially screened, large segments of the line would be visible for only a short time, or most views would be in the middle or background.
- Severe erosion from new or improved access roads or clearing that would detract from the visual setting only over a short period of time.
- Conflicts with the prevailing land patterns but the transmission line would only be visible to few people or only for short periods.
- Impacts that may be partially mitigated.

There would be a *low impact* when project activities result in the following outcomes:

- Minimal visual changes compared to existing conditions or in changes that would only be visible to a small number of additional viewers because the transmission line would be screened or only seen at a distance.
- Only minor scarring and erosion from new or improved access roads or clearing that would not substantially detract from the setting.
- Temporary visual changes where no visually sensitive resources are affected.
- Impacts that may be mostly mitigated.

There would be *no impacts* on visual resources when the existing visual setting would not substantially change compared to existing conditions or when the visual conditions would be improved.

AIR QUALITY

There would be a *high impact* when project activities result in the following outcomes:

- A widespread reduction in air quality that could pose a probable risk to human health and safety, and would violate an established air quality standard.

There would be a *moderate impact* when project activities result in the following outcomes:

- A localized reduction in air quality on a temporary basis that could create a possible but unlikely risk to human health and safety, and would not violate an air quality standard.
- The ability to partially mitigate air quality impacts.

There would be a *low impact* when project activities result in the following outcomes:

- Minor increases in emissions of pollutants on a temporary basis where air quality would not be perceptibly affected; impacts would be confined to the immediate vicinity of the project; and health and safety risks would be unlikely.
- The ability to mostly mitigate air quality impacts.

There would be *no impact* when there would be no increase in emissions of pollutants.

SOCIOECONOMICS AND PUBLIC SERVICES

There would be a *high impact* when project activities result in the following outcomes:

- A regional reduction in the quantity or quality of social or economic resources or public services.
- Significant reduction in long-term economic productivity.
- Consumption of significant amounts of nonrenewable resources.
- Disproportionately *high impacts* on low-income or minority populations.

There would be a *moderate impact* when project activities result in the following outcomes:

- A local reduction in quantity or quality of social or economic resources or public services.
- Marginal reduction of long-term economic productivity.
- Consumption of moderate amounts of non-renewable resources.
- Moderate potential impacts on minority or low-income populations or impacts that would not be disproportionate.
- The ability to mostly mitigate impacts.

There would be a *low impact* when project activities result in the following outcomes:

- Reduction in the quality or quantity of social or economic resources within the study area.
- Only a short-term reduction in economic productivity.
- Consumption of negligible amounts of non-renewable resources.
- Unlikely potential impacts on low-income or minority populations.
- Impacts that did not require mitigation.

There would be *no impact* when there is no perceptible change in socioeconomic conditions or disproportionate impacts on environmental justice populations.

CULTURAL RESOURCES

There would be a *high impact* when project activities result in the following outcomes:

- Adverse effects on cultural resources eligible for listing, including the transmission line, in the National Register of Historic Properties that could diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association and that could not be at least partially mitigated.

There would be *low to moderate* impacts when project activities result in the following outcomes:

- Adverse effects on cultural resources eligible for listing in the National Register of Historic Properties, but that could be reduced through avoidance, minimization, or mitigation through the Section 106 process of the National Historic Preservation Act.

There would be *no impact* when:

- Known cultural resources are not adversely affected.
- Impacts, if present, to the transmission line or other cultural resources would not adversely affect the potential for eligibility in the National Register of Historic Places.
- The Rebuild Project is modified to ensure there would be no adverse effects and the State Historic Preservation Officer concurs.

NOISE, PUBLIC HEALTH, AND SAFETY

There would be a *high impact* when project activities result in the following outcomes:

- New significant health or safety risks or precludes the use of the ROW or nearby areas from pre-existing activities.
- Noise levels that permanently exceed accepted state standards.

There would be a *moderate impact* when project activities result in the following outcomes:

- New moderate health or safety risks or precludes the use of the ROW or nearby areas from pre-existing activities.
- Noise exceeding ambient noise levels during a portion of the time for residential receptors.
- The ability to only partially mitigate impacts.

There would be a *low impact* when project activities result in the following outcomes:

- New health or safety risks that do not preclude the use of the ROW or adjacent or nearby areas from pre-existing activities.
- Noise levels that contribute to ambient noise but that would not be easily perceived by nearby residents.
- The ability to mostly mitigate impacts.

There would be *no impact* when there are no new health or safety risks.

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APPENDIX C

Surface Waters in the Study Area

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The key characteristics of all surface waters in the study area are summarized below. The location of the surface water is identified relative to its distance from the Walla Walla Substation and from existing and proposed infrastructure. Surface waters are classified according to the Washington State Department of Natural Resource (WDNR) stream typing system, in accordance with Washington Administrative Code (WAC) 222-16-030, as follows:

- Type S: shorelines of the State
- Type F: fish-bearing waters
- Type N: non-fish-bearing waters
 - Type Np: perennial, non-fish-bearing waters
 - Type Ns: seasonal, non-fish-bearing waters

Table C-1. Surface Waters in the Study Area

Nearest Existing Structures (Line Mile/ Structure Number)		Water Body Name	Next Named Water Body Downstream	WDNR Type ¹	Existing Structures within 300 Feet (Line Mile/ Structure Number)	Proposed Structures within 300 Feet (Line Mile/ Structure Number)
West	East					
1/6	1/7	Unnamed	Mill Creek	U	1/7	1/7
2/1	2/2	Unnamed	Mill Creek	U	None	None
2/5	2/6	Unnamed	Mill Creek	U	None	None
2/9	3/1	Unnamed	Mud Creek	U	None	None
3/3	3/4	Unnamed Mud Creek tributary	Mud Creek	U	None	None
3/4	3/5	Unnamed Mud Creek tributary	Mud Creek	U	None	None
3/5	3/6	Unnamed Mud Creek tributary	Mud Creek	U	None	None
3/6	3/7	Mud Creek	Dry Creek	U	None	None
5/6	6/1	Unnamed	Dry Creek	U	None	None
6/4	6/5	Unnamed	Dry Creek	U	None	None
6/6	6/7	Unnamed	Dry Creek	U	6/6	6/7
7/2	7/3	Dry Creek	Walla Walla River	S	Access road adjacent to stream	Reconstruction of access road adjacent to Dry Creek
7/8	8/1	Unnamed	Dry Creek	Not mapped by WDNR	7/8	7/8
8/3	8/4	Unnamed	Dry Creek	U	None	None
8/7	8/8	Spring Valley Creek	Dry Creek	U	None	None
9/5	9/6	Unnamed	Dry Creek	U	None	None
9/6	9/7	Unnamed	Dry Creek	U	9/6	9/6

Nearest Existing Structures (Line Mile/ Structure Number)		Water Body Name	Next Named Water Body Downstream	WDNR Type ¹	Existing Structures within 300 Feet (Line Mile/ Structure Number)	Proposed Structures within 300 Feet (Line Mile/ Structure Number)
West	East					
9/7	10/1	Unnamed	Dry Creek	U	9/6	9/6
10/1	10/2	Unnamed	Dry Creek	U	10/1	10/1
10/2	10/3	Unnamed	Dry Creek	U	10/2	10/2
10/3	10/4	Unnamed	Dry Creek	U	10/3	10/3
10/4	10/5	Unnamed	Dry Creek	U	10/4	10/4
10/5	10/6	Unnamed	Dry Creek	U	10/5	10/5
10/6	11/1	Unnamed	Dry Creek	U	10/6	10/6
11/1	11/2	Unnamed	Dry Creek	U	11/1	11/1
11/2	11/3	Unnamed	Dry Creek	U	11/2	11/2
11/3	11/4	Unnamed	Dry Creek	U	11/3	11/3
11/4	11/5	Unnamed	Dry Creek	U	11/4	11/4
11/5	11/6	Unnamed	Dry Creek	U	11/5	11/5
11/6	11/7	Unnamed	Dry Creek	U	11/6	11.6
11/7	11/8	Unnamed	Dry Creek	U	11/7	11/7
11/8	11/9	Unnamed	Dry Creek	U	11/8	11/8
12/1	12/2	Unnamed	Dry Creek	U	12/1 and 12/2	12/1 and 12/2
12/5	12/6	Unnamed	Dry Creek	U	None	None
13/1	13/2	Unnamed	Dry Creek	U	None	None
13/3	13/5	Unnamed	Dry Creek	U	None	None
13/6	14/1	Unnamed	Dry Creek	U	None	None
14/5	15/1	Unnamed	Dry Creek	U	None	None
15/1	15/2	Unnamed	Dry Creek	U	None	None
15/2	15/3	Unnamed	Dry Creek	U	None	None
15/4	16/1	Unnamed	Dry Creek	U	15/4	15/4
16/2	16/3	Unnamed	Dry Creek	U	16/2	16/3
16/3	16/4	Unnamed	Dry Creek	U	None	None
16/5	17/1	Unnamed	Dry Creek	U	None	None
17/2	17/3	Unnamed	Dry Creek	U	None	None
17/4	17/5	Unnamed	Dry Creek	U	None	None
18/2	18/3	Unnamed	Dry Creek	U	18/2, access road	18/3 and 18/4, new access road ² , access road reconstruction
18/5	19/1	Unnamed	Dry Creek	U	None	18/8
19/3	19/4	Unnamed	Dry Creek	U	None	Access road
19/4	19/5	Unnamed	Dry Creek	U	None	None

Nearest Existing Structures (Line Mile/ Structure Number)		Water Body Name	Next Named Water Body Downstream	WDNR Type ¹	Existing Structures within 300 Feet (Line Mile/ Structure Number)	Proposed Structures within 300 Feet (Line Mile/ Structure Number)
West	East					
19/5	20/1	Unnamed	Dry Creek	U	None	None
20/2	20/3	Unnamed	Dry Creek	U	None	None
20/4	20/5	Unnamed	Dry Creek	U	20.5	20.5
20/7	21/1	Unnamed	Dry Creek	U	21/1, access road	21/1, access road reconstruction
22/4	22/5	Unnamed	Coppei Creek	U	22/4 and access road on other side of SR12 from creek	22/4 and reconstructed access road on other side of SR12 from creek
23/2	23/3	Coppei Creek	Touchet River	F	23/2 and 23/3, access road to hardened ford	23/2 and 23/3,
23/6	23/7	Unnamed	Coppei Creek	U	23/6	23/6
23/7	23/8	Unnamed	Coppei Creek	U	23/7	23/7
23/8	24/1	Unnamed	Coppei Creek	U	23/8	23/8
24/3	24/4	Wilson Creek	Touchet River	N	None	None
24/4	24/5	Unnamed	Wilson Creek	U	24/4	24/4
24/5	24/6	Unnamed	Wilson Creek	U	24/5	24/5
25/3	25/4	Wilson Creek	Touchet River	N	Access road	Reconstructed Access Road
25/4	25/5	Wilson Creek	Touchet River	N	25/4	25/4
25/6	25/7	Unnamed	Whiskey Creek	U	None	None
25/8	26/1	Whiskey Creek	Touchet River	F	None	None
26/2	26/3	Unnamed	Whiskey Creek	F	None	None
26/4	27/1	Unnamed	Whiskey Creek	N	None	26/5
27/6	28/1	Bundy Hollow Creek	Dustin Hollow Creek	Ns	Access road; culvert	None
28/3	28/4	Dustin Hollow Creek	Whiskey Creek	F	None	None
28/5	29/1	Unnamed	Dustin Hollow Creek	N	None	28/6
29/5	30/1	Dustin Hollow Creek	Whiskey Creek	F	30/1	30/3
30/2	30/3	Dustin Hollow Creek	Whiskey Creek	F	30/2; access road	30/2 and 30/3; reconstructed access road

Nearest Existing Structures (Line Mile/ Structure Number)		Water Body Name	Next Named Water Body Downstream	WDNR Type ¹	Existing Structures within 300 Feet (Line Mile/ Structure Number)	Proposed Structures within 300 Feet (Line Mile/ Structure Number)
West	East					
30/5	30/6	Hogeye Hollow Creek	Touchet River	F	None	None
31/1	31/2	Unnamed	Hogeye Hollow Creek	N	None	None
31/5	31/6	Payne Hollow Creek	Touchet River	N	None	None
32/3	32/4	Unnamed	South Fork Touchet River	N	None	None
32/4	32/5	Unnamed	South Fork Touchet River	N	None	None
32/4	32/5	Unnamed	South Fork Touchet River	N	None	None
32/4	32/5	South Fork Touchet River	Touchet River	S	Access road to ford	None
32/5	33/1	Unnamed	South Fork Touchet River	N	Access road	Access road reconstruction
33/2	33/3	Unnamed	South Fork Touchet River	N	None	None
33/3	33/4	Unnamed	South Fork Touchet River	N	None	None
33/5	33/6	Unnamed	South Fork Touchet River	N	None	None
34/1	34/2	Unnamed	Wolf Fork Touchet River	N	None	None
34/3	34/4	Unnamed	Wolf Fork Touchet River	N	None	None
34/4	35/1	Unnamed	Wolf Fork Touchet River	N	None	None
35/1	35/2	Unnamed	Wolf Fork Touchet River	N	35/2	35/2
35/3	35/4	Wolf Fork Touchet River	North Fork Touchet River	N	35/3, access road to ford leading to structure 35/2	35/3, access road reconstruction
35/4	35/5	Unnamed	Wolf Fork Touchet River	N	35/4	None
35/6	35/6	Wolf Fork Touchet River	North Fork Touchet River	S	None	None
35/6	35/7	Unnamed	Wolf Fork Touchet River	N	None	None

Nearest Existing Structures (Line Mile/ Structure Number)		Water Body Name	Next Named Water Body Downstream	WDNR Type ¹	Existing Structures within 300 Feet (Line Mile/ Structure Number)	Proposed Structures within 300 Feet (Line Mile/ Structure Number)
West	East					
36/2	36/3	North Fork Touchet River	Touchet River	S	None	None
36/6	37/1	Unnamed	North Fork Touchet River	N	None	None
37/2	37/3	Unnamed	Hatley Gulch Creek	N	Access road	Access road reconstruction
37/2	37/3	Unnamed	Hatley Gulch Creek	N	Access road	Access road reconstruction
37/5	38/1	Hatley Gulch Creek	North Fork Touchet River	F	None	None
38/3	38/4	Unnamed	Hatley Gulch Creek	N	38/3	38/4
38/3	38/4	Unnamed	Hatley Gulch Creek	N	38/4	38/5
39/2	39/3	Unnamed	Patit Creek	N	39/2	39/2
39/3	39/4	Unnamed	Patit Creek	N	None	None
39/5	39/6	Unnamed	Patit Creek	N	None	None
40/1	40/2	Unnamed	Patit Creek	N	None	None
40/3	40/4	Unnamed	West Patit Creek	N	40/3	40/3
40/4	40/5	Unnamed	West Patit Creek	N	Access road	Access road reconstruction
40/5	41/1	Unnamed	West Patit Creek	N	None	None
41/1	41/2	Unnamed	West Patit Creek	U	Access road to ford	Access road reconstruction
41/4	41/5	Unnamed	West Patit Creek	F	None	None
41/6	42/1	West Patit Creek	Patit Creek	F	None	None
42/3	42/4	Unnamed	North Patit Creek	N	None	None
42/4	42/5	Unnamed	North Patit Creek	N	42/5, access road	42/5, access road reconstruction
42/5	43/1	Unnamed	North Patit Creek	N	None	None
42/5	43/1	Unnamed	North Patit Creek	N	None	None
43/2	43/3	Unnamed	North Patit Creek	N	43/3	43/3

Nearest Existing Structures (Line Mile/ Structure Number)		Water Body Name	Next Named Water Body Downstream	WDNR Type ¹	Existing Structures within 300 Feet (Line Mile/ Structure Number)	Proposed Structures within 300 Feet (Line Mile/ Structure Number)
West	East					
43/3	43/4	Unnamed	North Patit Creek	N	None	None
43/5	43/6	Unnamed	North Patit Creek	N	None	None
43/6	44/1	North Patit Creek	Patit Creek	F	Access road to ford	Access road reconstruction
45/5	45/6	Unnamed	North Patit Creek	F	None	None
46/2	46/3	Unnamed	North Patit Creek	F	None	None
46/4	46/5	Unnamed	North Patit Creek	F	None	None
46/5	46/6	Unnamed	North Patit Creek	Not mapped by WDNR	Access road	Access road reconstruction
47/7	47/7	Unnamed	Tucannon River	N	Substation	Substation

¹ Washington State Department of Natural Resources (WDNR) water types (WAC 222-16-030): S = shoreline of the state; F = fish-bearing water; N = non-fish-bearing water; Np = perennial, non-fish-bearing water; Ns = seasonal, non-fish-bearing water; U = unidentified type

² This access road would result in a fordable crossing of the unnamed tributary. The ford would not be hardened and no in-water construction would be conducted.

APPENDIX D

Greenhouse Gases

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Appendix D: Greenhouse Gases

INTRODUCTION

Greenhouse gases (GHG) are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. They are released both naturally and through human activities such as deforestation, soil disturbance, and burning of fossil fuels. These activities disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. The resulting build up of heat in the atmosphere due to increased GHG levels causes warming of the planet through a greenhouse-like effect (EIA 2009a). Increasing levels of GHGs could increase the Earth's temperature by up to 7.2 degrees Fahrenheit by the end of the twenty-first century (EPA 2010a).

The principal GHGs emitted into the atmosphere through human activities are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases (EPA 2010a).

- **Carbon dioxide** is the major GHG emitted (EPA 2010a; Houghton 2010). CO₂ enters the atmosphere as a result of such activities as land use changes, the burning of fossil fuels (e.g., coal, natural gas, oil, and wood products), and the manufacturing of cement. CO₂ emissions resulting from the combustion of coal, oil, and gas constitute 81% of all U.S. GHG emissions (EIA 2009b). Before the industrial revolution, CO₂ concentrations in the atmosphere were roughly stable at 280 parts per million. By 2005, CO₂ levels had increased to 379 parts per million, a 36% increase, as a result of human activities (IPCC 2007).
- **Methane** is emitted during the processing and transport of fossil fuels, through intensive animal farming, and by the degradation of organic waste. Concentrations of CH₄ in the atmosphere have increased 148% above preindustrial levels (EPA 2010a).
- **Nitrous oxide** is emitted during agricultural and industrial activities and during the combustion of fossil fuels and solid waste. Atmospheric levels of N₂O have increased 18% since the beginning of industrial activities (EPA 2010a, 2010b).
- **Fluorinated gases**, including hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆), are synthetic compounds emitted through industrial processes. They are replacing ozone-depleting compounds such as chlorofluorocarbons (CFCs) in insulating foams, refrigeration, and air conditioning. Although they are emitted in small quantities, fluorinated gases have the ability to trap more heat than CO₂ and are considered gases with a high global warming potential. Atmospheric concentrations of fluorinated gases have been increasing over the last 20 years and this trend is expected to continue (EPA 2010a).

While models predict that atmospheric concentrations of all GHGs will increase over the next century due to human activity, the extent and rate of change is difficult to predict, especially on a global scale. As a response to concerns over the predicted increase of global GHG levels, various federal and state mandates address the need to reduce GHG emissions, including those described below.

- The federal **Clean Air Act** establishes regulations to control emissions from large generation sources such as power plants: limited regulation of GHG emissions occurs through a review of new sources.
- The U.S. Environmental Protection Agency (EPA) has issued the **Final Mandatory Reporting of Greenhouse Gases Rule** that requires reporting of GHG emissions from large sources. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHGs are required to submit annual reports to EPA (EPA 2010b), although no other action is required (40 Code of Federal Regulations Parts 86, 87, 89.).
- **Executive Orders 13423 and 13514** require federal agencies to measure, manage, and reduce GHG emissions by agency-defined target amounts and dates.
- In **Washington State, Executive Orders 07-02 and 09-05** direct state agencies to work with western states and Canadian provinces to develop a regional emissions reduction program designed to reduce GHG emissions to 1990 levels by 2020 (Ecology 2010).

ACTIVITIES THAT WOULD CONTRIBUTE TO GREENHOUSE GAS EMISSIONS

The Walla Walla–Tucannon River Transmission Line Rebuild Project (Rebuild Project or Proposed Action) would involve rebuilding the existing transmission line. Under the No Action Alternative, the transmission line would not be rebuilt and ongoing operation and maintenance activities would continue. Implementation of the Proposed Action would contribute to an increase in GHG concentrations through the following activities, each discussed in more detail below:

- **construction:** use of gasoline and diesel-powered vehicles, including cars, trucks, construction equipment, and helicopters;
- **construction:** temporary removal and/or disturbance of vegetation and soils;
- **construction:** permanent removal of vegetation, including trees, for the construction of new roads and new transmission line structures;
- **ongoing operation and maintenance:** use of gasoline and diesel-powered vehicles for routine patrols, maintenance project work (vegetation management and site-specific repairs of roads and transmission line structures and associated hardware), emergency maintenance, and resource review; and
- **ongoing operation and maintenance:** use of helicopters for aerial inspections of the transmission line corridor.

METHODS USED TO CALCULATE GREENHOUSE GAS EMISSIONS

Construction

Construction for the Rebuild Project would take about 7 months (June through December), with peak construction activity occurring during a 5-month period (June through October). Road and

structure-related construction would take place during the 5-month peak construction period. Non-peak construction activities would include installing and removing best management practice measures such as silt fencing, establishing staging areas and moving equipment and materials into and out of the project area, conducting site preparation and site restoration work along roadways and at structure sites, monitoring culvert function, and other similar activities.

The transportation components of GHG emissions were estimated for the Proposed Action based on the approximate number of vehicles that would be used during project construction and the approximate distance those vehicles would travel during the construction period. GHG emissions were calculated for both the 5-month peak construction period and the 2-month non-peak period based on estimates of vehicle round trips per day.

Overestimating the number of round trips ensures that GHG emission estimates are conservatively high. The number of round trips was deliberately overestimated using the following assumptions.

- All workers would travel in separate vehicles to and within the project area each day.
- A maximum number of workers would be required to construct the project.
- The round-trip distance to the project area is the distance from Walla Walla, Washington, to the Tucannon Substation and back (about 100 miles). Although some workers might stay in towns closer to the project area such as Dayton, and Waitsburg, Washington, these towns are smaller and adequate accommodations may not be available.
- All workers would travel the full length of the project area each day. Although this is true for some workers such as inspectors, other workers could be localized.
- Fuel consumption is based on the average fuel economy for standard pickup trucks of 18 miles per gallon. Again, this is likely an overestimation as more efficient vehicles may occasionally be used.
- Average helicopter fuel consumption is estimated by BPA pilots at 1 mile per gallon.

Up to 30 construction workers would be at work on the transmission line during the peak construction period (5 months) and an estimated 20 workers could be present during the non-peak construction period (2 months).

BPA staff would travel to the transmission line for various purposes, such as road inspection, work inspection, staff meetings, environmental compliance monitoring, and meetings with landowners. An estimated two round trips per week from the Pasco, Washington, BPA offices during the 7-month construction period would result in a total of 56 round trips at an estimated 200 miles per trip.

Helicopters may be used to replace the conductor. After the equipment (puller and tensioner) is set up, a sock line (usually a rope) is strung through all of the structures using a helicopter. It was assumed that the helicopter would be used for approximately 1 month (20 work days) to conduct this work. An estimated two round trips from the Walla Walla Airport each day would result in a total of 40 round trips at an estimated 100 miles per trip.

Fuel consumption and GHG emissions would also result from operation of on-site heavy construction equipment. Heavy construction equipment may include augers, dozers, excavators,

graders, heavy-duty trucks, and front-end-loaders. Similar to the transportation activities listed above, increased use of heavy construction equipment would occur during peak construction.

Although it is difficult to develop an accurate estimation of total fuel consumption associated with heavy construction equipment operation, the following assumptions were used.

- A maximum of 40 equipment machines would be in operation during peak construction and 20 equipment machines would be in operation during off-peak construction.
- The average size of the equipment would not exceed 250 horsepower. All equipment would operate at maximum power for 8 hours per day and 5 days per week throughout the construction phase. This is a significant overestimation because equipment commonly operates in idle or at reduced power.
- Equipment would operate at approximately 35% efficiency, representing the percentage of productive energy extracted from the diesel fuel relative to the maximum potential energy within the fuel (i.e., 138,000 British thermal units per gallon of diesel) (DOE and EPA 2011).

GHG emissions associated with equipment operation were overestimated to account for all potential construction activities and associated material deliveries to and from the construction site. They are also expected to account for the low levels of GHG emissions related to temporary soil disruption and damaged vegetation from construction activities, which were not estimated separately in this analysis. GHG emissions that result from soil disturbance are short-lived and return to background levels within several hours (Kessavalou et al. 1998). Emissions from decomposing vegetation would also be relatively short-lived where vegetation would be allowed to reestablish following construction.

Permanent Vegetation Removal

The permanent removal of trees and other vegetation would occur as a result of the construction of new roads and 24 new transmission line structures. Although permanent tree removal would not immediately emit any GHGs, it would reduce the level of solid carbon storage in the area. Tree growth and future carbon sequestration rates are highly variable and depend on several factors, including the species of tree, age of tree, climate, forest density, and soil conditions. In the Pacific Northwest, the U.S. Forest Service estimates the maximum carbon density associated with a fully mature forest ranges from 60 to 364 metric tons of carbon per acre (Birdsey et al. 2006).

Approximately 2,450 feet of new access roads within a 50-foot easement would be constructed. Because BPA access road standards only require a minimum 14-foot-wide travel surface with a 20-foot-wide travel corridor, a portion of the 50-foot-wide road easements would remain undisturbed. However, GHG emissions are overestimated by assuming that the entire road easement would be converted from a fully mature, forested area to an area that is permanently kept clear of trees, which for this project would be approximately 2.8 acres. The operation of tree removal equipment to clear new road areas of trees was included within the construction section analysis described above.

Twenty-four additional transmission line structures would be added to the transmission line. An area of up to 100 by 100 feet (0.23 acre) around each structure would be maintained free of

seedling trees. Assuming that all 24 new structures would require clearing, a total of 5.5 acres would be cleared of trees.

In total, up to 8.3 acres of land would be cleared of trees for construction of new roads and transmission line structures. This is an overestimation since trees do not occur over the entire affected area, although losses of other types of vegetation with smaller carbon storage capacities could still occur.

Operations and Maintenance

During operation and maintenance of the transmission line, the following annual activities would result in GHG emissions:

- routine patrols (access road, structure, and vegetation inspections): 60 round trips per year, from the BPA Pasco office, 200 miles round trip;
- maintenance of roads and structures and associated hardware: 160 round trips per year, from the BPA Pasco office, 200 miles;
- emergency maintenance to address line outages, landslides, and other unpredicted events: 40 round trips per year, from BPA Pasco office, 200 miles round trip;
- natural resource review: 8 round trips per year, from the BPA Portland office, 580 miles round trip; and
- aerial inspections by helicopter: routine visits twice per year and up to twice per year for specific maintenance needs such as facility winter readiness checks: four round trips from Walla Walla Airport to Tucannon Substation, 100 miles round trip.

Vegetation management activities, including danger tree removal, mowing along roadsides, and weed control, would be conducted during most years. Because vegetation management does not include permanent vegetation removal other than trees, this activity was not included in GHG calculations.

Calculations of GHG emissions include operations and maintenance work for the estimated 50-year life span of the rebuilt transmission line.

RESULTS

GHG emissions were calculated using the estimated values described above for three types of activities: construction of the Rebuild Project, permanent vegetation removal for new roads, and ongoing annual operations and maintenance for the estimated 50-year life span of the transmission line. Each type of activity is discussed separately below.

Construction Emissions

Table 1 displays the results of calculations for the construction activities that would contribute to GHG emissions. Construction of the Rebuild Project would result in an estimated 6,828 metric tons of CO₂e¹ (equivalent carbon dioxide) emissions. All GHG emissions associated with

¹ CO₂e is a unit of measure used by the IPCC that takes into account the global warming potential of each of the emitted GHGs using global warming potential factors. See Table 1.

construction activities would occur in the first year. The Proposed Action’s contribution to GHG emissions during construction would be considered *low*.

Table 1. Estimated Greenhouse Gas Emissions from Project Construction

Estimated GHG Emissions of Construction Activities	CO2 (metric tons)	CH4 (CO2e) ¹ (metric tons)	N2O (CO2e) ¹ (metric tons)	Total CO2e (metric tons)
Peak construction transportation	160	111	665	936
Off-peak construction transportation	43	30	177	250
BPA employee transportation	6	4	25	35
Helicopter operation	2	0.03	0.01	2
Peak construction: equipment operation	4,635	5	31	4,671
Off-peak construction: equipment operation	927	1	6	934
TOTAL				6,828

¹ CO₂ emission factors calculated from DOE and EIA 2005. CH₄ and N₂O emission factors from EPA 2007.

² CH₄ and N₂O emissions have been converted into units of equivalent carbon dioxide (CO₂e) using the IPCC global warming potential (GWP) factors of 21 GWP for CH₄ and 310 GWP for N₂O (ICBE 2000).

Permanent Vegetation Removal Emissions

Table 2 displays the contribution to atmospheric GHG levels that would result from tree removal for new road construction and the installation and maintenance of new structures. Assuming each affected acre contains the maximum level of carbon storage within the proposed carbon density range above, the net carbon footprint associated with the removal of trees under the Proposed Action would be an estimated 11,084 metric tons of CO₂e. Given this estimate, the impact of vegetation removal on GHG emissions would be considered *low*.

Table 2. Net Carbon Footprint Associated with Removal of Maximum Number of Trees

Type of Activity	Maximum Loss of Carbon Storage (metric tons)	Total CO2e ¹ (metric tons)
Transmission line structure construction	2,003	7,345
New road construction	1,020	3,739
TOTAL		11,084

¹ Carbon was converted to units of CO₂e using a conversion factor of 3.67.

Operations and Maintenance Emissions

Table 3 displays the contribution to GHG emissions that would result from operations and maintenance activities. Under the Proposed Action, these activities would result in an estimated 7,628 metric tons of CO₂e emissions over the estimated 50-year lifespan of the line. Given this estimate, the impact of operations and maintenance activities on GHG emissions would be considered *low*.

Table 3. Estimated Greenhouse Gas Emissions from Operations and Maintenance over the 50-Year Life of the Rebuild Project

Type of Operation and Maintenance Activity	CO ₂ (metric tons)	CH ₄ (CO ₂ e) ¹ (metric tons)	N ₂ O (CO ₂ e) ¹ (metric tons)	Total CO ₂ e (metric tons)
Routine patrols	296	83	1,228	1,607
Maintenance work	790	222	3,274	4,286
Emergency maintenance	197	55	818	1,070
Natural resource review	115	32	475	622
Helicopter surveys	42	0.7	0.2	43
TOTAL				7,628

¹ CO₂ emission factors calculated from DOE and EIA 2005. CH₄ and N₂O emission factors from EPA 2007.

² CH₄ and N₂O emissions have been converted into units of equivalent carbon dioxide (CO₂e) using the IPCC global warming potential (GWP) factors of 21 GWP for CH₄ and 310 GWP for N₂O (ICBE 2000).

Summary of Results

To summarize, the Proposed Action would result in an estimated total of 6,828 metric tons of CO₂e emissions during the initial project year, and an estimated 7,628 metric tons of CO₂e emissions from ongoing operation and maintenance activities over the estimated 50-year lifespan of the line. The lost carbon storage capacity of the forest equals a net loss of 11,084 metric tons of CO₂e (emissions resulting from biomass combustion or land use changes such as deforestation are considered optional for reporting and, if reported, should not be added to direct or indirect emission calculations [The Climate Registry 2008]).

To provide context for this level of emissions, EPA's mandatory reporting threshold for annual CO₂ emissions is 25,000 metric tons of CO₂e, roughly the amount of CO₂ generated by 4,400 passenger vehicles per year. The emissions associated with the Proposed Action would be roughly equivalent to 1,202 passenger vehicles for the initial year of construction and roughly 1,343 passenger vehicles for operations and maintenance activities in over a 50-year period, or about 27 passenger vehicles per year. All levels of GHG emissions are significant in that they contribute to global GHG concentrations and climate change. Given this low amount of contribution, however, the Proposed Action's impact on GHG concentrations would be considered *low*.

RECOMMENDED MITIGATION MEASURES

The following mitigation measures have been identified to reduce or eliminate GHG emissions:

- Implement vehicle idling and equipment emissions measures.
- Encourage carpooling and the use of shuttle vans among construction workers to minimize construction-related traffic and associated emissions.
- Locate staging areas as close to construction sites as practicable to minimize driving distances.
- Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance, where practicable.
- Encourage the use of the proper size of equipment for the job.
- Use alternative fuels for generators at construction sites, such as propane or solar, or use electrical power, where practicable.
- Reduce electricity use in the construction office by using compact fluorescent bulbs and turning off electronic equipment every night.
- Recycle or salvage nonhazardous construction and demolition debris, where practicable.
- Dispose of wood poles in the local area, where practicable.
- Use local sources for rock for road construction.

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