

## **APPENDIX B-4 NOXIOUS WEED REPORT**

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## **APPENDIX B-4: NOXIOUS WEED REPORTS**

Noxious weed reports were submitted in Appendix B-4 of both the January 2013 Draft Environmental Impact Statement (DEIS) and January 2015 Supplemental Draft Environmental Impact Statement (SDEIS). The methods used for the DEIS and SDEIS Noxious Weed Reports are the same, except that the noxious weed surveys were conducted in different years and in different locations. The original versions of these documents have been included in Appendix B-4 of this Final Environmental Impact Statement (FEIS), as listed below:

### **January 2013 DEIS Appendix B-4: Noxious Weed Report**

The original proposed Project analyzed in the DEIS consisted of 10 end-to-end alternatives approximately following the southern and eastern flanks of the Joint Base Lewis-McChord Yakima Training Center (JBLM YTC). Federal lands that were accessed included Bureau of Reclamation (Reclamation), Bureau of Land Management (BLM), JBLM YTC, and U.S. Fish and Wildlife Service (USFWS). Corresponding route segments for the FEIS include 1a/New Northern Route (NNR)-1, 1b, 1c, 2a, 2b, 2c, 2d, 3a, 3b, and 3c.

The DEIS noxious weed survey was coordinated with the second special status plant survey that year which occurred during June 22-29, 2011. Incidental observations of noxious weeds that were observed during the August 8-10, 2011 special status plant survey were documented if not already previously mapped. Of the 674 acres of federal lands within the 160-foot wide right-of-way (ROW) corridor, 450 acres were accessible and surveyed. The remaining 224 acres of federal lands that were not surveyed were inaccessible due to restricted access on the JBLM YTC, access issues crossing private lands, dangerously steep terrain, and excessively long distances to hike from a vehicle to the ROW corridor. Twenty noxious weed species were documented on accessible federal lands, including 11 Washington Class B species and nine Washington Class C species.

### **January 2015 SDEIS Appendix B-4: Noxious Weed Report**

In April, 2013 the NNR was identified following route segments approximately following the northern flank of the JBLM YTC. After the 2013 noxious weed surveys were completed, routing adjustments were made due to new requirements for separation distance from existing transmission lines and concerns about sage-grouse. The locations of the NNR and Manastash Ridge (MR) Subroute were finalized in November 2013. The NNR occurs along the west side of Interstate 82 and then passes through the northern portion of the JBLM YTC to the Vantage Substation. The MR Subroute skirts Manastash Ridge, west of Badger Pocket in the northwestern portion of the JBLM YTC. The 2013 noxious weed surveys were conducted on approximately 584 acres or 30.5 of 41.2 centerline miles of federal and Washington State Department of Transportation (WSDOT) lands on the NNR and MR Subroute route segments. Portions of Reclamation and BLM lands which had been surveyed for the DEIS in 2011 and incorporated into the NNR were not revisited in 2013. Corresponding route segments for the FEIS include 1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8, and MR-1. The 2013 noxious weed surveys did not occur on Route Segment NNR-6, due to route changes that occurred after the surveys had been completed.

The SDEIS noxious weed survey was coordinated with the first special status plant survey that year, which occurred during May 13-20, 2013. Most noxious weeds during the May 2013 survey were more mature than typical for the time of year, either flowering or in the pre-bud stage, and were more similar to typical June conditions. During July 25-27, 2013 botanists re-visited noxious weed sites which had been identified as needing follow-up confirmation, as detailed in the January 2015 SDEIS Appendix B-4:

Noxious Weed Report. Sixteen noxious weed species were documented on federal and WSDOT lands of the NNR route segments surveyed, including eight Washington Class B species and eight Washington Class C species.

**APPENDIX B-4**

**NOXIOUS WEED REPORT**

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## **1.0 INTRODUCTION**

The noxious weed survey was conducted on approximately 450 acres of accessible federal lands within the right-of-way (ROW) corridor for the proposed 230 kilovolt (kV) Vantage to Pomona transmission line (ca 32.5 miles of ROW corridor centerline) between the existing Pomona Heights Substation near Yakima, Washington, and the Vantage Substation located adjacent to the Columbia River and north of Beverly, Washington. This work was conducted to provide information about noxious weeds specific to the proposed project. Habitat assessment and special status plant surveys were coordinated at the same time as the noxious weed surveys, and these are both discussed in separate reports. Appendix B-2 and Appendix B-3.

Each year, the State Noxious Weed Control Board adopts, by rule (WAC 16-750), the State Noxious Weed List. This list determines which plants will be considered noxious weeds and where control will be required in Washington State. This approach allows control activities of land owners - both public and private - to be prioritized towards the protection and enhancement of Washington's agriculture and natural areas in the most cost-effective manner.

There are three classes of noxious weeds on the state noxious weed list. These include:

- Class A: Non-native species that are limited in distribution in Washington. State law requires that these weeds be eradicated.
- Class B: Non-native species that are either absent from or limited in distribution in some portions of the state but very abundant in other areas. The goals are to contain the plants where they are already widespread and prevent their spread into new areas.
- Class C: Non-native plants that are already widespread in Washington State. Counties can choose to enforce control, or they can educate residents about controlling these noxious weeds.

Once the State Noxious Weed list is adopted, county and district weeds lists are created from the updated State Noxious Weed List. County weed lists include all State Class A weeds and Class B weeds designated by the state for control their area according to WAC 16-750. Counties and districts can then select additional Class B weeds and Class C weeds that they will require control of in their area.

## **2.0 METHODS**

Qualified botanists documented target noxious weed species on accessible federal lands within the ROW corridor for the alternate route segments. Federal lands were considered inaccessible due to: restricted access on the Yakima Training Center (YTC); access issues crossing private lands; dangerously steep terrain; and excessively long distances (greater than one mile) to hike from car to the ROW corridor. Three surveys were conducted to address the different phenology (timing of flowering and/or fruiting) of target special status plant species. The noxious weed survey was coordinated with the second special status plant survey, which occurred during June 22-29, 2011. Incidental observations of noxious weeds that were observed during the May 16-25 and August 8-10, 2011 were documented if not already previously mapped. Federal lands that were accessed included Bureau of Reclamation (Reclamation), Bureau of Land Management (BLM), YTC, and U.S. Fish and Wildlife Service (USFWS). Pre-construction clearance surveys will be identified and detailed in the Plan of Development (POD).

### **Surveyor Qualifications**

Noxious weed surveys were conducted by botanists who have the following minimum qualifications:

- An academic background (bachelor's degree or higher in botany) or equivalent experience in plant taxonomy;
- The taxonomic experience to identify, through personal knowledge or the use of technical floras, most species encountered in the field, and an understanding of how to contact taxonomic experts for species that they are unable to identify;
- The skills to use GPS to adequately map occurrences of special status plant species; and
- Familiarization of the potential special status plant species in the project area.

## **Field Preparation**

The list of target noxious weeds was developed to include those designated by the Washington State Noxious Weed Control Board (2011), plus any additional noxious weeds designated by the project counties (Benton, Grant, Kittitas, and Yakima). Sources of information for noxious weed species included the *Vascular Plants of the Pacific Northwest: Vols. I-V* (Hitchcock et al. 1969), *Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973), *Noxious Weeds that Harm Washington: Eastern and Western Washington Field Guides* (WSNWCB 2009a,b), *Weeds of the West* (Whitson et al. 2000), and botanists' personal knowledge of the species.

## **Field Survey**

A complete pedestrian survey was conducted during June 22-29, 2011 for the target noxious weed species on accessible federal lands with a 25 meters separation between surveyors, covering the 160 foot (ca 49 meter) ROW corridor. Botanists walked roughly parallel intuitive meandering transects while they were targeting habitats most likely to support special status plant species. The survey was floristic, meaning that all taxa were identified to the level necessary to determine if they are special status plant or noxious weed species (except if the plant was in an unidentifiable stage; i.e., from grazing).

A survey-grade GPS was used to document the occurrence of target noxious weed species discovered. For each noxious weed species occurrence discovered, the following attributes were documented: species name, date, surveyor name(s), estimated number of plants, estimated cover, and estimated land area occupied. Very steep slopes and other conditions that pose a safety hazard were not surveyed. Very steep slopes are typically avoided for installation of transmission line structures or structures are installed using special methods such as helicopters, minimizing ground disturbance. In addition, botanists communicated with YTC personnel to ensure surveys were coordinated with training activities.

## **3.0 RESULTS**

Of the 674 acres of federal lands within the 160 foot wide ROW corridor, 450 acres were accessible and surveyed. The remaining 224 acres of federal lands that were not surveyed were inaccessible due to restricted access on the YTC, access issues crossing private lands, dangerously steep terrain, and excessively long distances to hike from car to the ROW corridor.

Twenty noxious weed species were documented on accessible federal lands, including 11 Washington Class B species and nine Washington Class C species (Table 1 and Table 2). No Washington Class A species were documented. The control of Washington Class C species is at the discretion of each county. Grant, Kittitas, and Yakima Counties require control of all of the Class C species found during the survey, except for reed canarygrass (*Phalaris arundinacea*). This species is not listed for control in any of the counties (Noxious Weed Control Board of Grant County (2011), Kittitas County Noxious Weed Control Board (2011), and Yakima County Noxious Weed Board (2011)). Horseweed (*Conyza canadensis*) is listed as a Kittitas County Class C weed and control is required in that County.

**TABLE 1 SPECIES BIOLOGY AND LIST OF NOXIOUS WEED LOCATIONS BY ROUTE SEGMENT**

Species Name	Species Background <sup>1,2,3,4,5,6</sup>				Legal Noxious Status <sup>6,7,8</sup>		Location of Species (Route Segment)
	Life Span	Growth Habit	Reproductive Mechanisms	Suitable Habitat	Washington	County	
Russian knapweed <i>Acroptilon repens</i>	perennial	forb	creeping roots, seeds	Disturbed land such as cultivated fields, orchards, pastures and roadsides.	Class B	G, K, Y	3b
Burningbush <i>Bassia scoparia</i> (= <i>Kochia scoparia</i> )	annual	forb	seeds	Cultivated fields, roadsides, ditch banks and waste areas.	Class B	G	1a, 1b, 1c, 3b, 3c
Hoary cress <i>Cardaria draba</i>	perennial	forb	creeping roots, seeds	Moist, open unshaded areas. Can invade irrigated pastures, ditch banks, roadsides and waste areas. Typically does not invade arid rangelands.	Class C	G, K	1a, 1b
Diffuse knapweed <i>Centaurea diffusa</i>	annual, perennial	forb	seeds	Disturbed areas, dry pasturelands, and meadows.	Class B	G, K, Y	1a, 1b, 1c, 2b, 3b, 3c
Rush skeletonweed <i>Chondrilla juncea</i>	perennial	forb	seeds	Disturbed cropland, rangeland, roadways, and waste areas.	Class B	G, K, Y	3c
Canada thistle <i>Cirsium arvense</i>	perennial	forb	creeping roots, seeds	Wide habitat range and fairly adaptable. Disturbed open areas with moderate moisture conditions. Along roadsides, railroad ROW, rangeland, forestland, cropland, and abandoned fields.	Class C	G, K	1a, 1b, 3b, 3c
Field bindweed <i>Convolvulus arvensis</i>	perennial	vine, forb	creeping roots, seeds	Disturbed cultivated and waste areas.	Class C	G, K	2b, 3b
Horseweed <i>Conyza canadensis</i>	annual	forb	seeds	Pastures, meadows, cultivated fields, along roadways and in waste areas.		K	3c
Common St. Johnswort <i>Hypericum perforatum</i>	perennial	forb	seeds, short runners	Disturbed sunny, well-drained areas with gravelly or sandy soils.	Class C	G	3b

Species Name	Species Background <sup>1,2,3,4,5,6</sup>				Legal Noxious Status <sup>6,7,8</sup>		Location of Species (Route Segment)
	Life Span	Growth Habit	Reproductive Mechanisms	Suitable Habitat	Washington	County	
Common catsear <i>Hypochaeris radicata</i>	perennial	forb	seeds	Disturbed sites, waste areas, pastures and cultivated fields.	Class B	G, K	3c
Perennial pepperweed <i>Lepidium latifolium</i>	perennial	forb/herb	rhizomes, seeds	Wet areas, ditches, roadsides and cropland.	Class B	G, K, Y	1b, 1c, 3c
Dalmatian toadflax <i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	perennial	forb/herb	creeping roots, seeds	Well-drained, coarse textured soils. Disturbed areas such as roadsides, gravel pits, rangelands and waste areas.	Class B	G, K, Y	1a
Purple loosestrife <i>Lythrum salicaria</i>	perennial	forb	rhizomes, seeds	Aquatic sites along ditches, streams, ponds, and lake shores.	Class B	G, K, Y	3c
Scotch thistle <i>Onopordum acanthium</i>	biennial	forb/herb	seeds	Areas with high soil moisture. Frequently associated with waterways, bottoms of gullies, draws and roadsides.	Class B	G, K, Y	1b, 1c, 3b, 3c
Reed canarygrass <i>Phalaris arundinacea</i>	perennial	grass	large rootstalks	Wet meadows, marshes, pastures, lake margins and ditches.	Class C		3c
Common reed (nonnative genotype) <i>Phragmites australis</i>	perennial	subshrub, shrub, graminoid	rhizomes, seeds	Marshes, river edges, shores of lakes and ponds, roadsides, disturbed areas.	Class B	G	3c
Russian thistle <i>Salsola iberica</i> (= <i>S. kali</i> )	annual	forb	seeds	Disturbed dry sites such as cultivated dryland agriculture and over-grazed rangelands.	Class C	K	1a, 1b, 1c, 2b, 2d, 3b, 3c
Cereal rye <i>Secale cereale</i>	annual	graminoid	seeds	Roadsides, waste areas and open rangeland.	Class C	G	3c
Groundsel <i>Senecio vulgaris</i>	annual, biennial	forb	seeds	Disturbed sites such as roadsides, railroad beds and pastures.	Class C	G	3c
Puncturevine <i>Tribulus terrestris</i>	annual	forb/herb	seeds	Pastures, cultivated fields, waste sites, along highways and roads.	Class B	G, K, Y	1a, 3c

Sources: USDA 2010<sup>1</sup>, WNWCB 2011<sup>2</sup>, WNWCB 2009<sup>3</sup>, Sheley and Petroff 1999<sup>4</sup>, Ecology 2001<sup>5</sup>, Whitson et al. 1999<sup>6</sup>, Noxious Weed Control Board of Grant County 2011<sup>7</sup>, Kittitas County Noxious Weed Control Board<sup>8</sup>, Yakima County Noxious Weed Board<sup>9</sup>; State of Washington Noxious Weed Designations: **Class A**– have a limited distribution in Washington. State law requires that these weeds be eradicated; **Class B** - are either absent from or limited in distribution in some portions of the state but very abundant in other areas. The goals are to contain the plants where they are already widespread and prevent their spread into new areas; **Class C** – are already widespread in Washington State. Counties can choose to enforce control, or they can educate residents about controlling these noxious weeds (WNWCB 2011); County Noxious Weed Lists: B=Benton; G=Grant; K=Kittitas; Y=Yakima.

TABLE 2 DISTRIBUTION OF WEED SPECIES ON FEDERAL LAND BY ROUTE SEGMENT (NUMBER OF OCCURENCES AND ACRES)

SPECIES NAME	Route Segments (number of populations and acres)																				
	1a		1b		1c		2a		2b		2c		2d		3a		3b		3c		
	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	
Russian knapweed <i>Acroptilon repens</i>																		3	2.0		
Burningbush <sup>1</sup> <i>Bassia scoparia</i> (= <i>Kochia scoparia</i> )																					
Hoary cress <i>Cardaria draba</i>	1	0.0	3	0.14																	
Diffuse knapweed <i>Centaurea diffusa</i>	2	4.6	8	32.7	3	0.6			1	0.0								5	0.2	13	12.3
Rush skeletonweed <i>Chondrilla juncea</i>																				1	0.0
Canada thistle <i>Cirsium arvense</i>	1	0.0	3	0.1														1	1.9	4	0.3
Field bindweed <i>Convolvulus arvensis</i>									2	0.0								2	0.0		
Horseweed <sup>2</sup> <i>Conyza canadensis</i>																				1	48.5
Common St. Johnswort <i>Hypericum perforatum</i>																		1	0.0		

SPECIES NAME	Route Segments (number of populations and acres)																				
	1a		1b		1c		2a		2b		2c		2d		3a		3b		3c		
	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	
Common catsear <sup>2</sup> <i>Hypochaeris radicata</i>																				1	3.2
Perennial pepperweed <i>Lepidium latifolium</i>			5	0.6	2	0.0														4	0.2
Dalmatian toadflax <i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	2	2.5																			
Purple loosestrife <i>Lythrum salicaria</i>																				1	0.0
Scotch thistle <i>Onopordum acanthium</i>			4	0.2	1	0.0											2	0.0	1	0.0	
Reed canarygrass <i>Phalaris arundinacea</i>																				2	1.6
Common reed (nonnative genotype) <i>Phragmites australis</i>																				1	0.1
Russian thistle <sup>1</sup> <i>Salsola iberica</i> (=S. <i>kali</i> )																					
Cereal rye <i>Secale cereale</i>																				1	0.1

SPECIES NAME	Route Segments (number of populations and acres)																				
	1a		1b		1c		2a		2b		2c		2d		3a		3b		3c		
	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	# of Occurrences	Acres	
Groundsel <sup>2</sup> <i>Senecio vulgaris</i>																				2	2.1
Puncturevine <sup>2</sup> <i>Tribulus terrestris</i>	1	4.5																		4	61.6
<b>TOTAL</b>	<b>7</b>	<b>11.6</b>	<b>23</b>	<b>33.74</b>	<b>6</b>	<b>0.6</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>4.1</b>	<b>36</b>	<b>130.0</b>

<sup>1</sup>Burningbush and Russian thistle were not mapped due to their ubiquitous and often dominant nature across most accessible federal lands. <sup>2</sup>Horseweed, common cat's-ear, groundsel, and puncturevine were not determined to be noxious until after the surveys were complete. Information is based on notes and retrospective mapping.

Figures 1 and Figure 2 show the known distribution of all noxious weeds found on accessible federal lands for each route segment. All noxious weed species were mapped, except for two species because of their ubiquitous and often dominant nature across most accessible federal lands. These include kochia (*Kochia scoparia*; Class B) and Russian thistle (*Salsola iberica*; Class C). In addition, some species shown in the maps were not determined to be noxious until after the surveys were complete, so their mapped distribution is based on notes and retrospective mapping. These include horseweed (*Conyza canadensis*), common cat's-ear (*Hypochaeris radicata*), groundsel (*Senecio vulgaris*), and puncturevine (*Tribulus terrestris*). Some of these species were partially mapped in the field and all occurred on Reclamation lands.

Route 3c had the largest number of Class B and C noxious weed species (13 species) and occurrences (36), which were associated with the irrigation canals and agricultural lands on the Reclamation lands (Table 3). Routes 1a, 1b, 1c, and 3b also had a substantial number of noxious weed species. Routes 2c and 2d had the fewest number of noxious weed species documented. Many other areas where noxious weeds were documented were characterized by vectors for weed establishment and spread, such as roads, the YTC fire breaks, areas with past fire events, riparian areas, and agricultural lands and associated irrigation canals.

**TABLE 3 NUMBER OF NOXIOUS WEED SPECIES DOCUMENTED BY ROUTE SEGMENT (2011)**

ROUTE	CLASS A	CLASS B	CLASS C
1a	0	4	3
1b	0	4	3
1c	0	4	1
2a	No Federal Lands		
2b	0	1	2
2c	Federal Lands Inaccessible		
2d	0	0	1
3a	No Federal Lands		
3b	0	4	4
3c	0	10	6

## 4.0 RECOMMENDATIONS

A Noxious Weed Management Plan will be prepared for the proposed 230 kV Vantage to Pomona Transmission Line project to address what measures will be implemented by Pacific Power and its contractors to treat and prevent the establishment and spread of noxious weeds. This plan will address the following components:

- Regulations related to noxious weeds and weed management.
- List of all noxious weeds relevant to the project area, and whether they are known to occur within the ROW corridor.
- Mitigation measures for preventing the establishment and spread of noxious weeds.
- Mitigation measures for treating noxious weeds without damaging sensitive resources.
- Procedures for monitoring and documenting weed control activities during construction and for three years after construction is completed.

Pacific Power is committed to preventing the establishment and spread of noxious weeds during construction, operation, and maintenance of the proposed project.

## **5.0 LITERATURE CITED**

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# Figure 1 Noxious Weed Survey

## Class C Noxious Weeds

### Legend

#### Routes

- Link Node
- Alternative Route

#### 2011 Noxious Weed Survey

##### Class C Noxious Weeds

- *Cardaria draba*
- *Cirsium arvense*
- *Convolvulus arvensis*
- *Conyza canadensis*
- *Hypericum perforatum*
- *Phalaris arundinacea*
- *Secale cereale*
- *Senecio vulgaris*

#### Existing Transmission

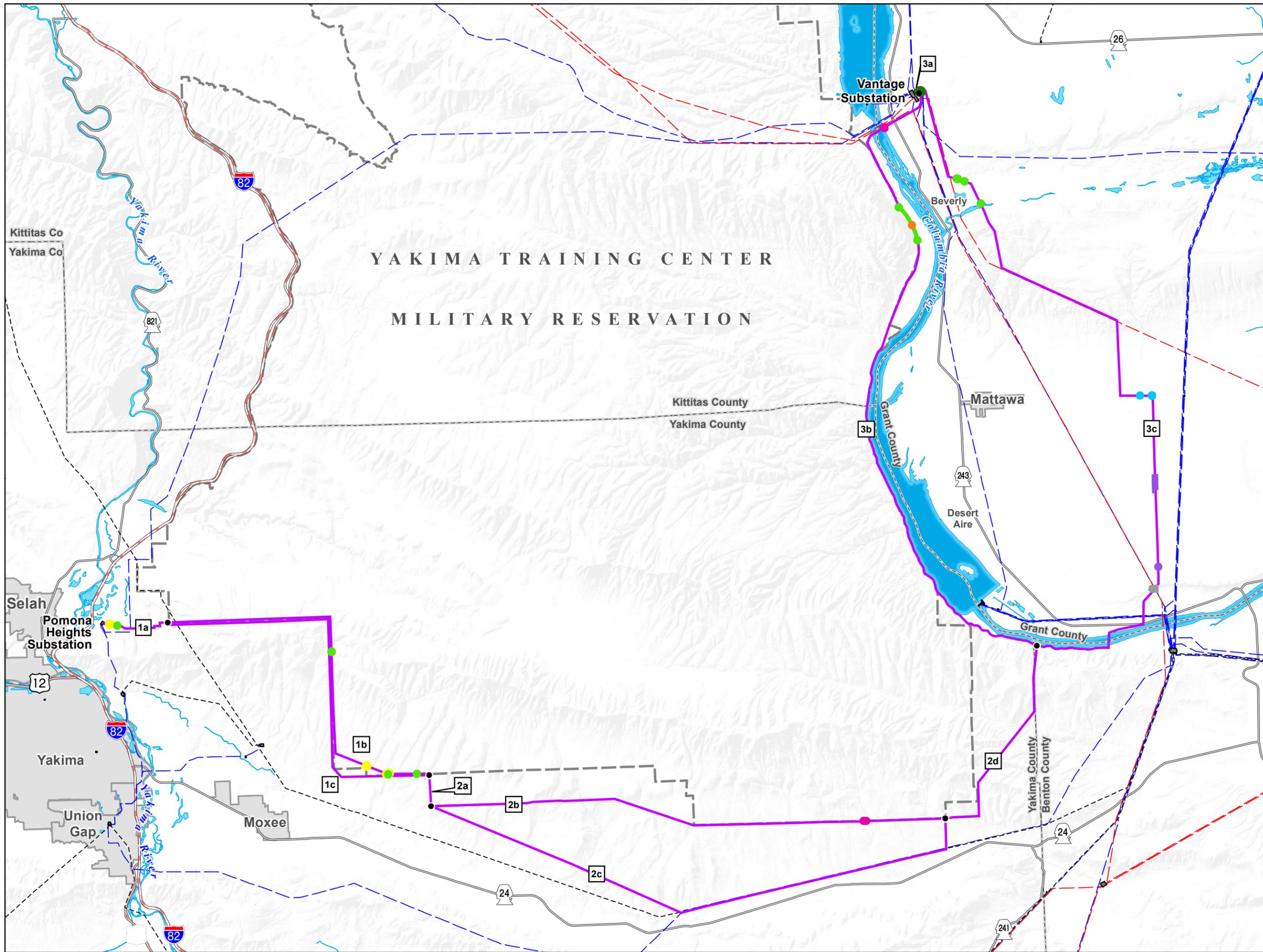
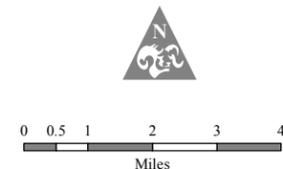
- Substation
- 500kV
- 230kV
- 115kV

#### Boundaries

- City Boundary
- County
- Yakima Training Center



Data are projected in UTM Zone 10N, NAD83



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# Figure 2 Noxious Weed Survey

## Class B Noxious Weeds

### Legend

#### Routes

- Link Node
- Alternative Route

#### 2011 Noxious Weed Survey

##### Class B Noxious Weeds

- *Acroptilon repens*
- *Centaurea diffusa*
- *Chondrilla juncea*
- *Hypochaeris radicata*
- *Lepidium latifolium*
- *Linaria dalmatica*
- *Lythrum salicaria*
- *Onopordum acanthium*
- *Phragmites australis*
- *Tribulus terrestris*

#### Existing Transmission

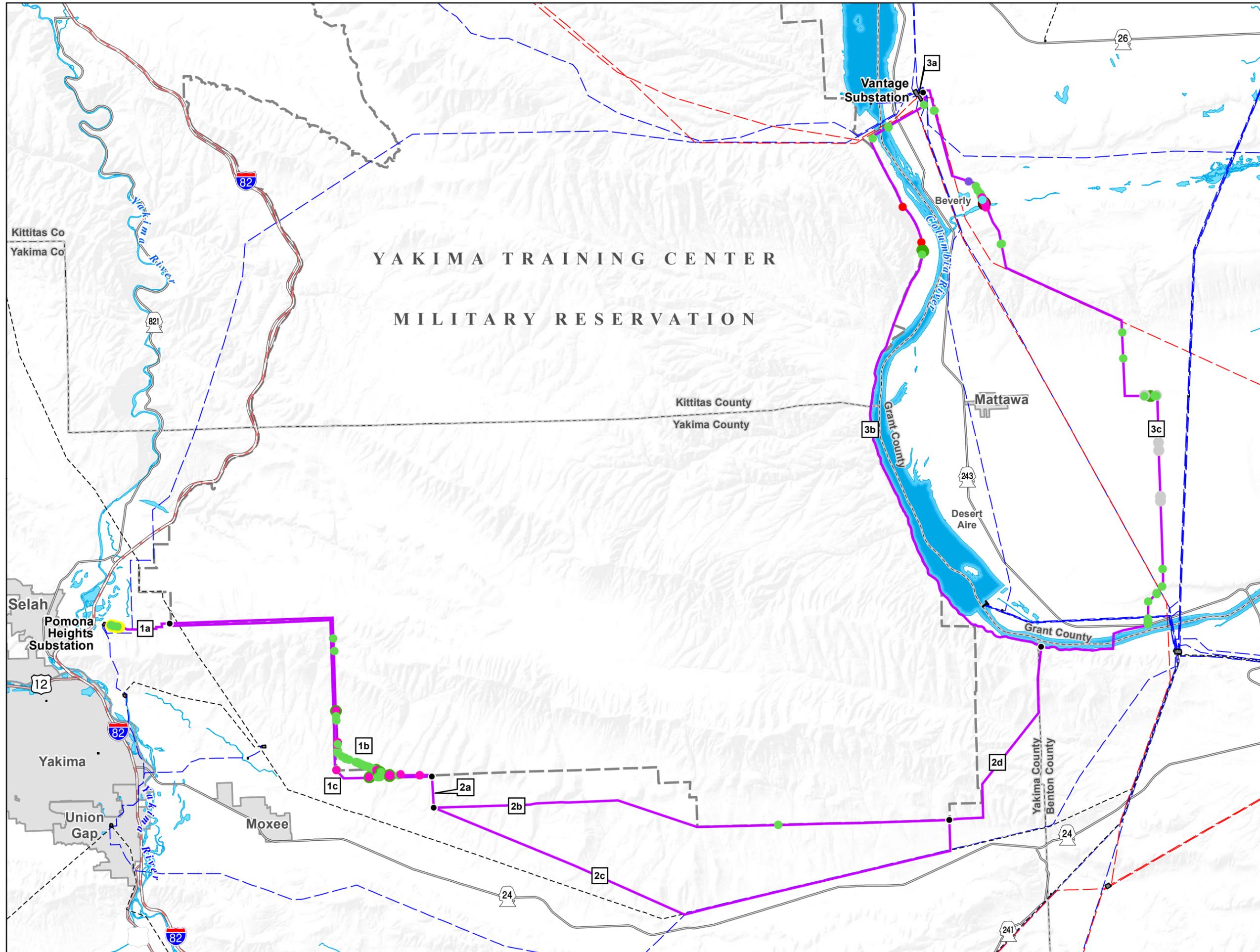
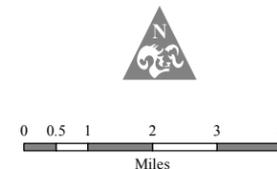
- Substation
- 500kV
- 230kV
- 115kV

#### Boundaries

- ⊕ City Boundary
- County
- ▭ Yakima Training Center



Data are projected in UTM Zone 10N, NAD83



Kittitas Co  
Yakima Co

YAKIMA TRAINING CENTER  
MILITARY RESERVATION

Kittitas County  
Yakima County

Selah  
Pomona Heights Substation

Yakima  
Union Gap

Moxee

Vantage Substation

Beverly

Mattawa

Desert Aire

Grant County

Yakima County  
Benton County

82

821

12

82

82

24

2c

2a

2b

1c

1b

1a

3a

3b

3c

241

24

26

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## **APPENDIX A – TARGET NOXIOUS WEED SPECIES LIST**

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APPENDIX A TARGET NOXIOUS WEED SPECIES LIST

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS <sup>1</sup>					CONTROL REQUIRED
		CLASS	BENTON	GRANT	KITTITAS	YAKIMA	
<i>Abutilon theophrasti</i>	velvetleaf	A		X	X	X	Yes
<i>Acroptilon repens</i>	Russian knapweed	B		X	X	X	Yes: Grant, Yakima
<i>Aegilops cylindrica</i>	jointed goatgrass	C		X	X		Yes: Grant
<i>Alhagi maurorum</i>	camelthorn	B		X			Yes: Grant, Yakima
<i>Alliaria petiolata</i>	garlic mustard	A		X			Yes
<i>Alopecurus myosuroides</i>	blackgrass	B		X			Yes: Grant, Yakima
<i>Amorpha fruticosa</i>	indigobush	B		X			Yes: Grant, Yakima
<i>Anchusa arvensis</i>	annual bugloss	B		X	X		Yes: Grant, Yakima
<i>Anchusa officinalis</i>	common bugloss	B		X			Yes: Grant, Yakima
<i>Anthriscus sylvestris</i>	wild chervil	B		X			Yes: Grant, Yakima
<i>Artemisia absinthium</i>	absinth wormwood	C			X		
<i>Berteroa incana</i>	hoary alyssum	B		X			Yes: Grant, Yakima
<i>Brachypodium sylvaticum</i>	false-brome	A		X			Yes
<i>Bryonia alba</i>	white bryony	B		X			Yes: Grant, Yakima
<i>Buddleja davidii</i>	butterflybush	B		X	X	X	Yes: Grant, Yakima
<i>Butomus umbellatus</i>	flowering rush	A		X			Yes
<i>Cabomba caroliniana</i>	fanwort	B		X			Yes: Grant, Yakima
<i>Cardaria draba</i>	hoary cress	C		X	X		Yes: Grant
<i>Cardaria pubescens</i>	hairy whitetop	C			X		
<i>Carduus acanthoides</i>	plumeless thistle	B		X			Yes: Grant, Yakima
<i>Carduus nutans</i>	musk thistle	B		X	X	X	Yes: Grant, Yakima
<i>Carduus pycnocephalus</i>	thistle, Italian	A		X			Yes
<i>Carduus tenuiflorus</i>	slenderflower thistle	A		X			Yes
<i>Cenchrus longispinus</i>	longspine sandbur	B		X	X		Yes: Grant
<i>Centaurea calcitrapa</i>	purple starthistle	A		X			Yes
<i>Centaurea cyanus</i>	cornflower (bachelor's button)	C			X		Yes: Kittitas
<i>Centaurea diffusa</i>	diffuse knapweed	B		X	X	X	Yes: Grant
<i>Centaurea jacea</i>	brown knapweed	B		X			Yes: Yakima
<i>Centaurea jacea x nigra</i>	meadow knapweed	B		X	X	X	Yes: Grant, Yakima
<i>Centaurea macrocephala</i>	bighead knapweed	A		X			Yes
<i>Centaurea nigra</i>	black knapweed	B		X			Yes: Grant, Yakima
<i>Centaurea nigrescens</i>	Vochin knapweed	A		X			Yes
<i>Centaurea solstitialis</i>	yellow starthistle	B		X	X	X	Yes: Grant, Yakima
<i>Centaurea stoebe</i>	spotted knapweed	B		X	X	X	Yes: Grant, Yakima
<i>Chondrilla juncea</i>	rush skeletonweed	B		X	X	X	Yes: Grant, Yakima
<i>Cirsium arvense</i>	Canada thistle	C		X	X		Yes: Grant; and Yakima

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS <sup>1</sup>					CONTROL REQUIRED
		CLASS	BENTON	GRANT	KITTITAS	YAKIMA	
							only in T7N R20, 21, 22, 23E
<i>Cirsium vulgare</i>	bull thistle	C		X	X		Yes: Grant
<i>Clematis vitalba</i>	old-man's-beard	C					
<i>Conium maculatum</i>	poison-hemlock	B		X	X	X	Yes: Grant
<i>Convolvulus arvensis</i>	field bindweed	C		X	X		Yes: Grant
<i>Conyza canadensis</i>	horseweed (marestail)	C			X		Yes: Kittitas
<i>Crupina vulgaris</i>	common crupina	A		X			Yes
<i>Cuscuta approximata</i>	smoothseed alfalfa dodder	C		X	X		Yes: Grant
<i>Cynoglossum officinale</i>	houndstongue	B		X	X	X	Yes: Grant
<i>Cyperus esculentus</i>	yellow nutsedge	B		X		X	Yes: Grant
<i>Cytisus scoparius</i>	Scotch broom	B		X	X	X	Yes: Grant, Yakima
<i>Daphne laureola</i>	spurge laurel	B		X			Yes: Grant
<i>Daucus carota</i>	wild carrot	B		X	X	X	Yes: Grant, Yakima
<i>Echium vulgare</i>	blueweed	B		X			Yes: Grant, Yakima
<i>Egeria densa</i>	Brazilian elodea	B		X			Yes: Grant, Yakima
<i>Epilobium hirsutum</i>	hairy willowherb	B		X			Yes: Grant, Yakima
<i>Euphorbia esula</i>	leafy spurge	B		X		X	Yes: Grant, Yakima
<i>Euphorbia myrsinites</i>	myrtle spurge	B		X	X	X	Yes: Grant, Kittitas
<i>Euphorbia oblongata</i>	eggleaf spurge	A		X			Yes
<i>Foeniculum vulgare</i>	common fennel	B		X			Yes: Grant
<i>Galega officinalis</i>	goatsrue	A		X			Yes
<i>Geranium lucidum</i>	shiny geranium	A		X			Yes
<i>Geranium robertianum</i>	herb-Robert	B		X	X		Yes: Grant, Yakima
<i>Glyceria maxima</i>	reed sweetgrass	A		X			Yes
<i>Gypsophila paniculata</i>	babysbreath	C			X		
<i>Hedera helix</i> 'Baltica', 'Pittsburgh', and 'Star'; <i>H. hibernica</i> 'Hibernica'	English ivy - four cultivars only	C					
<i>Helianthus ciliaris</i>	Texas blueweed	A		X		X	Yes
<i>Hemizonia pungens</i>	spikeweed	C		X			Yes: Grant
<i>Heracleum mantegazzianum</i>	giant hogweed	A		X			Yes
<i>Hieracium atratum</i>	polar hawkweed	B		X			Yes: Grant, Yakima
<i>Hieracium aurantiacum</i>	orange hawkweed	B		X	X		Yes: Grant, Yakima
<i>Hieracium caespitosum</i>	yellow hawkweed	B		X	X		Yes: Grant, Yakima
<i>Hieracium floribundum</i>	yellowdevil hawkweed	A		X			Yes
<i>Hieracium glomeratum</i>	queen-devil hawkweed	B		X			Yes: Grant, Yakima
<i>Hieracium lachenalii</i>	common hawkweed	C					

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS <sup>1</sup>					CONTROL REQUIRED
		CLASS	BENTON	GRANT	KITTITAS	YAKIMA	
<i>Hieracium laevigatum</i>	smooth hawkweed	B		X			Yes: Grant, Yakima
<i>Hieracium pilosella</i>	mouseear hawkweed	B		X			Yes: Grant, Yakima
<i>Hieracium sabaudum</i>	European hawkweed	A		X			Yes
<i>Hieracium</i> spp.	hawkweeds, non-native and invasive species not listed elsewhere	C					
<i>Hydrilla verticillata</i>	hydrilla	A		X			Yes
<i>Hyoscyamus niger</i>	black henbane	C		X			Yes: Grant
<i>Hypericum perforatum</i>	common St. Johnswort	C		X	X		Yes: Grant
<i>Hypochaeris radicata</i>	common catsear	B		X	X	X	Yes: Grant, Yakima
<i>Impatiens glandulifera</i>	policeman's helmet	B		X			Yes: Grant, Yakima
<i>Iris pseudacorus</i>	yellowflag iris	C		X	X		Yes: Grant, Kittitas
<i>Isatis tinctoria</i>	dyer's woad	A		X			Yes
<i>Kochia scoparia</i>	kochia	B		X	X		Yes: Grant
<i>Lamiastrum galeobdolon</i>	yellow archangel	B			X		
<i>Lepidium latifolium</i>	perennial pepperweed	B		X	X	X	Yes: Grant
<i>Leprodiclis holosteoides</i>	lepyrodiclis	B		X			Yes: Grant, Yakima
<i>Leucanthemum vulgare</i>	oxeye daisy	B		X	X	X	Yes: Grant, Yakima
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	B		X	X	X	Yes: Grant
<i>Linaria vulgaris</i>	yellow toadflax	C			X		
<i>Ludwigia hexapetala</i>	water primrose	B		X			Yes: Grant
<i>Ludwigia peploides</i>	floating primrose-willow	A		X			Yes
<i>Lysimachia vulgaris</i>	garden loosestrife	B		X			Yes: Grant, Yakima
<i>Lythrum salicaria</i>	purple loosestrife	B		X	X	X	Yes: Grant, Yakima
<i>Lythrum virgatum</i>	wand loosestrife	B		X			Yes: Grant, Yakima
<i>Matricaria perforata</i>	scentless mayweed	C		X	X		Yes: Grant
<i>Mirabilis nyctaginea</i>	wild four-o'clock	A		X			Yes
<i>Myriophyllum aquaticum</i>	parrotfeather	B		X		X	Yes: Grant, Yakima
<i>Myriophyllum heterophyllum</i>	variable-leaf milfoil	A		X			Yes
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	B		X	X	X	Yes: Grant, Kittitas, Yakima
<i>Nymphaea odorata</i>	fragrant waterlily	C					
<i>Nymphoides peltata</i>	yellow floatingheart	B		X		X	Yes: Grant, Yakima
<i>Onopordum acanthium</i>	Scotch thistle	B		X	X	X	Yes: Grant, Yakima
<i>Phalaris arundinacea</i>	reed canarygrass	C					
<i>Phragmites australis</i>	common reed (nonnative genotypes)	B		X			Yes: Grant, Yakima
<i>Picris hieracioides</i>	hawkweed oxtongue	B		X			Yes: Grant, Yakima

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS <sup>1</sup>					CONTROL REQUIRED
		CLASS	BENTON	GRANT	KITTITAS	YAKIMA	
<i>Polygonum bohemicum</i>	Bohemian knotweed	B			X		
<i>Polygonum cuspidatum</i>	Japanese knotweed	B		X	X	X	Yes: Grant
<i>Polygonum polystachyum</i>	Himalayan knotweed	B					
<i>Polygonum sachalinense</i>	giant knotweed	B		X			Yes: Grant
<i>Potamogeton crispus</i>	curlyleaf pondweed	C					
<i>Potentilla recta</i>	sulfur cinquefoil	B		X	X	X	Yes: Grant, Yakima
<i>Pueraria montana var. lobata</i>	kudzu	A		X			Yes
<i>Rorippa austriaca</i>	Austrian fieldcress	B		X			Yes: Grant, Yakima
<i>Rubus armeniacus</i>	Himalayan blackberry	C					
<i>Rubus laciniatus</i>	evergreen blackberry	C					
<i>Sagittaria graminea</i>	grass-leaved arrowhead	B		X			Yes: Grant, Yakima
<i>Salsola iberica</i>	Russian thistle	C			X		Yes: Kittitas
<i>Salvia aethiopsis</i>	Mediterranean sage	A		X			Yes
<i>Salvia pratensis</i>	meadow clary	A		X			Yes
<i>Salvia sclarea</i>	clary sage	A		X			Yes
<i>Schoenoplectus mucronatus</i>	ricefield bulrush	A		X			Yes
<i>Secale cereale</i>	cereal rye	C		X			Yes: Grant
<i>Senecio jacobaea</i>	tansy ragwort	B		X	X	X	Yes: Grant, Yakima
<i>Senecio vulgaris</i>	common groundsel	C		X	X		Yes: Grant
<i>Silene latifolia ssp. alba</i>	white cockle	C		X	X		Yes: Grant
<i>Silybum marianum</i>	milk thistle	A		X			Yes
<i>Solanum elaeagnifolium</i>	silverleaf nightshade	A		X			Yes
<i>Solanum rostratum</i>	buffalobur	A		X	X	X	Yes
<i>Soliva sessilis</i>	lawnweed	B		X			Yes: Grant, Yakima
<i>Sonchus arvensis ssp. arvensis</i>	perennial sowthistle	B		X	X	X	Yes: Grant, Yakima
<i>Sorghum halepense</i>	johnsongrass	A		X		X	Yes
<i>Spartina alterniflora</i>	smooth cordgrass	A		X			Yes
<i>Spartina anglica</i>	common cordgrass	A		X			Yes
<i>Spartina densiflora</i>	dense-flowered cordgrass	A		X			Yes
<i>Spartina patens</i>	saltmeadow cordgrass	A		X			Yes
<i>Spartium junceum</i>	Spanish broom	A		X			Yes
<i>Sphaerophysa salsula</i>	swainsonpea	B		X		X	Yes: Grant
<i>Tamarix ramosissima</i>	saltcedar	B		X	X	X	Yes: Kittitas, Yakima
<i>Tanacetum vulgare</i>	common tansy	C			X		
<i>Thymelaea passerina</i>	spurge flax	A		X			Yes
<i>Tribulus terrestris</i>	puncturevine	B		X	X	X	Yes: Grant

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS <sup>1</sup>					CONTROL REQUIRED
		CLASS	BENTON	GRANT	KITTITAS	YAKIMA	
<i>Ulex europaeus</i>	gorse	B		X			Yes: Grant, Yakima
<i>Xanthium spinosum</i>	spiny cocklebur	C			X		
<i>Zygophyllum fabago</i>	Syrian beancaper	A		X			Yes

Sources<sup>1</sup>: WNWCB 2009, Noxious Weed Control Board of Grant County (2011), Kittitas County Noxious Weed Control Board (2011), and Yakima County Noxious Weed Board (2011).

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**APPENDIX B-4  
NOXIOUS WEED REPORT**

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## APPENDICES

APPENDIX A	TARGET NOXIOUS WEED SPECIES LIST	
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## **ACRONYMS AND ABBREVIATIONS**

BLM	U.S. Bureau of Land Management
DEIS	Draft Environmental Impact Statement
GPS	global positioning system
JBLM YTC	Joint Base Lewis-McChord Yakima Training Center
kV	kilovolt
MR	Manastash Ridge Subroute
NNR	New Northern Route
POD	Plan of Development
Reclamation	Bureau of Reclamation
ROW	right-of-way
WSDOT	Washington State Department of Transportation

## 1.0 INTRODUCTION

Pacific Power proposes to construct, operate and maintain a new 230 kilovolt (kV) transmission line in the south-central portion of Washington from the Vantage Substation near the Wanapum Dam to the Pomona Heights Substation near Selah, Washington. The original proposed Project analyzed in the Draft Environmental Impact Statement (DEIS) consisted of 10 end-to-end alternatives approximately following the southern and eastern flanks of the Joint Base Lewis-McChord Yakima Training Center (JBLM YTC). In April, 2013 the New Northern Route (NNR) was identified (hereafter Preliminary-NNR). Special status plant surveys were conducted on accessible portions of that route during May and July 2013. After the field surveys, routing adjustments were made due to new requirements for separation distance from existing transmission lines and concerns about sage-grouse. The locations of the NNR and Manastash Ridge Subroute (MR) were finalized in November 2013. The Final-NNR occurs along the west side of Interstate 82 and then passes through the northern portion of the JBLM YTC to the Vantage Substation. The MR skirts Manastash Ridge, west of Badger Pocket in the northwestern portion of the JBLM YTC (Figure 1). To facilitate analysis and discussion, the new routes are broken into eight NNR segments (NNR-1 through NNR-8) and one MR subroute (MR-1).

The 2013 noxious weed surveys were conducted on approximately 584 acres or 30.5 centerline miles of federal and Washington State Department of Transportation (WSDOT) lands on the Preliminary-NNR segments. Portions of Bureau of Reclamation (Reclamation) and U.S. Bureau of Land Management (BLM) lands which had been surveyed for the DEIS in 2011 and were incorporated into the Preliminary-NNR and the Final-NNR were not revisited. Special status plant surveys coincided with the noxious weed surveys, and are discussed in a separate report (Appendix B-3 of the SDEIS). Due to the routing adjustments that occurred following the noxious weed surveys, 43 percent (16.2 of the total 37.7 centerline miles) of federal and WSDOT lands within the Final-NNR were surveyed in 2013 (14.6 miles) and 2011 (1.6 miles). Table 1 shows how the Preliminary-NNR and the Final-NNR segments correspond to each other and the centerline miles surveyed during 2011 and 2013, by land jurisdiction, that are still part of the Final-NNR.

**TABLE 1 NOXIOUS WEED SURVEY STATUS AND CENTERLINE MILES FOR THE FINAL-NNR**

FINAL-NNR ROUTE SEGMENTS			PRELIMINARY-NNR ROUTE SEGMENTS WHERE 2011/2013 SURVEYS WERE CONDUCTED AND ARE STILL PART OF FINAL-NNR <sup>b</sup> (MILES)					
SEGMENT NUMBER	JURIS-DICTION <sup>a</sup>	TOTAL MILES	NNR-1	NNR-2	NNR-3	NNR-4	NNR-5	TOTAL SURVEYED
NNR-1	Reclamation	0.2	0.2 (0.1 mile in 2011 and 0.1 mile in 2013)					0.2
	Private	2.1						
	TOTAL	2.4	0.2					0.2
NNR-2	Private	<0.1						
	WSDOT	<0.1						
	JBLM YTC	5.0		5.0 (2013)				5.0
	TOTAL	5.0		5.0				5.0
NNR-3	BLM	3.6			3.6 <sup>c</sup> (entire length of ROW but only 1/3 its width; 2013)			3.6 <sup>c</sup>

FINAL-NNR ROUTE SEGMENTS			PRELIMINARY-NNR ROUTE SEGMENTS WHERE 2011/2013 SURVEYS WERE CONDUCTED AND ARE STILL PART OF FINAL-NNR <sup>b</sup> (MILES)					
SEGMENT NUMBER	JURISDICTION <sup>a</sup>	TOTAL MILES	NNR-1	NNR-2	NNR-3	NNR-4	NNR-5	TOTAL SURVEYED
	Private	5.0						
	WSDOT	0.7			0.5 (2013)			0.5
	TOTAL	9.3			4.1 <sup>c</sup>			4.1 <sup>c</sup>
	Private	1.2						
	WSDOT	0.1						
NNR-4o/NNR-4u	JBLM YTC	3.3				3.3 <sup>c</sup> (2.9 of this is for entire length of ROW but only 1/3 its width; 2013)		3.3 <sup>c</sup>
	TOTAL	4.5				3.3 <sup>c</sup>		3.3 <sup>c</sup>
NNR-5	JBLM YTC	1.8				1.6 (2013)		1.6
NNR-6o/NNR-6u	JBLM YTC	6.4						
NNR-7	JBLM YTC	8.2				0.1 (2013)		0.1
	BLM	0.4					0.4 (0.1 miles in 2011 and 0.3 miles in 2013)	0.4
NNR-8	Reclamation	1.4					1.4 (2011)	1.4
	Private	0.5						
	Water	0.4						
	TOTAL	2.7					1.8	1.8
	DNR	1.7						
MR-1	Private	3.5						
	JBLM YTC	6.6				<0.1 (2013)		<0.1
	TOTAL	11.9				<0.1		<0.1
<b>GRAND TOTAL</b>		<b>52.3</b>	<b>0.2</b>	<b>5.0</b>	<b>4.1<sup>c</sup></b>	<b>5.0<sup>c</sup></b>	<b>1.8</b>	<b>16.2<sup>c</sup></b>

<sup>a</sup>Noxious weed surveys are required on lands managed by the BLM, Reclamation, JBLM YTC, and WSDOT, which cumulatively total 37.72 centerline miles of the Final-NNR.

<sup>b</sup>There were 1.6 centerline miles surveyed in 2011 and 14.6 centerline miles surveyed in 2013 that are still within the Final-NNR.

<sup>c</sup>Even though only 1/3 of the width of the ROW were surveyed in 2013, these values are included in the grand total, as they are fairly representative of the entire ROW for the Final-NNR.

Each year, the State Noxious Weed Control Board adopts, by rule (WAC 16-750), the State Noxious Weed List. This list determines which plants will be considered noxious weeds and where control will be required in Washington State. This approach allows control activities of land owners - both public and private - to be prioritized towards the protection and enhancement of Washington's agriculture and natural areas in the most cost-effective manner.

There are three classes of noxious weeds on the State Noxious Weed List. These include:

- Class A: Non-native species that are limited in distribution in Washington. State law requires that these weeds be eradicated.
- Class B: Non-native species that are either absent from or limited in distribution in some portions of the state but very abundant in other areas. The goals are to contain the plants where they are already widespread and prevent their spread into new areas.
- Class C: Non-native plants that are already widespread in Washington State. Counties can choose to enforce control, or they can educate residents about controlling these noxious weeds.

Once the State Noxious Weed List is adopted, county and district weed lists are created from the updated State Noxious Weed List. County weed lists include all State Class A weeds and Class B weeds designated by the state for control their area according to WAC 16-750. Counties and districts can then select additional Class B weeds and Class C weeds that they will require control of in their area.

## **2.0 METHODS**

In 2013, qualified botanists surveyed for noxious weed species on federal and WSDOT lands within the ROW corridor for the Preliminary-NNR route segments, which was almost entirely accessible. Methodology for 2013 surveys is described below. In addition, 2011 noxious weed survey data for the portion of Final-NNR-8 east of the Columbia River is also included in this document.

### **Surveyor Qualifications**

Noxious weed surveys were conducted by botanists who have the following minimum qualifications:

- An academic background (bachelor's degree or higher in botany) or equivalent experience in plant taxonomy;
- The taxonomic experience to identify, through personal knowledge or the use of technical floras, most species encountered in the field, and an understanding of how to contact taxonomic experts for species that they are unable to identify;
- The skills to use a global positioning system (GPS) to adequately map noxious weeds; and
- Familiarization of the potential noxious weed species in the Project area.

All of the botanists who conducted noxious weed surveys in 2013 had also been involved in the 2011 botanical surveys.

### **Field Preparation**

The list of target noxious weeds is provided in Appendix A and was developed to include those designated by the Washington State Noxious Weed Control Board (2013), plus any additional noxious weeds designated by the Project counties for the NNR (Grant, Kittitas, and Yakima). Sources of information for noxious weed species included the *Vascular Plants of the Pacific Northwest: Vols. I-V* (Hitchcock et al. 1969), *Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973), *Noxious Weeds that Harm Washington: Eastern and Western Washington Field Guides* (WSNWCB 2009a,b), *Weeds of the West* (Whitson et al. 2000), and botanists' personal knowledge of the species.

### **Field Survey**

A pedestrian survey was conducted May 13-20, 2013 for noxious weed species on federal and WSDOT lands within the 160 foot (ca 49 meter) ROW corridor. Botanists walked roughly parallel intuitive meandering transects, with a 40 foot (12 meter) separation between surveyors. The survey was floristic, meaning that all taxa were identified to the level necessary to determine if they are special status plant or noxious weed species (except if the plant was in an unidentifiable stage; i.e., from grazing).

All noxious weeds were mapped, or documented with GPS and noted if a noxious weed was not far enough along to determine species. Most noxious weeds during the May 2013 survey were much farther along than typical for the time of year, and either flowering or in the pre-bud stage. During July 25-27,

2013 botanists re-visited and re-mapped noxious weed sites which had been identified as needing follow-up confirmation.

A survey-grade GPS was used to document the occurrence of target noxious weed species discovered. For each noxious weed species occurrence discovered, the following attributes were documented: species name, date, surveyor name(s), estimated number of plants, estimated cover, and estimated land area occupied.

Very steep slopes and other conditions that posed a safety hazard were not surveyed, although this seldom occurred along the Preliminary-NNR. In addition, botanists communicated with JBLM YTC personnel to ensure surveys were coordinated with training activities.

### **3.0 RESULTS**

For the Preliminary-NNR, 30.5 of 41.2 centerline miles were surveyed in 2013. Unsurveyed areas included: a 0.1 mile section on WSDOT lands that was too steep to be safely completed and another small area between interstate lanes; a 0.4 mile section crossing the Columbia River; 8.7 miles of private land; and a 1.4 mile section east of the Columbia River which was surveyed in 2011. For the Final-NNR, as previously described, 16.2 centerline miles surveyed in 2011 and 2013 are still part of the Final-NNR (which includes 37.7 centerline miles on federal or WSDOT lands).

Sixteen noxious weed species were documented on federal and WSDOT lands of the Final-NNR, including eight Washington Class B species and eight Washington Class C species (Tables 2 through 4). No Washington Class A species were documented. The control of Washington Class C species is at the discretion of each county. In this report, noxious weeds that were documented in 2013 for the Preliminary-NNR are included in Table 2, regardless of whether or not they still occur in the Final-NNR. All other tables and figures show only noxious weeds documented in the Final-NNR.

TABLE 2 SPECIES BIOLOGY AND LIST OF NOXIOUS WEED LOCATIONS BY ROUTE SEGMENT

SPECIES NAME	SPECIES BACKGROUND <sup>1,2,3,4</sup>				LEGAL NOXIOUS STATUS <sup>4,5,6</sup>		PRELIMINARY-NNR SEGMENTS	CORRESPONDING FINAL-NNR SEGMENTS
	LIFE SPAN	GROWTH HABIT	REPRODUCTIVE MECHANISMS	HABITAT	ST	CO		
Russian knapweed <i>Acroptilon repens</i>	perennial	forb	creeping roots, seeds	Disturbed land such as cultivated fields, orchards, pastures and roadsides.	Class B	G, K, Y	NNR – 2	NNR – 2, NNR - 3
Burningbush <i>Bassia scoparia</i> (= <i>Kochia scoparia</i> )	annual	forb	seeds	Cultivated fields, roadsides, ditch banks and waste areas.	Class B	G	NNR – 2, NNR – 5	NNR – 2, NNR – 8
Hoary cress <i>Cardaria draba</i>	perennial	forb	creeping roots, seeds	Moist, open unshaded areas. Can invade irrigated pastures, ditch banks, roadsides and waste areas. Typically does not invade arid rangelands.	Class C	G, K	NNR – 2, NNR – 4	NNR – 5
Spiny plumeless thistle <i>Carduus acanthoides</i>	annual, biennial	forb	seeds	Pastures, stream valleys, fields, and roadsides	Class B	G	NNR – 2, NNR – 4	NNR – 5
Diffuse knapweed <i>Centaurea diffusa</i>	annual, perennial	forb	seeds	Disturbed areas, dry pasturelands, and meadows.	Class B	G, K, Y	NNR – 1, NNR – 2, NNR – 3, NNR – 4, NNR – 5	NNR – 1, NNR – 2, NNR – 3, NNR – 4o/NNR – 4u, NNR – 5, NNR – 8
Canada thistle <i>Cirsium arvense</i>	perennial	forb	creeping roots, seeds	Wide habitat range and fairly adaptable. Disturbed open areas with moderate moisture conditions. Along roadsides, railroad ROW, rangeland, forestland, cropland, and abandoned fields.	Class C	G, K	NNR – 1, NNR – 2, NNR – 4	NNR – 1, NNR – 2, NNR – 5
Bull thistle <i>Cirsium vulgare</i>	biennial	forb	seeds	Pastures, fields, roadsides, and disturbed sites.	Class C	G, K	NNR – 4	NNR – 5

SPECIES NAME	SPECIES BACKGROUND <sup>1,2,3,4</sup>				LEGAL NOXIOUS STATUS <sup>4,5,6</sup>		PRELIMINARY-NNR SEGMENTS	CORRESPONDING FINAL-NNR SEGMENTS
	LIFE SPAN	GROWTH HABIT	REPRODUCTIVE MECHANISMS	HABITAT	ST	CO		
Field bindweed <i>Convolvulus arvensis</i>	perennial	vine, forb	creeping roots, seeds	Disturbed cultivated and waste areas.	Class C	G, K	NNR – 2, NNR – 5	NNR – 2, NNR – 8
Horseweed (marestail) <i>Conyza canadensis</i>	annual, biennial	forb	seeds	Pastures, meadows, cultivated fields, along roadsides, and in waste areas.	Class C	K	NNR – 2	NNR – 2
Fuller's teasel <i>Dipsacus fullonum</i>	biennial	forb	seeds	Moist sites, especially irrigation ditches, canals, and disturbed sites.	Class C	G, K	NNR – 4	N/A
Common St. Johnswort <i>Hypericum perforatum</i>	perennial	forb	seeds, short runners	Disturbed sunny, well-drained areas with gravelly or sandy soils.	Class C	G, K	NNR – 4	NNR – 5
Perennial pepperweed <i>Lepidium latifolium</i>	perennial	forb	seeds, deep roots	Waste places, wet areas, ditches, roadsides, and cropland.	Class B	G,K,Y	NNR – 4	N/A
Dalmatian toadflax <i>Linaria dalmatica</i>	perennial	forb/ herb	creeping roots, seeds	Well-drained, coarse textured soils. Disturbed areas such as roadsides, gravel pits, rangelands and waste areas.	Class B	G, K, Y	NNR – 1, NNR – 2	NNR – 1, NNR – 2
Purple loosestrife <i>Lythrum salicaria</i>	perennial	forb	creeping roots, seeds	Aquatic sites such as canals, ditches, or pond shorelines.	Class B	G,K,Y	NNR-2	NNR – 2
Reed canarygrass <i>Phalaris arundinacea</i>	perennial	grass	creeping roots, seeds	Wet ground, along streams and in marshes.	Class C	G, K, Y	NNR-2	NNR – 2
Sulphur cinquefoil <i>Potentilla recta</i>	perennial	forb	seeds	Disturbed areas, roadsides, pastures.	Class B	G,K,Y	NNR – 4	NNR – 5

SPECIES NAME	SPECIES BACKGROUND <sup>1,2,3,4</sup>				LEGAL NOXIOUS STATUS <sup>4,5,6</sup>		PRELIMINARY-NNR SEGMENTS	CORRESPONDING FINAL-NNR SEGMENTS
	LIFE SPAN	GROWTH HABIT	REPRODUCTIVE MECHANISMS	HABITAT	ST	CO		
Russian thistle <i>Salsola tragus</i> (= <i>S. iberica</i> )	annual	forb	seeds	Disturbed dry sites such as cultivated dryland agriculture and over-grazed rangelands.	Class C	K	NNR – 2, NNR – 3, NNR – 4, NNR – 5	NNR – 2, NNR – 3, NNR – 5, NNR – 8
Groundsel <i>Senecio vulgaris</i>	annual, biennial	forb	seeds	Disturbed sites such as roadsides, railroad beds and pastures.	Class C	G, K	NNR – 4 (on road outside of ROW)	N/A
Puncturevine <i>Tribulus terrestris</i>	annual	forb	seeds	Pastures, cultivated fields, waste areas, and along highways and roads	B	G	NNR – 1	NNR – 1

Sources: USDA 2013<sup>1</sup>, WNWCB 2013<sup>2</sup>, WNWCB 2009<sup>3</sup>, Whitson et al. 2000<sup>4</sup>, Noxious Weed Control Board of Grant County 2013<sup>5</sup>, Kittitas County Noxious Weed Control Board 2013<sup>6</sup>, Yakima County Noxious Weed Board 2011<sup>7</sup>; State of Washington Noxious Weed Designations: **Class A**– have a limited distribution in Washington. State law requires that these weeds be eradicated; **Class B** – are either absent from or limited in distribution in some portions of the state but very abundant in other areas. The goals are to contain the plants where they are already widespread and prevent their spread into new areas; **Class C** – are already widespread in Washington State. Counties can choose to enforce control, or they can educate residents about controlling these noxious weeds (WNWCB 2013); County Noxious Weed Lists: G=Grant; K=Kittitas; Y=Yakima.

TABLE 3 LAND AREA OF NOXIOUS WEED SPECIES BY FINAL-NNR SEGMENT (ACRES)<sup>1</sup>

Species Name	Acres of Noxious Weeds								
	NNR – 1	NNR – 2	NNR – 3	NNR-4o/ NNR-4u	NNR – 5	NNR-6o/ NNR-6u	NNR – 7	NNR - 8	MR – 1
Russian knapweed <i>Acroptilon repens</i>		3.4	0.1						
Burningbush <sup>2</sup> <i>Bassia scoparia</i> (= <i>Kochia scoparia</i> )		X						X	
Hoary cress <i>Cardaria draba</i>					T				
Diffuse knapweed <i>Centaurea diffusa</i>	1.7	10.5	T	11.8	0.8			0.1	
Canada thistle <i>Cirsium arvense</i>	T	T			0.3				
Bull thistle <i>Cirsium vulgare</i>					T				
Field bindweed <i>Convolvulus arvensis</i>		T						T	
Horseweed (marestail) <i>Conyza canadensis</i>		0.1							
Common St. Johnswort <i>Hypericum perforatum</i>					T				
Dalmatian toadflax <i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	0.8	0.7							
Purple loosestrife <i>Lythrum salicaria</i>		T							
Reed canarygrass <i>Phalaris arundinacea</i>		T							
Sulphur cinquefoil <i>Potentilla recta</i>					0.1				
Russian thistle <sup>2</sup> <i>Salsola tragus</i> (= <i>S. iberica</i> )		X	X	X	X		X	X	
Puncturevine <i>Tribulus terrestris</i>	1.7								
TOTAL NOXIOUS WEEDS	4.1	14.7	0.1	11.8	1.3			0.1	

<sup>1</sup>Fuller's teasel (*Dipsacus fullonum*), perennial peppercorn (*Lepidium latifolium*), and groundsel (*Senecio vulgaris*) were documented in the Preliminary-NNR during 2013 surveys, but do not occur on the Final-NNR.

T=Trace (<0.05)

<sup>2</sup>X=Burningbush and Russian thistle were not mapped due to their ubiquitous and often dominant nature; an "X" is indicated if present.

Figures 1 and 2 show the distribution of all noxious weeds found on federal and WSDOT lands for each route segment. All noxious weed species were mapped, except for two species because of their ubiquitous nature where present. These include burningbush (*Bassia scoparia*; Class B) and Russian thistle (*Salsola tragus*; Class C). Many areas where noxious weeds were documented were characterized by vectors for weed establishment and spread, such as roads, the JBLM YTC fire breaks, areas with past fire events, abandoned pasture land, riparian areas, agricultural lands and associated irrigation canals.

**TABLE 4 NUMBER OF NOXIOUS WEED SPECIES DOCUMENTED BY FINAL-NNR ROUTE SEGMENT<sup>1</sup>**

ROUTE SEGMENT	CLASS A	CLASS B	CLASS C
NNR – 1	0	4	1
NNR – 2	0	4	5
NNR – 3	0	2	1
NNR-4o/NNR-4u	0	1	1
NNR – 5	0	3	5
NNR-6o/NNR-6u	0	0	0
NNR – 7	0	0	1
NNR – 8	0	2	2
MR – 1	0	0	0
<b>TOTAL</b>	<b>0</b>	<b>8</b>	<b>8</b>

<sup>1</sup>Total number of noxious weeds is cumulative and most route segments have the same noxious weed species.

## 4.0 RECOMMENDATIONS

Pacific Power is committed to preventing the establishment and spread of noxious weeds during construction, operation, and maintenance of the proposed Project. A Noxious Weed and Invasive Plant Management Plan will be developed and incorporated into the final Plan of Development (POD) for the proposed 230 kV Vantage to Pomona Transmission Line project. The Plan will be developed in consultation with the agencies and local weed control districts and will describe:

- Regulations related to noxious weeds and weed management;
- List of all noxious weeds relevant to the project area, and whether they are known to occur within the ROW corridor;
- Procedures for preventing the establishment and spread of noxious weeds;
- Procedures for treating noxious weeds without damaging sensitive resources; and
- Procedures for monitoring and documenting weed control activities before and during construction, and for three years after construction is completed.

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# Figure 1 Noxious Weed Survey

Class C Noxious Weeds

## Legend

### Routes

- Link Node
- Alternative Route

### Noxious Weed Surveys

#### Class C Noxious Weeds

- *Cardaria draba*
- *Cirsium arvense*
- *Cirsium vulgare*
- *Convolvulus arvensis*
- *Conyza canadensis*
- *Hypericum perforatum*
- *Phalaris arundinacea*

### Existing Transmission

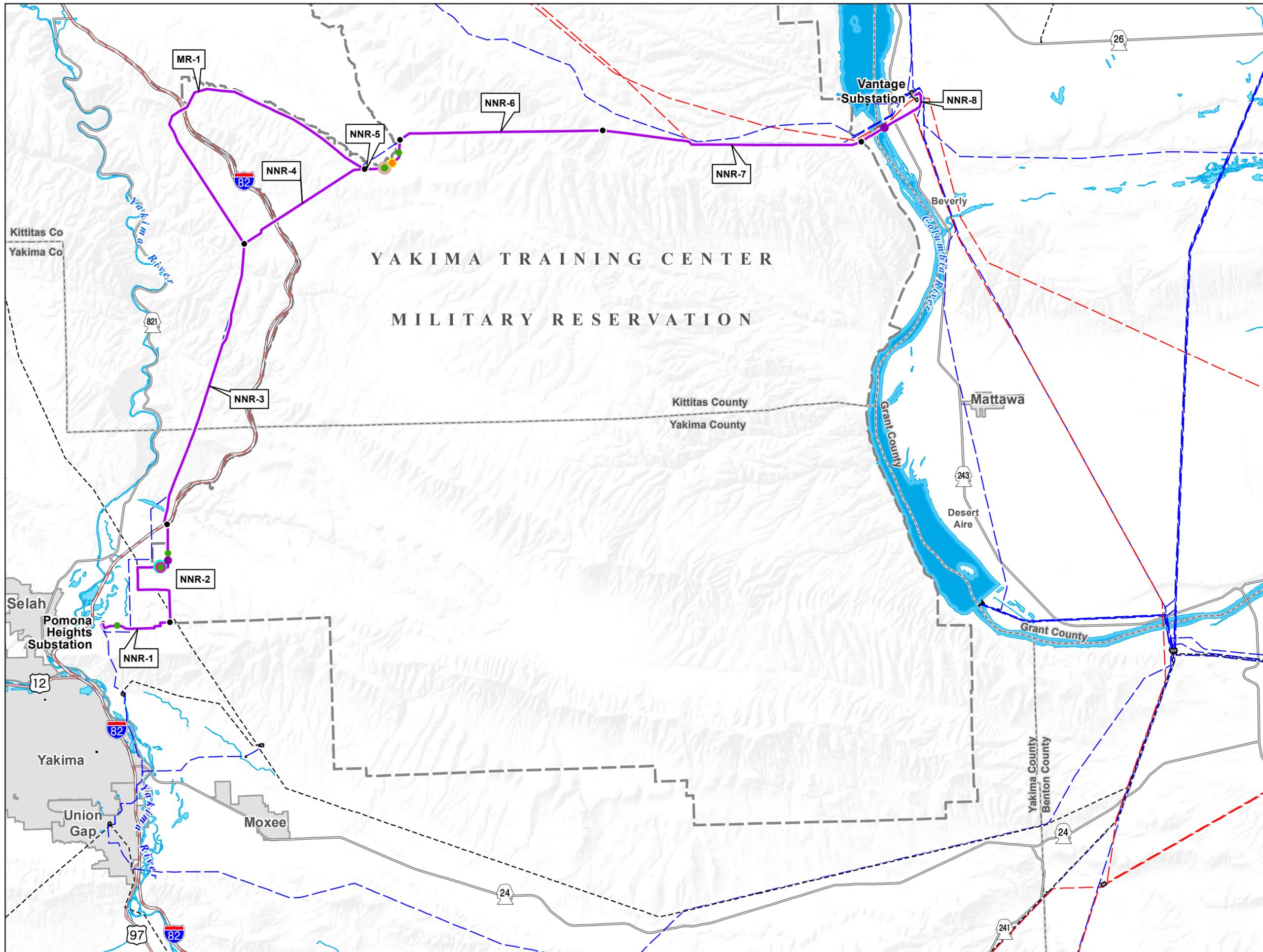
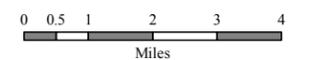
- Substation
- 500kV
- 230kV
- - - 115kV

### Boundaries

- ⊕ City Boundary
- - - County
- ▭ Yakima Training Center



Data are projected in UTM Zone 10N, NAD83



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## Figure 2 Noxious Weed Survey Class B Noxious Weeds

### Legend

#### Routes

- Link Node
- Alternative Route

#### Noxious Weed Surveys

##### Class B Noxious Weeds

- *Acroptilon repens*
- *Carduus acanthoides*
- *Centaurea diffusa*
- *Linaria dalmatica*
- *Lythrum salicaria*
- *Potentilla recta*
- *Tribulus terrestris*

#### Existing Transmission

- Substation
- 500kV
- 230kV
- 115kV

#### Boundaries

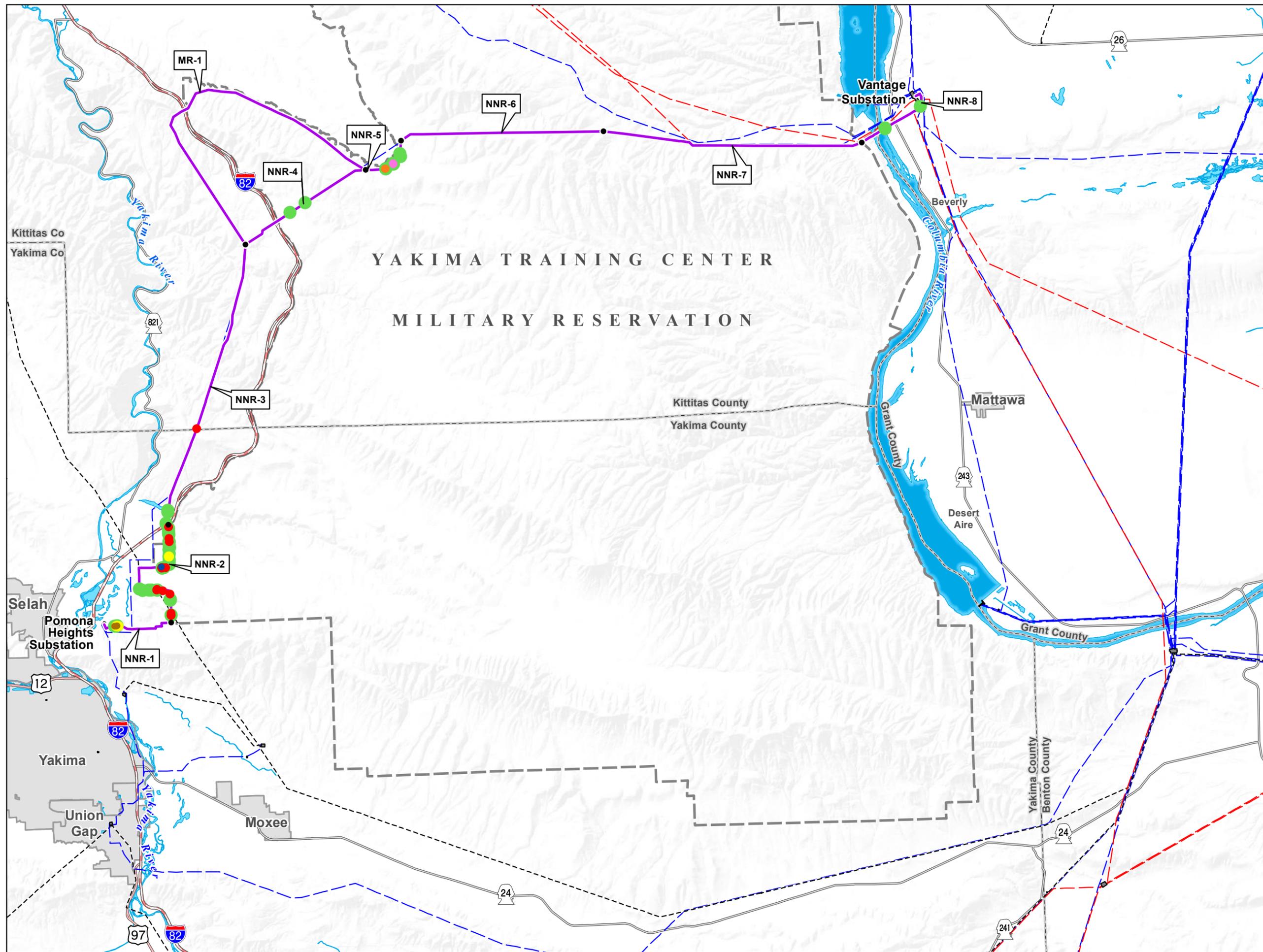
- ⊕ City Boundary
- - - County
- ▭ Yakima Training Center



Data are projected in UTM Zone 10N, NAD83



0 0.5 1 2 3 4  
Miles



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## **APPENDIX A –NOXIOUS WEED SPECIES LIST**

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**APPENDIX A NOXIOUS WEED SPECIES LIST**

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS				CONTROL REQUIRED
		CLASS	GRANT	KITTITAS	YAKIMA	
<i>Abutilon theophrasti</i>	velvetleaf	A	X	X	X	Yes
<i>Acroptilon repens</i>	Russian knapweed	B	X	X	X	Yes: Grant, Yakima
<i>Aegilops cylindrica</i>	jointed goatgrass	C	X	X		Yes: Grant
<i>Alhagi maurorum</i>	camelthorn	B	X			Yes: Grant, Yakima
<i>Alliaria petiolata</i>	garlic mustard	A	X			Yes
<i>Alopecurus myosuroides</i>	blackgrass	B	X			Yes: Grant, Yakima
<i>Amorpha fruticosa</i>	indigobush	B	X			Yes: Grant, Yakima
<i>Anchusa arvensis</i>	annual bugloss	B	X	X		Yes: Grant, Yakima
<i>Anchusa officinalis</i>	common bugloss	B	X			Yes: Grant, Yakima
<i>Anthriscus sylvestris</i>	wild chervil	B	X			Yes: Grant, Yakima
<i>Artemisia absinthium</i>	absinth wormwood	C		X		
<i>Berteroa incana</i>	hoary alyssum	B	X			Yes: Grant, Yakima
<i>Brachypodium sylvaticum</i>	false-brome	A	X			Yes
<i>Bryonia alba</i>	white bryony	B	X			Yes: Grant, Yakima
<i>Buddleja davidii</i>	butterflybush	B	X	X	X	Yes: Grant, Yakima
<i>Butomus umbellatus</i>	flowering rush	A	X			Yes
<i>Cabomba caroliniana</i>	fanwort	B	X			Yes: Grant, Yakima
<i>Cardaria draba</i>	hoary cress	C	X	X		Yes: Grant
<i>Cardaria pubescens</i>	hairy whitetop	C		X		
<i>Carduus acanthoides</i>	plumeless thistle	B	X			Yes: Grant, Yakima
<i>Carduus nutans</i>	musk thistle	B	X	X	X	Yes: Grant, Yakima
<i>Carduus pycnocephalus</i>	thistle, Italian	A	X			Yes
<i>Carduus tenuiflorus</i>	slenderflower thistle	A	X			Yes
<i>Cenchrus longispinus</i>	longspine sandbur	B	X	X		Yes: Grant
<i>Centaurea calcitrapa</i>	purple starthistle	A	X			Yes
<i>Centaurea cyanus</i>	cornflower (bachelor's button)	C		X		Yes: Kittitas
<i>Centaurea diffusa</i>	diffuse knapweed	B	X	X	X	Yes: Grant
<i>Centaurea jacea</i>	brown knapweed	B	X			Yes: Yakima
<i>Centaurea jacea x nigra</i>	meadow knapweed	B	X	X	X	Yes: Grant, Yakima
<i>Centaurea macrocephala</i>	bighead knapweed	A	X			Yes
<i>Centaurea nigra</i>	black knapweed	B	X			Yes: Grant, Yakima
<i>Centaurea nigrescens</i>	Vochin knapweed	A	X			Yes
<i>Centaurea solstitialis</i>	yellow starthistle	B	X	X	X	Yes: Grant, Yakima
<i>Centaurea stoebe</i>	spotted knapweed	B	X	X	X	Yes: Grant, Yakima
<i>Chondrilla juncea</i>	rush skeletonweed	B	X	X	X	Yes: Grant, Yakima
<i>Cirsium arvense</i>	Canada thistle	C	X	X		Yes: Grant; and Yakima only in T7N R20, 21, 22, 23E
<i>Cirsium vulgare</i>	bull thistle	C	X	X		Yes: Grant

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS				CONTROL REQUIRED
		CLASS	GRANT	KITTITAS	YAKIMA	
<i>Clematis vitalba</i>	old-man's-beard	C				
<i>Conium maculatum</i>	poison-hemlock	B	X	X	X	Yes: Grant
<i>Convolvulus arvensis</i>	field bindweed	C	X	X		Yes: Grant
<i>Conyza canadensis</i>	horseweed (marestail)	C		X		Yes: Kittitas
<i>Crupina vulgaris</i>	common crupina	A	X			Yes
<i>Cuscuta approximata</i>	smoothseed alfalfa dodder	C	X	X		Yes: Grant
<i>Cynoglossum officinale</i>	houndstongue	B	X	X	X	Yes: Grant
<i>Cyperus esculentus</i>	yellow nutsedge	B	X		X	Yes: Grant
<i>Cytisus scoparius</i>	Scotch broom	B	X	X	X	Yes: Grant, Yakima
<i>Daphne laureola</i>	spurge laurel	B	X			Yes: Grant
<i>Daucus carota</i>	wild carrot	B	X	X	X	Yes: Grant, Yakima
<i>Dipsacus fullonum</i>	common teasel	C		X		Yes: Grant, Kittitas
<i>Echium vulgare</i>	blueweed	B	X			Yes: Grant, Yakima
<i>Egeria densa</i>	Brazilian elodea	B	X			Yes: Grant, Yakima
<i>Epilobium hirsutum</i>	hairy willowherb	B	X			Yes: Grant, Yakima
<i>Euphorbia esula</i>	leafy spurge	B	X		X	Yes: Grant, Yakima
<i>Euphorbia myrsinites</i>	myrtle spurge	B	X	X	X	Yes: Grant, Kittitas
<i>Euphorbia oblongata</i>	eggleaf spurge	A	X			Yes
<i>Foeniculum vulgare</i>	common fennel	B	X			Yes: Grant
<i>Galega officinalis</i>	goatsrue	A	X			Yes
<i>Geranium lucidum</i>	shiny geranium	A	X			Yes
<i>Geranium robertianum</i>	herb-Robert	B	X	X		Yes: Grant, Yakima
<i>Glyceria maxima</i>	reed sweetgrass	A	X			Yes
<i>Gypsophila paniculata</i>	babysbreath	C		X		
<i>Hedera helix</i> 'Baltica', 'Pittsburgh', and 'Star'; <i>H.</i> <i>hibernica</i> 'Hibernica'	English ivy - four cultivars only	C				
<i>Helianthus ciliaris</i>	Texas blueweed	A	X		X	Yes
<i>Hemizonia pungens</i>	spikeweed	C	X			Yes: Grant
<i>Heracleum mantegazzianum</i>	giant hogweed	A	X			Yes
<i>Hieracium atratum</i>	polar hawkweed	B	X			Yes: Grant, Yakima
<i>Hieracium aurantiacum</i>	orange hawkweed	B	X	X		Yes: Grant, Yakima
<i>Hieracium caespitosum</i>	yellow hawkweed	B	X	X		Yes: Grant, Yakima
<i>Hieracium floribundum</i>	yellowdevil hawkweed	A	X			Yes
<i>Hieracium glomeratum</i>	queen-devil hawkweed	B	X			Yes: Grant, Yakima
<i>Hieracium lachenalii</i>	common hawkweed	C				
<i>Hieracium laevigatum</i>	smooth hawkweed	B	X			Yes: Grant, Yakima
<i>Hieracium pilosella</i>	mouseear hawkweed	B	X			Yes: Grant, Yakima

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS				CONTROL REQUIRED
		CLASS	GRANT	KITTITAS	YAKIMA	
<i>Hieracium sabaudum</i>	European hawkweed	A	X			Yes
	hawkweeds, non-native and invasive species not listed elsewhere	C				
<i>Hieracium</i> spp.						
<i>Hydrilla verticillata</i>	hydrilla	A	X			Yes
<i>Hyoscyamus niger</i>	black henbane	C	X			Yes: Grant
	common St. Johnswort					
<i>Hypericum perforatum</i>	Johnswort	C	X	X		Yes: Grant
<i>Hypochaeris radicata</i>	common catsear	B	X	X	X	Yes: Grant, Yakima
<i>Impatiens glandulifera</i>	policeman's helmet	B	X			Yes: Grant, Yakima
<i>Iris pseudacorus</i>	yellowflag iris	C	X	X		Yes: Grant, Kittitas
<i>Isatis tinctoria</i>	dyer's woad	A	X			Yes
<i>Kochia scoparia</i>	kochia	B	X	X		Yes: Grant
<i>Lamiastrum galeobdolon</i>	yellow archangel	B		X		
	perennial pepperweed					
<i>Lepidium latifolium</i>	pepperweed	B	X	X	X	Yes: Grant
<i>Leprodiclis holosteoides</i>	lepyrodiclis	B	X			Yes: Grant, Yakima
<i>Leucanthemum vulgare</i>	oxeye daisy	B	X	X	X	Yes: Grant, Yakima
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	B	X	X	X	Yes: Grant
<i>Linaria vulgaris</i>	yellow toadflax	C		X		
<i>Ludwigia hexapetala</i>	water primrose	B	X			Yes: Grant
	floating primrose-willow					
<i>Ludwigia peploides</i>		A	X			Yes
<i>Lysimachia vulgaris</i>	garden loosestrife	B	X			Yes: Grant, Yakima
<i>Lythrum salicaria</i>	purple loosestrife	B	X	X	X	Yes: Grant, Yakima
<i>Lythrum virgatum</i>	wand loosestrife	B	X			Yes: Grant, Yakima
<i>Matricaria perforata</i>	scentless mayweed	C	X	X		Yes: Grant
<i>Mirabilis nyctaginea</i>	wild four-o'clock	A	X			Yes
<i>Myriophyllum aquaticum</i>	parrotfeather	B	X		X	Yes: Grant, Yakima
<i>Myriophyllum heterophyllum</i>	variable-leaf milfoil	A	X			Yes
						Yes: Grant, Kittitas, Yakima
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	B	X	X	X	
<i>Nymphaea odorata</i>	fragrant waterlily	C				
<i>Nymphoides peltata</i>	yellow floatingheart	B	X		X	Yes: Grant, Yakima
<i>Onopordum acanthium</i>	Scotch thistle	B	X	X	X	Yes: Grant, Yakima
<i>Phalaris arundinacea</i>	reed canarygrass	C				
	common reed (nonnative genotypes)					
<i>Phragmites australis</i>		B	X			Yes: Grant, Yakima
<i>Picris hieracioides</i>	hawkweed oxtongue	B	X			Yes: Grant, Yakima
<i>Polygonum bohemicum</i>	Bohemian knotweed	B		X		

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS				CONTROL REQUIRED
		CLASS	GRANT	KITTITAS	YAKIMA	
<i>Polygonum cuspidatum</i>	Japanese knotweed	B	X	X	X	Yes: Grant
<i>Polygonum polystachyum</i>	Himalayan knotweed	B				
<i>Polygonum sachalinense</i>	giant knotweed	B	X			Yes: Grant
<i>Potamogeton crispus</i>	curlyleaf pondweed	C				
<i>Potentilla recta</i>	sulfur cinquefoil	B	X	X	X	Yes: Grant, Yakima
<i>Pueraria montana var. lobata</i>	kudzu	A	X			Yes
<i>Rorippa austriaca</i>	Austrian fieldcress	B	X			Yes: Grant, Yakima
<i>Rubus armeniacus</i>	Himalayan blackberry	C				
<i>Rubus laciniatus</i>	evergreen blackberry	C				
<i>Sagittaria graminea</i>	grass-leaved arrowhead	B	X			Yes: Grant, Yakima
<i>Salsola iberica</i>	Russian thistle	C		X		Yes: Kittitas
<i>Salvia aethiopsis</i>	Mediterranean sage	A	X			Yes
<i>Salvia pratensis</i>	meadow clary	A	X			Yes
<i>Salvia sclarea</i>	clary sage	A	X			Yes
<i>Schoenoplectus mucronatus</i>	ricefield bulrush	A	X			Yes
<i>Secale cereale</i>	cereal rye	C	X			Yes: Grant
<i>Senecio jacobaea</i>	tansy ragwort	B	X	X	X	Yes: Grant, Yakima
<i>Senecio vulgaris</i>	common groundsel	C	X	X		Yes: Grant
<i>Silene latifolia ssp. alba</i>	white cockle	C	X	X		Yes: Grant
<i>Silybum marianum</i>	milk thistle	A	X			Yes
<i>Solanum elaeagnifolium</i>	silverleaf nightshade	A	X			Yes
<i>Solanum rostratum</i>	buffalobur	A	X	X	X	Yes
<i>Soliva sessilis</i>	lawnweed	B	X			Yes: Grant, Yakima
<i>Sonchus arvensis ssp. arvensis</i>	perennial sowthistle	B	X	X	X	Yes: Grant, Yakima
<i>Sorghum halepense</i>	johnsongrass	A	X		X	Yes
<i>Spartina alterniflora</i>	smooth cordgrass	A	X			Yes
<i>Spartina anglica</i>	common cordgrass	A	X			Yes
<i>Spartina densiflora</i>	dense-flowered cordgrass	A	X			Yes
<i>Spartina patens</i>	saltmeadow cordgrass	A	X			Yes
<i>Spartium junceum</i>	Spanish broom	A	X			Yes
<i>Sphaerophysa salsula</i>	swainsonpea	B	X		X	Yes: Grant Yes: Kittitas, Yakima
<i>Tamarix ramosissima</i>	saltcedar	B	X	X	X	
<i>Tanacetum vulgare</i>	common tansy	C		X		
<i>Thymelaea passerina</i>	spurge flax	A	X			Yes
<i>Tribulus terrestris</i>	puncturevine	B	X	X	X	Yes: Grant
<i>Ulex europaeus</i>	gorse	B	X			Yes: Grant, Yakima
<i>Xanthium spinosum</i>	spiny cocklebur	C		X		

SCIENTIFIC NAME	COMMON NAME	LEGAL NOXIOUS STATUS				CONTROL REQUIRED
		CLASS	GRANT	KITTITAS	YAKIMA	
<i>Zygophyllum fabago</i>	Syrian beancaper	A	X			Yes

Sources<sup>1</sup>: WNWCB 2009a, 2013, Noxious Weed Control Board of Grant County (2013), Kittitas County Noxious Weed Control Board (2013), and Yakima County Noxious Weed Board (2011).

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**APPENDIX B-5  
SAGE-GROUSE ANALYSIS AND MITIGATION REPORT**

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## **APPENDIX B-5: SAGE-GROUSE ANALYSIS AND MITIGATION REPORT**

As a result of the comments received for the Vantage to Pomona Heights 230 kilovolt Transmission Line Project Draft Environmental Impact Statement that was published in January 2013, the Bureau of Land Management, Pacific Power (Project Proponent) and the Joint Base Lewis-McChord Yakima Training Center (JBLM YTC) identified a new route that is located largely on JBLM YTC managed land. The New Northern Route (NNR) Alternative was evaluated for potential impacts in the January 2015 Supplemental Draft Environmental Impact Statement (SDEIS) and a Sage-Grouse Mitigation and Analysis Report (Report) was prepared to expand the impact analysis included in the SDEIS and propose a mitigation framework for the proposed Project-related impacts to Sage-Grouse associated with the NNR Alternative. The Report and the SDEIS considered two Design Options and one Subroute: 1) NNR Alternative - Overhead Design Option; 2) NNR Alternative - Underground Design Option; and 3) NNR Alternative – Manastash Ridge Subroute. The original version of the Report has been included in Appendix B-5 of this Final Environmental Impact Statement (FEIS). In addition to the updated Sage-Grouse analysis included in the text of the FEIS, two documents addressing Sage-Grouse have been prepared and are included as appendices in the FEIS. These documents include the Framework for Development of a Sage-Grouse Compensatory Mitigation Plan (Appendix B-6) that identifies a plan to establish debits/credits applicable to project-related impacts to Sage-Grouse and the Compliance with Applicable Greater Sage-Grouse Policies, Plans, and Procedures (Appendix B-7) document that identifies the latest policies regarding Sage-Grouse and discusses potential impacts to populations and habitat.

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## **ACRONYMS AND ABBREVIATIONS**

AMSL	above mean sea level
APLIC	Avian Power Line Interaction Committee
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
COT	Conservation Objectives Team
DEIS	Draft Environmental Impact Statement
DPS	Distinct Population Segment
ESA	Endangered Species Act
GAP	Gap Analysis Program
GIS	Geographic Information System
HCA	Habitat Concentration Area
I-90	Interstate 90
IM	Instruction Memorandum
IPC	Idaho Power Company
ISAC	Idaho Sage-grouse Advisory Committee
JBLM YTC	Joint Base Lewis-McChord Yakima Training Center
km	kilometer
kV	kilovolt
lscv	least squares cross validation
mph	miles per hour
MR	Manastash Ridge
MU	Management Unit
NERC	North American Reliability Corporation
NNR	New Northern Route
NOAA	National Oceanic and Atmospheric Administration
OHV	off-highway vehicle
PAC	Priority Area for Conservation
PDF	Project Design Feature
PHS	Priority Habitats and Species
POD	Plan of Development
POWER	Power Engineers, Inc.
Project	Vantage to Pomona Heights 230 kV Transmission Line Project
PUD	Public Utilities District
Reclamation	U.S. Bureau of Reclamation
ROW	Right-of-Way
SDEIS	Supplemental Draft Environmental Impact Statement
SEE	Stell Environmental Enterprises, Inc.
UD	Utilization Distribution
U.S.	United States
USDA	U.S. Department of Agriculture
USEPA	Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWIN	Utah Wildlife in Need
WAFWA	Western Association of Fish and Wildlife Agencies

WDFW	Washington Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WECC	Western Electricity Coordinating Council
WHCWG	Washington Habitat Connectivity Working Group
WO	Washington Office (Bureau of Land Management)
WSDOT	Washington State Department of Transportation

## **1.0 INTRODUCTION**

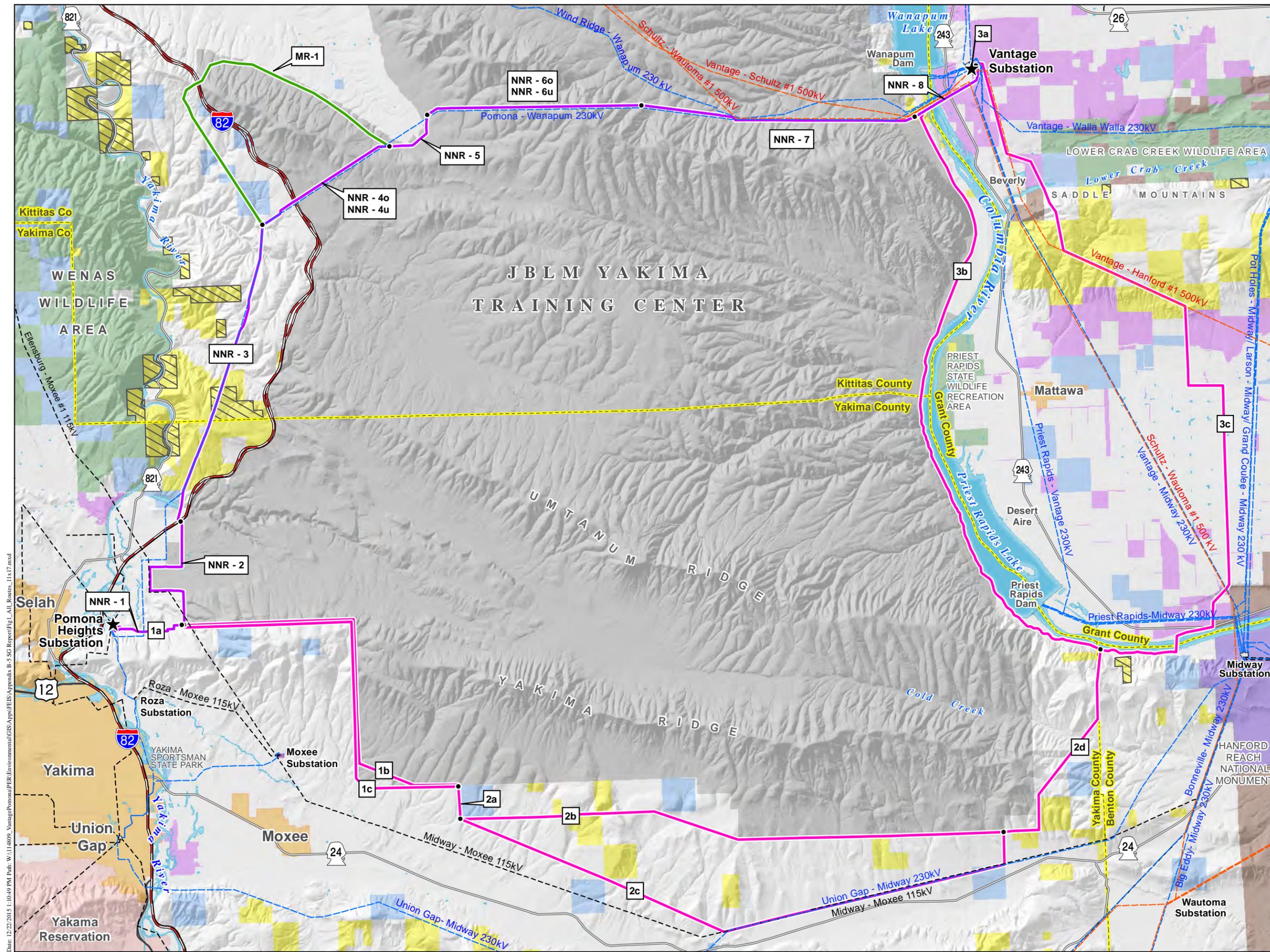
On January 4, 2013, the Bureau of Land Management (BLM) released the Vantage to Pomona Heights 230 kilovolt (kV) Transmission Line Project Draft Environmental Impact Statement (DEIS) for public review and comment, identifying an Agency Preferred Alternative (Alternative D in the DEIS). Public meetings were held in February 2013 to provide the public an opportunity to give their input on the DEIS and Agency Preferred Alternative. As a result of the comments received at the public meetings and submitted in writing during the DEIS comment period, BLM, Pacific Power (Project Proponent) and the Joint Base Lewis-McChord Yakima Training Center (JBLM YTC) met and identified a new route that is located largely on JBLM YTC managed land. This new route is similar to a northern JBLM YTC route that was considered and eliminated from consideration because of Western Electricity Coordinating Council (WECC) line separation requirements in place at the time the alternative was being considered. Previously, the separation distance required the placement of the line in areas that would create conflicts with JBLM YTC's aerial operations and training on the facility. Recently, the separation standards were revised by the electrical regulating authorities, WECC and the North American Electric Reliability Corporation (NERC), to allow a much closer distance between existing transmission lines. This regulatory change would allow this alternative route to be located in close proximity (200 to 250 feet) to existing lines (Bonneville Power Administration [BPA] and Pacific Power), which allowed this alternative option to be reconsidered as the New Northern Route (NNR; see Figure 1). As was done with alternative routes analyzed in the DEIS, the NNR was evaluated for potential impacts in a Supplemental Draft Environmental Impact Statement (SDEIS).

Based on DEIS comments received from U.S. Fish and Wildlife Service (USFWS) and Washington Department of Fish and Wildlife (WDFW) regarding impacts to greater sage-grouse (*Centrocercus urophasianus*; hereafter sage-grouse), this Sage-Grouse Mitigation and Analysis Report (Report) has been prepared to expand the impact analysis and to propose a mitigation framework for the proposed Project. This Report accompanies and will be incorporated into the SDEIS and includes the following sections:

- Brief Project Description
- Regulatory Overview
- Sage-Grouse Species Ecology
- Current Conditions and Trends
- Affected Environment
- Impact Analysis
- Comparison of Impacts
- Consistency with Regulatory Environment
- Proposed Measures to Offset Project Impacts

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**Figure 1**  
**New Northern Route Alternative**



Data are projected in UTM Zone 10N, NAD83

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## **2.0 BRIEF PROJECT DESCRIPTION**

Pacific Power proposes to construct, operate and maintain a new 230 kV transmission line from Pacific Power's Pomona Heights substation located just east of Selah, Washington in Yakima County to the BPA Vantage Substation located just east of the Wanapum Dam in Grant County, Washington.

The NNR Alternative considered in the SDEIS is approximately 40.4 miles in length. A subroute also being considered, the Manastash Ridge (MR) Subroute, adds 7.3 miles to the NNR Alternative for a total length of approximately 47.7 miles (Figure 1). The MR Subroute was proposed as an option to the NNR-4 route segment. Shaped like a horseshoe, it circumnavigates to the west, north, and east of Manastash Ridge. The NNR crosses federal land managed by the BLM, JBLM YTC, the U.S. Bureau of Reclamation (Reclamation), and state land managed by Washington State Department of Transportation (WSDOT) and Washington Department of Natural Resources (WDNR). The NNR Alternative also crosses three counties: Yakima, Kittitas and Grant Counties.

As proposed by Pacific Power, most of the transmission line would be constructed on H-frame wood structures between 65 and 90 feet tall and spaced approximately 650 to 1,000 feet apart, depending on terrain. In developed areas, single wood or steel monopole structures between 80 and 110 feet tall would be used. Single wood or steel monopole structures would be spaced approximately 400 to 700 feet apart. Steel lattice structures approximately 200 feet tall would be used where the NNR Alternative would cross the Columbia River below the Wanapum Dam.

This Report and the SDEIS considers two Design Options and one subroute: 1) NNR Alternative - Overhead Design Option; 2) NNR Alternative - Underground Design Option; and 3) NNR Alternative - MR Subroute. The Underground Design Option is being considered for two route segments (NNR-4 and NNR-6) as requested by the USFWS and WDFW regarding potential impacts to sage-grouse. The Underground Option, including components, construction technology and techniques, is discussed in detail in Chapter 2 of the SDEIS. A comparison of impacts for the Design Options and Subroute are discussed for Route Segments NNR-4, NNR-6, and MR-1 in Section 7.2.4 of this Report.

## **3.0 REGULATORY OVERVIEW**

### **3.1 Federal Regulations and Policies**

Sage-grouse are listed as Threatened by the state of Washington and are a BLM Sensitive species (Schroeder et al. 2003; Stinson et al. 2004). In 2001, USFWS determined that the western subspecies of sage-grouse (*Centrocercus urophasianus ssp. phaios*) met the requirements of a Distinct Population Segment (DPS); therefore, the USFWS is reanalyzing this designation since the eastern and western subspecies are no longer considered separate taxa. Petitions for listing sage-grouse range-wide were filed in 2002 and 2003, and in 2005, the USFWS concluded that listing sage-grouse was not warranted (USFWS 2005). In 2008, a status review was initiated by the USFWS to address new information that had become available since 2005 (USFWS 2008). Based on new information available, USFWS determined in March 2010 that the range-wide listing of sage-grouse under ESA was warranted, but the listing was precluded in order to complete higher priority listing actions. Range-wide the sage-grouse is considered a Candidate species under ESA (USFWS 2010a and 2010b). The USFWS is scheduled to make a final listing determination (i.e., either listing sage-grouse as Threatened or Endangered or determining that it does not warrant listing) by 2015. The USFWS's *12-Month Findings for Petitions to List the Greater Sage-Grouse as Threatened or Endangered* (2010a and 2010b) listed the following as potential impacts to sage-grouse resulting from power lines: 1) collisions/electrocutions, 2) consolidation of predatory birds along power lines, 3) lower recruitment rates near lines, 4) habitat fragmentation, 5) degradation of habitat due to spread of

invasive plant species, 6) impacts resulting from the line's electromagnetic fields, and 7) direct loss of habitat.

Since designation of sage-grouse as a Candidate species, several BLM directives have been issued or revised regarding management direction for sage-grouse in order to prevent further declines and future listing. Federal and state regulatory requirements and guidance applicable to sage-grouse are discussed below and the Project's conformance with these regulatory requirements is discussed in Section 9.0.

In 2013, the USFWS Conservation Objectives Team (COT) published the Greater Sage-grouse Conservation Objectives: Final Report (COT Report). The COT Report provides guidelines and objectives for the conservation of sage-grouse. The main objective identified in the COT Report is to minimize habitat threats to the species so as to meet the objective of the 2006 Western Association of Fish and Wildlife Agencies' (WAFWA) Greater Sage-Grouse Comprehensive Conservation Strategy to reverse negative population trends and achieve a neutral or positive population trend. A key component of the COT Report is the identification of Priority Areas of Conservation (PACs), which are considered key habitats essential for sage-grouse conservation. The COT Report is a guidance document only. The COT Report's identification of conservation objectives does not create a legal obligation beyond the existing legal requirements for sage-grouse. The conservation framework within the COT Report consists of: 1) identifying sage-grouse population and habitat status and threats; 2) defining a broad conservation goal; 3) identifying PACs; and 4) developing specific conservation objectives and measures. The COT Report identifies four PACs within the state of Washington, two of which have extant populations, Moses Coulee and Yakima Training Center, and two historic populations undergoing reintroduction efforts with translocated birds. With the exception of a portion of NNR-8, the Project is located entirely within the Yakima Training Center PAC (see Figure 2). The sage-grouse population within this PAC is discussed in detail in Section 5.0. The COT Report (USFWS 2013) contains the following guidance for conservation objectives and measures to reduce threats within sage-grouse habitat and which are applicable for the NNR Alternative:

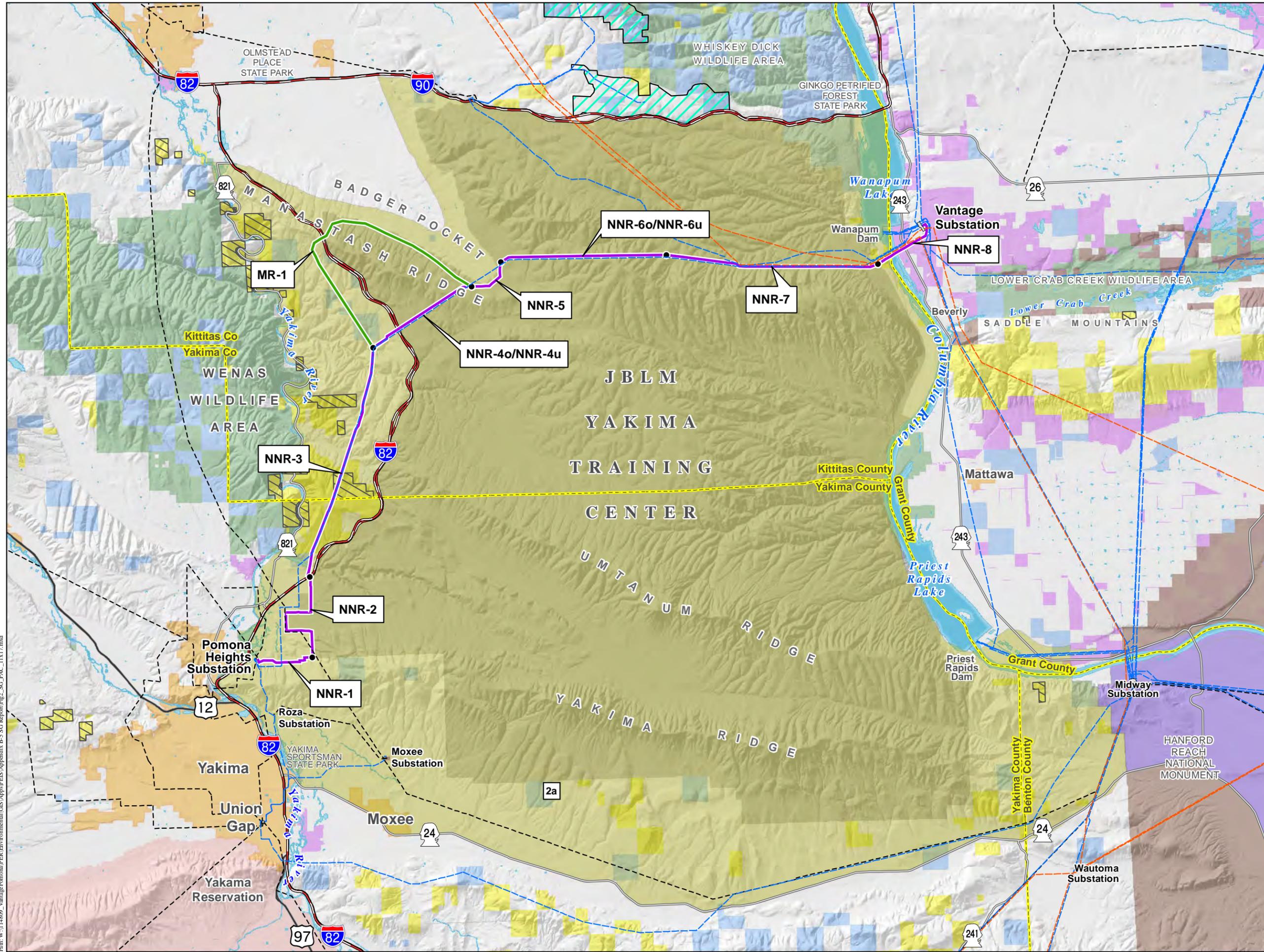
- Objective: Maintain and restore healthy native sagebrush plant communities.
  - Measures – Fire:
    - Restrict and contain fire.
    - Design, implement and monitor restoration activities for burned sagebrush habitat.
  - Measures – Invasive Species:
    - Reduce or eliminate disturbances that promote the spread of invasive species.
    - Monitor and control invasive vegetation post-wildfire for at least three years.
    - Require best management practices for construction projects in and adjacent to sagebrush habitats to prevent invasion.
    - Restore altered ecosystems so that non-native invasive plants are reduced to levels that do not put the area at risk of conversion if a catastrophic event were to occur.
- Objective: Avoid development of infrastructure within PACs. Measures include:
  - Avoid infrastructure construction in sage-grouse habitat, both within and outside of PACs.
  - Power transmission corridors which cannot avoid PACs should be buried (if technically feasible) and disturbed habitat should be restored.

- If avoidance is not possible, consolidate new structures with existing features and/or preclude development of new structures within locally important sage-grouse habitats.
  - Consolidation with existing features should not result in a cumulative corridor width of greater than 656 feet (200 meters).
  - Habitat function lost from placement of infrastructure should be replaced.
- Infrastructure corridors should be designed and maintained to preclude introduction of invasive species.
- Restrictions limiting use of roads should be enforced.
- Remove transmission lines and roads that are duplicative or are not functional.
- Transmission line towers should be constructed to severely reduce or eliminate nesting and perching by avian predators, most notably ravens, thereby reducing anthropogenic subsidies to those species.
- Mitigate impacts to habitat.
- Remove (or decommission) non-designated roads within sagebrush habitats.

In addition to the COT Report, BLM's Washington, D.C. office (WO) has issued two recent Instruction Memoranda (IMs) for sage-grouse: WO IM 2012-043, Greater Sage-Grouse Interim Management Policies and Procedures (BLM 2010); and WO IM 2012-044, BLM National Greater Sage-Grouse Land Use Planning Strategy (BLM 2011b). The Columbia Basin DPS of sage-grouse are addressed in other policies and planning efforts and are not covered by WO IM 2012-043. WO IM 2012-044 provides direction to the BLM for the consideration of conservation measures identified in two documents: A Report on National Greater Sage-Grouse Conservation Measures (Sage-Grouse National Technical Team 2011) and the National Greater Sage-Grouse Planning Strategy (BLM 2011c). The National Greater Sage-Grouse Planning Strategy excludes the Washington State DPS, stating that they will be addressed through other policies and planning efforts (BLM 2011c).

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**Figure 2**  
**Sage-Grouse**  
**Priority Area**  
**for Conservation**



**Legend**

**Routes**

- New Northern Route (NRR) Alternative
- Manastash Ridge Subroute
- Sage-Grouse Priority Area for Conservation (PAC) (Draft 2013/01)

**Existing Transmission**

- 500 kV Transmission Line
- 230 kV Transmission Line
- 115 kV Transmission Line
- Substation

**Jurisdiction**

- Private Individual or Company
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Washington Department of Fish and Wildlife
- State of Washington
- JBLM Yakima Training Center
- U.S. Fish and Wildlife Service
- Department of Energy

**Roads**

- Interstate Highway
- US Highway
- State Highway

**Special Management Areas**

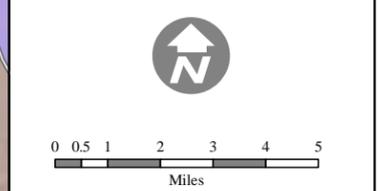
- BLM Area of Critical Environmental Concern (ACEC)

**Base Features**

- Wind Farm
- County Boundary
- Municipality



Data are projected in UTM Zone 10N, NAD83



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### 3.2 State Regulations and Policies

In 2004, the state of Washington published the Greater Sage-Grouse Recovery Plan (Recovery Plan) to summarize the current knowledge of sage-grouse in Washington and to outline strategies to increase population size and distribution. This Recovery Plan delineated distinctive regions in Washington, called management units (MUs), to focus recovery efforts in those areas most likely to contribute to reaching recovery objectives. Fourteen management units were delineated based on current occupancy, land ownership, location, topography, and habitat quantity, condition and potential (Stinson et al. 2004). The four MUs that would be crossed by the Project ROW corridor include: Rattlesnake Hills, JBLM YTC, Umtanum Ridge and Saddle Mountains (see Figure 3). The eight-mile-wide Project area also encompasses land within the Potholes MU. The MUs are further designated as:

- Regularly Occupied Habitat includes intact sagebrush communities known to be occupied by resident breeding populations of sage-grouse and are considered to be of highest conservation value. MUs within the eight-mile-wide Project area designated as Regularly Occupied Habitat are: JBLM YTC, Rattlesnake Hills and Umtanum Ridge.
- Connectivity Habitat includes movement corridors between seasonally used areas and between populations and includes areas important for providing habitat connections. There are no MUs within the eight-mile-wide Project area designated as Connectivity Habitat. Colockum MU, designated as Connectivity Habitat, is located approximately five miles north of Route Segments NNR-4 and NNR-5.
- Occasionally Occupied Habitat includes habitat that may be occupied on a seasonal or irregular basis, but is not regularly occupied by sage-grouse. Within the eight-mile-wide Project area, Saddle Mountains MUs is designated as Occasionally Occupied Habitat.
- Expansion Habitat includes areas where expansion could occur through an improvement in habitat quality. The Potholes MUs is within the eight-mile-wide Project area and has been designated as Expansion Habitat.

The Recovery Plan's goal is to establish a viable population of sage-grouse in a substantial portion of its historic range in Washington, with specific recovery objectives focusing on the breeding season population. The Recovery Plan states that recovering sage-grouse to a viable population will require an increase in population density, an expansion of occupied areas, and an improvement in habitat quality. Current and past management efforts focused on maintaining the existing populations and distributions of sage-grouse, while recovery efforts will focus on increasing the numbers and distribution of sage-grouse in Washington. Some of the designated MUs will require substantial restoration efforts to support breeding and wintering populations and may require coordinated efforts between public and private land managers to maintain and improve habitat (Stinson et al. 2004). Recovery Plan conservation strategies that are applicable to the proposed Project are discussed below and consistency with these strategies is discussed in Section 9.0.

- Protect sage-grouse populations:
  - Protect active sage-grouse leks from human disturbance. The Recovery Plan recommends minimizing disturbance from construction and development activities, particularly within 0.6 mile (1.0 kilometer) of breeding habitat during February - June.

- Protect nesting and brood-rearing areas from disturbance. The Recovery Plan states that wherever possible, prevent disturbance in sage-grouse nesting and brood-rearing habitat between March 1 and June 15.
- Reduce collision and predation hazards posed by poles, wires and fences. The Recovery Plan states: new power lines and utilities should use existing corridors or be located so as to minimize collision risk and damage to habitat; existing power lines should be buried or modified with perch guards to prevent use as a raptor perch site; and unneeded fences in sage-grouse use areas should be removed.
- Protect sage-grouse habitat on public lands:
  - Protect habitat from fire. The Recovery Plan states that fire management plans should be developed and implemented on public lands to prevent catastrophic destruction of sage-grouse habitat.
  - Protect important sage-grouse habitat on public lands from development and agricultural conversion.
  - Manage riparian habitats by promoting recovery of vegetation in riparian zones and avoiding road development and human disturbance in wet meadows.
  - Discourage expansion of road system on public lands in management units. The Recovery Plan states: new roads, trails or rights-of-way (ROWs) should be avoided; avoid improvements to existing, unused, and unpaved roads; promote closures of unnecessary roads or those that are negatively impacting habitat quality.
- Restore degraded habitat:
  - The Recovery Plan states that shrub-steppe restoration projects should use native seed sources, suppress cheatgrass and weeds, restore bunchgrass and native forb understory, reestablish sagebrush, and restore degraded wet meadows or vegetation at developed streams.

### **3.3 JBLM YTC Regulations and Policies**

JBLM YTC has developed a Western Sage-Grouse Management Plan (Livingston 1998) that describes the current knowledge of and threats facing sage-grouse on the JBLM YTC. It outlines protection measures and procedures to be followed to ensure that the JBLM YTC sage-grouse population persists into the future. Protection for sage-grouse and its habitat within this Plan was expanded to an additional 33,000 acres in 2011 with the application of additional fire management and sage-grouse conservation related mitigation measures contained in the Record of Decision Fort Lewis Army Growth and Force Structure Realignment (Army 2011). As such, JBLM YTC has designated two sage-grouse protection zones: primary and secondary. The primary protection zone includes areas that are considered as essential sage-grouse habitat. Secondary protection zones provide indirect benefits to sage-grouse due to the application of fire management practices and habitat restoration efforts within these areas (JBLM YTC 2002). JBLM YTC sage-grouse management includes:

- Sage-grouse protection during breeding:
  - Buffer leks by 0.6 mile. These areas are closed to all training activities and other land use practices between midnight and 9:00 a.m. from February 1-May 15; and
  - Sage-grouse protection areas are off limits to all military training activities, except for the use of existing ranges, between February 1 and June 15.
- Sage-grouse habitat protection:
  - Bivouacking, digging, and maneuver training activities are designed to reduce or eliminate impacts to sage-grouse habitat within sage-grouse protection areas;
  - Fire is managed in accordance with JBLM YTC's Wildland Fire Management Plan; and

- Noxious weeds are controlled in accordance with state and federal law and in coordination with a JBLM YTC wildlife biologist.
- Habitat restoration in disturbed areas:
  - Conduct assessment of current and potential habitat availability, rank habitat according to species need, identify and prioritize potential restoration sites, and monitor restored sites.
- Monitoring population trends:
  - JBLM YTC began formal monitoring and research of lek counts in 1989. Sage-grouse lek surveys are conducted on an annual basis to monitor leks.

## **4.0 SAGE-GROUSE SPECIES ECOLOGY**

### **4.1 Introduction**

Sage-grouse is a sagebrush- (*Artemisia* spp.) obligate species of the western United States and Canada (Schroeder et al. 1999). The historic distribution of sage-grouse covers 57 million acres in eleven states (WGA 2012) and is largely coincident with the occurrence of sagebrush dominated habitats in the Columbia Basin, Snake River Plain, Rocky Mountain Province, Great Basin, Colorado Plateau and Great Plains (Connelly et al. 2004). Range-wide declines in sage-grouse populations over the past century have been attributed to human settlement, land use patterns (e.g., grazing, agriculture, energy development), fire, and introduced weeds resulting in landscape-scale declines in the extent, integrity and quality of sagebrush habitats (USFWS 2010).

### **4.2 Life History and Habitat Requirements**

#### **4.2.1 Species Description**

Sage-grouse is the largest grouse in North America (Schroeder et al. 1999). Adult males range in size from 66 to 76 centimeters in total length and may weigh over 3.0 kilograms during the breeding season; adult females are smaller with total lengths ranging from 48 to 58 centimeters and weighing between 1.3 and 1.7 kilograms. Plumage of both males and females is variegated with dorsal patterns of gray, black and buff providing cryptic coloration for concealment in sagebrush cover; however, males are more colorful with a distinct black throat and bib and a white breast concealing two yellowish to greenish gular sacs (Stinson et al. 2004). Sage-grouse are known for their breeding displays in early spring when males congregate in open areas within sagebrush and perform elaborate displays that include inflating their gular sacs. Females select mates at these breeding display grounds, called “leks,” and then nest, typically within four miles of a lek (Connelly et al. 2000). Sage-grouse habitat requirements vary seasonally and they often select different habitats during breeding, late brood-rearing and wintering seasons (Schroeder et al. 1999). Seasonal habitats will be discussed in more detail below. Diet consists primarily of sagebrush; however, sage-grouse will shift to insects and forbs during spring and summer (Stinson et al. 2004).

Sage-grouse populations may be migratory or non-migratory, based on landscape-scale distribution of essential resources, seasonal changes in resource availability and established behavior patterns of local populations. Movements of migratory populations may exceed 46 miles. Connelly et al. (2000) identified three types of sage-grouse populations based on seasonal movements:

- Non-migratory populations make seasonal habitat shifts that are less than 6.2 miles;
- One-stage migratory populations make movements greater than 6.2 miles between two seasonal ranges; and

- Two-stage migratory populations make movements greater than 6.2 miles among three seasonal ranges.

Despite seasonal movements at a range of scales, high site fidelity is indicated with grouse returning to the same areas year after year. Females may nest within 656 feet of the previous year's nest (Schroeder 1997). Grouse populations at the JBLM YTC are considered non-migratory.

Sage-grouse are generally longer lived, have lower reproductive rates and higher annual survival rates compared to most gallinaceous (upland game) birds. Most females nest as yearlings; however, this varies across the species range. Connelly et al. (2000) reported that virtually all yearling females nested in Washington, 22% of yearling females did not nest in Oregon, and 45% of yearling females did not nest in Idaho (Connelly et al. 2000). Nest success varies across range from 12 to 86% and also annually. Average clutch size varies from 6.0 to 9.5 rangewide and within Washington (Schroeder 1997). A ratio of greater than or equal to 2.25 surviving juveniles per hen in the fall should result in stable or increasing populations (Connelly et al. 2000). Overall, few annual surplus birds exist from year to year. Low reproductive rates slow recovery from losses (USFWS 2010).

#### **4.2.2 Seasonal Habitats**

Although dependent on sagebrush throughout the year, sage-grouse shift among habitats based on seasonal differences in nutrition and cover requirements and the relative proximity of habitats providing resources. Seasonal use habitats considered essential for maintaining healthy sage-grouse populations include: 1) breeding and early brood-rearing, 2) summer/late brood-rearing and 3) wintering habitats.

#### **Breeding and Early Brood-Rearing**

The breeding and early brood-rearing season is considered the most sensitive time of year for sage-grouse. It is during this time that sage-grouse perform courtship and select mates, prepare for nesting, nest and raise chicks. Breeding habitats are roughly centered on leks. Leks are established in open areas with good visibility surrounded by sagebrush providing escape habitat, forage and thermal refuge. These open areas may include playas, lake beds, bare soil, short grass patches, landing strips, roads, agricultural fields, burns and similar sites. Leks are where males compete for mating opportunities by performing strutting displays and producing complex vocalizations. Trees or other tall structures are generally not within line of sight of leks and are uncommon within two miles (Connelly et al. 2000; Stiver et al. 2010).

After mating, females retreat from leks and seek out nest sites. Average distance from leks to nest sites varies among populations. Reported averages range from 0.7 to 3.6 miles, but this distance may exceed 12 miles. In disturbed or fragmented habitats, females may nest further from leks (Connelly et al. 2000). Cadwell et al. (1994) reported that female grouse in the JBLM YTC population nested an average of three miles from their capture lek. Doherty et al. (2010) report that of 527 sage-grouse nests monitored in the Powder River Basin of Wyoming and Montana, 79% were located within 3.1 miles of the lek and 95% were within 6.2 miles. Sage-grouse nests are most often established under larger sagebrush, but in some cases, other plant species may be used (Connelly et al. 2000). Nest success is higher under a cover of sagebrush (53%) versus cover of other plant species (22%). Successful nests in sagebrush are located in stands with greater average cover and taller and denser grass understory than unsuccessful nests. Sveum et al. (1998) in a study of the JBLM YTC population found most nests (71%) were in big sagebrush with an intact bunchgrass understory. Sagebrush cover in nesting habitat typically ranges from 15 to 25%, with a sagebrush height of 12 to 30 inches (Stiver et al. 2010). Pre-laying habitats with diverse forbs provide calcium, phosphorus and protein to hens (Gregg et al. 2008). The condition of pre-laying habitats may greatly affect nest initiation rate, clutch

size and success (Connelly et al. 2000). Once chicks have hatched, brood-rearing habitats become critical. Early brood-rearing habitats occur close to nests but movements may exceed 1.9 miles as grouse move to areas that have an abundance and diversity of herbaceous plants and insects, but may have lower sagebrush cover. Breeding/early brood-rearing season generally occurs from March 1 to June 30 (Stiver et al. 2010).

### **Summer/Late Brood-Rearing**

Late brood-rearing occurs during approximately July 1 to September 30 (Connelly et al. 2000; Stiver et al. 2010). During summer as chicks grow and vegetation dries out, sage-grouse may shift habitats. These late brood-rearing habitats tend to be more mesic sites and may be dominated by sagebrush but may also include wet meadows, farm fields and irrigated areas adjacent to sagebrush habitats (Connelly et al. 2000). Suitable late brood-rearing habitat is characterized by 10 to 25% sagebrush canopy cover, 15 to 30 inches sagebrush height, common presence of preferred forbs, and  $\geq 15\%$  perennial grass and forb canopy cover; however, late brood-rearing can occur in agricultural fields with adjacent sagebrush. Within the JBLM YTC population, females, on average, spend the summer and fall approximately four miles from the lek, while males average seven to eight miles away from the lek during summer (Cadwell et al. 1994). By fall a slow shift toward winter range begins. Sage-grouse continue to supplement their diet with remaining succulent forbs but by early winter a transition to a sagebrush-dominant diet resumes.

### **Winter**

Winter habitats are reached by December. Wintering habitat is typically similar throughout the species range and contains tall sagebrush or windswept areas with shallow snow accumulations. Sagebrush cover ranges from 10 to 30% with approximately 10 to 14 inches of height above the average snow depth (Stiver et al. 2010). Sage-grouse feed exclusively on sagebrush during winter. Big sagebrush is dominant, but grouse will feed on a variety of other sagebrush species, depending on availability (Connelly et al. 2000).

## **5.0 CURRENT CONDITIONS AND TRENDS, REGIONAL OVERVIEW**

### **5.1 Regional and Washington Populations**

The WDFW reports that the historical distribution of sage-grouse in Washington spanned the extent of shrub steppe and meadow steppe habitats of the Columbia Basin of eastern Washington in an area exceeding 22,000 square miles (Stinson et al. 2004). Although negative trends in sage-grouse populations had been noted since the early 1900s (Connelly et al. 2000), precipitous declines in Washington became apparent in the 1970s. Sixty-six percent of lek complexes documented in 1960 are now vacant (Schroeder et al. 2011). The population size in Washington declined more than 50% between 1970 and 2011. The current range within Washington is now approximately 8% of the presumed historic range and limited to two populations with a total of approximately 1,200 sage-grouse (Robb and Schroeder 2012). The Moses Coulee population, numbering approximately 930 birds, is found in Douglas and Grant Counties on mostly private land. The second population is located in Kittitas and Yakima Counties on the JBLM YTC land which is used for combat readiness training. In 2013, the sage-grouse population at JBLM YTC was estimated to be at 221 birds. Both populations are considered isolated from each other as well as the more distant populations in Oregon and Idaho (WDFW 2004). Connectivity among populations is discussed in Section 5.2 - Habitat Connectivity.

Both historic and recent declines in sage-grouse populations are largely the result of habitat loss and fragmentation associated with conversion of native sagebrush landscapes for human land uses (principally agriculture) and widespread degradation of remaining habitat through poor land management practices and the invasion of aggressive exotic weeds; however, over harvesting may have aggravated the impacts of habitat fragmentation and accelerated local extinctions (Stinson et al. 2004). In the Moses Coulee population in Douglas and Grant Counties, sage-grouse occupy a mosaic of native habitats, dryland wheat and lands enrolled in the Conservation Reserve Program with sagebrush steppe comprising only 44% of the area. The JBLM YTC sage-grouse population is found on the largest intact shrub steppe site in the state (Schroeder et al. 2011; Sveum et al. 1998). The JBLM YTC population is discussed at length in Section 6.0 - Affected Environment.

## **5.2 Habitat Connectivity**

Maintenance and restoration of habitat connectivity has important implications for the genetic and demographic health of wildlife populations. Anthropogenic features and land uses can reduce connectivity by fragmenting habitat and hindering the movement of wildlife. Fragmented landscapes with reduced connectivity support fewer animals and isolated local populations face higher local extinction rates and lower likelihood of recolonization as well as loss of genetic diversity (Beissinger and McCullough 2002). Given predicted climate change, connectivity conservation may have especially important implications in the future as species must move to adapt to changing vegetation patterns and shifting habitats (Heller and Zavaleta 2009). Development and agriculture have fragmented sagebrush-steppe within Washington and habitat connectivity is degraded and threatened for many species (WHCWG 2010).

The JBLM YTC sage-grouse population is one of two geographically distinct populations in Washington; the second population is located in the Mansfield Plateau/Moses Coulee area in Douglas and Grant Counties (Stinson et al. 2004). The JBLM YTC population is isolated from the Mansfield Plateau/Moses Coulee population by more than 30 miles and from populations in Oregon and Idaho by about 150 miles (Robb and Schroeder 2012). These populations have reduced genetic diversity relative to populations outside of Washington, and differ genetically from each other suggesting a recent genetic bottleneck and little gene-flow between these populations (Benedict et al. 2003; Oyler-McCance et al. 2005).

Sage-grouse exhibit two types of long-distance movements: 1) natal dispersal (movement a juvenile makes from its natal home range to its own adult home range) and 2) seasonal migrations. Minimal existing dispersal information indicates average natal dispersal distances for juvenile sage-grouse is approximately five miles, though movements of up to 20 miles have been recorded for adult females in Washington (Robb and Schroeder 2012). Sage-grouse in the JBLM YTC population are non-migratory with only localized movements between seasonal use areas, whereas some birds in the Mansfield Plateau/Moses Coulee population exhibit migratory patterns (Robb and Schroeder 2012).

The Washington Wildlife Habitat Connectivity Working Group (WHCWG) was formed to address the need to identify the most important areas for maintaining and enhancing habitat connectivity within the state. The partnership is among several state and federal agencies, tribes, and non-governmental organizations and is co-led by WDFW and WSDOT. The WHCWG has completed a statewide connectivity analysis (WHCWG 2010) and a Columbia Plateau connectivity analysis (WHCWG 2012), including a species-specific connectivity analysis for sage-grouse (Robb and Schroeder 2012). For sage-grouse, the Columbia Plateau analysis improved upon the statewide analysis by using telemetry and lek data, accounting for additional anthropogenic features, and improving the resolution.

The general WHCWG analyses identified the “Connected Backbone,” running north-south through the JBLM YTC, as the most important linkage zone in the Columbia Plateau Ecoregion. A second important corridor in the JBLM YTC area was identified as the “Lower Crab Creek Linkage Zone,” stretching east from JBLM YTC and facilitating east-west movement between the “Connected Backbone” and another north-south band in eastern Washington, the “Braided Scablands Swath” (WHCWG 2012).

Sage-grouse specific WHCWG analyses identified four Habitat Concentration Areas (HCA) within Washington. These include the JBLM YTC and Mansfield Plateau/Moses Coulee populations already mentioned and two reintroduced populations, one in the northern Crab Creek drainage in Lincoln County and one on the Yakama Reservation in Yakima County. Sage-grouse were translocated to the Yakama Reservation in 2006, but as of 2012 there were no confirmed observations of breeding activity (Robb and Schroeder 2012).

The WHCWG analyzed connectivity among the four HCAs by assigning resistance values to various landcovers and anthropogenic features along potential routes that sage-grouse may take if they attempted to travel from one HCA to another. The resistance values relied upon published literature and the professional judgment of biologists and expert reviewers. Assigned resistance values for landcover ranged from 0 (e.g., sagebrush-steppe) to 19 (forest). Resistance values for anthropogenic features ranged from 0 (e.g., 1,640 to 3,280-foot buffer of 230 kV transmission line) to 99 (housing with <10 acres/dwelling unit). Intermediate resistance values included local roads (2), wind turbines (9 for a 148-foot buffer, 4 for a 1,640-foot buffer, 1 for a 0.6 mile buffer), major highways (19 for centerline, 3 for a 1,640-foot buffer), and freeways (24 for centerline, 4 for a 1,640-foot buffer). Transmission lines were given resistance values comparable to wind turbines (7 for a single 230 kV line, 3 for a 1,640 foot buffer). For two adjacent 230 kV lines the resistance values were not doubled, but increased by approximately 25% (9 for a double line, 4 for 1,640-foot buffer, 1 for a 0.6 mile buffer; Robb and Schroeder 2012).

The WHCWG analysis identified the linkage between the JBLM YTC HCA and the Mansfield Plateau/Moses Coulee HCA as “fairly good” (see Figure 8). Much of the habitat along this corridor is shrub steppe that is protected within state-owned wildlife areas. Impediments to this linkage include the relative steepness of the terrain, and disturbance associated with Interstate 90 (I-90), several existing transmission lines, and wind energy development. Conditions for movement are best in the central portion of the linkage, but there are areas of concern at both ends. Near its northern end, the modeled corridor is constricted as it crosses the Columbia River near Rock Island Dam. Near the southern end, north of I-90 and the proposed Project, the linkage is constricted by wind energy development (Robb and Schroeder 2012).

The connectivity model is illustrated in Figure 8 and potential impacts of the proposed Project on sage-grouse connectivity are discussed in Section 7.2.3 Impacts Common to all Route Segments, Habitat Connectivity and Linkage.

## **6.0 AFFECTED ENVIRONMENT**

### **6.1 Project Area Description**

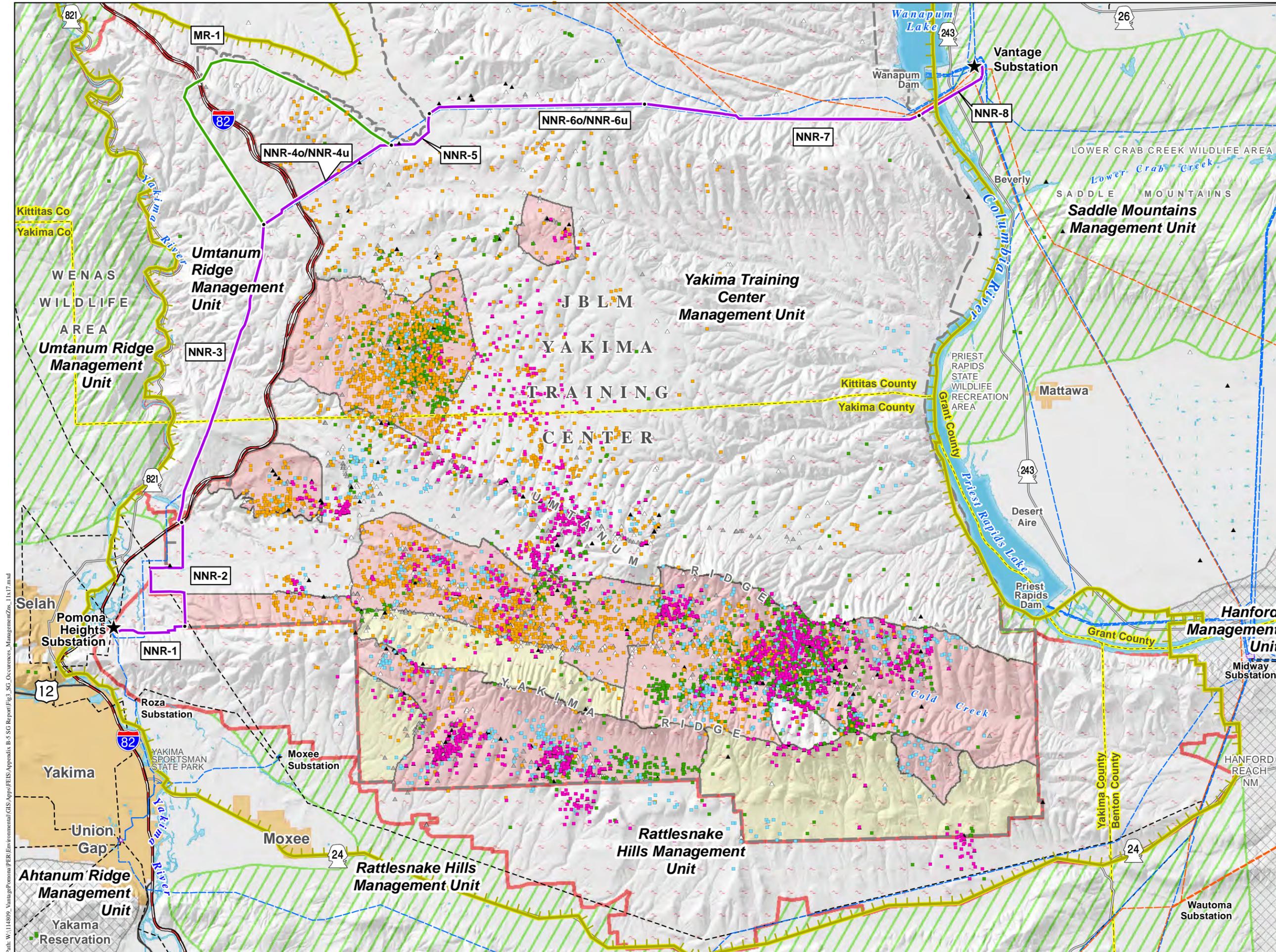
For the purposes of this sage-grouse analysis, the Project area is defined as an eight-mile-wide analysis area of the NNR and MR Subroute: a four-mile buffer of the route centerline. The Project area included in the DEIS for sage-grouse consisted of a two-mile-wide corridor: one mile from either side of route segment centerlines. For the SDEIS, the Project area was expanded to an eight-mile-

wide corridor based on input from JBLM YTC and USFWS. For description and analysis of individual route segments (Sections 6.5 and 7.2.4), a four-mile buffer of each route segment was used; please note that the buffers of each route segment overlap each other, so the sum of the route segment analysis areas is greater than the overall route analysis area for each alternative. The overall impacts are described for each alternative in Section 8.0 Comparison of Impacts by Alternative.

The proposed Project lies within the Columbia Plateau ecoregion, which covers most of central and eastern Washington, as well as limited parts of Oregon and Idaho (USEPA 2010). The Columbia Plateau is an arid sagebrush steppe and grassland that is surrounded by ecoregions that are typically moister, forested and mountainous (USEPA 2010). Approximately 15 million acres of steppe habitat existed in eastern Washington prior to Euro-American settlement (Daubenmire 1970; Stinson et al. 2004). Roughly half of the original steppe habitat in Washington has been lost to agriculture and human development with approximately 7.4 million acres remaining (Stinson et al. 2004). Washington greater sage-grouse populations declined as shrub-steppe habitat was lost and currently only about 8% of the historical range in Washington is occupied.

The majority of the proposed Project is within the JBLM YTC, the largest remaining contiguous block of intact shrub-steppe in the state of Washington (JBLM YTC 2002). The JBLM YTC sage-grouse population is one of two geographically distinct populations remaining in Washington and contains approximately 200 of the statewide estimated 1,200 sage-grouse (Robb and Schroeder 2012; Teske 2013). The proposed Project approximately follows the western and northern edges of the JBLM YTC sage-grouse population (see Figure 3).

**Figure 3  
Sage-Grouse  
Occurrence &  
Management Zones**



**Legend**

**Routes**

- New Northern Route (NNR) Alternative
- Manastash Ridge Subroute
- Route Segment Name
- Route Segment Node
- Project Substation

**Existing Transmission**

- 500kV
- 230kV
- 115kV
- Substation

**Sage-Grouse Occurrence Data**

- Sage-Grouse Priority Area for Conservation (PAC) (Draft 2013/01)

**Telemetry Data**

- 2012-2014
- 1999-2001
- 1989-1993
- Translocation Study

**Occurrence Data**

- Incidental Sighting 2011-2014
- Incidental Sighting 2001-2010
- Incidental Sighting 1969-2000

**WA Sage-Grouse Management Units**

- Regularly Occupied Habitat
- Occasionally Occupied Habitat
- Expansion Habitat

**YTC Sage-Grouse Protection Areas 2010**

- Primary
- Secondary

**Roads**

- Interstate Highway
- US Highway
- State Highway

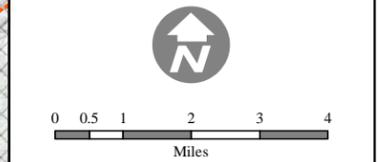
**Base Features**

- County Boundary
- Municipality
- JBLM Yakima Training Center



Due to the sensitive nature of the wildlife location data, lek location data is not shown.

Data are projected in UTM Zone 10N, NAD83



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## **6.2 Habitat**

With the exception of NNR-8, all of the route segments are within the JBLM YTC PAC (Figure 2) and cross the following MUs designated as Regularly Occupied Habitat: Rattlesnake Hills, Yakima Training Center, and Umtanum Ridge. The portion of NNR-8 that is east of the Columbia River is within the Saddle Mountains MU designated as Occasionally Occupied Habitat. The eight-mile-wide Project area also encompasses land within the Potholes (Expansion Habitat) MU and land not designated for sage-grouse management (Figure 3).

The proposed MR-1 Subroute and NNR route segments avoid passing through any of JBLM YTC's protection zones. A small stretch within NNR-2 passes immediately adjacent to the edge of a primary protection zone. Most of the western two-thirds of the NNR route are within four miles of various primary protection zones located east and south of the NNR route. There are no secondary protection zones within four miles of the NNR route (Figure 3).

Elevations along the proposed route range from approximately 500 to 3,350 feet above mean sea level (amsl). The Project area is dominated by shrub-steppe vegetation, with the most prevalent vegetation cover types including: 1) sagebrush steppe with a perennial grass understory and 2) annual grassland/noxious weeds. Other common cover types include: 1) sagebrush steppe with an annual grass understory, 2) perennial grassland, 3) forb-dominated communities and 4) agricultural, developed and disturbed areas. Other shrublands and riparian areas are present, but make up a relatively small part of the eight-mile-wide Project area.

Generally, sagebrush steppe with a perennial grass understory has the best potential to provide year-round suitable habitat for sage-grouse. Other shrubland and grassland habitat types have some potential to provide suitable or marginal habitat during one or more seasons depending on surrounding habitat and site-specific characteristics. Suitability of habitat for sage-grouse depends on several site-specific factors, including: 1) sagebrush cover, 2) sagebrush height and 3) cover, height, and species composition of forbs and perennial grasses (Stiver et al. 2010).

A sage-grouse habitat assessment in the NNR Alternative and MR Subroute ROW was conducted in 2013 using a combination of remote sensing data and field data collected during vegetation surveys and sage-grouse walking transect surveys. Field surveys were conducted in the ROW for a preliminary NNR Alternative; however following the surveys, routing adjustments were made due to new requirements for separation distance from existing transmission lines and concerns about sage-grouse. The locations of the final NNR Alternative and MR Subroute were finalized in November 2013. Due to the route adjustments, field surveys were not conducted along these new locations. Detailed methods and results are included in SDEIS Appendix B-2 (Sage-Grouse Habitat Assessment, New Northern Route and Manastash Ridge Subroute). Habitat determinations were made largely by sagebrush cover, as determined using aerial imagery, and by general understory character (e.g., areas dominated by annual grasses were not considered suitable breeding or summer habitat). The proposed ROW passes through a variety of steppe vegetation, ranging from relatively intact sagebrush with a perennial grass understory, to annual grasslands and disturbed ground. Consequently the seasonal habitat suitability is somewhat patchy and differs among the NNR and MR route segments. Generally speaking, the central and eastern portions of the proposed NNR ROW contain the most suitable habitat, while the relatively disturbed, weedy southern portions contain less suitable habitat. The highest concentration of suitable habitat occurs near Badger Pocket in Route Segments NNR-4, NNR-5, and the western end of NNR-6, with another concentration of suitable habitat in NNR-7. Suitability often differed by seasonality. For example, the relatively high-elevation portion of the ROW (>3,000 feet amsl) traversing the north-facing slopes of the Saddle Mountains, where high sagebrush cover was confined to swales and drainages where blowing snow gets deposited, crosses suitable summer

(late-brood rearing) and breeding habitat, but does not have suitable winter habitat, because the sagebrush is confined to pockets that likely have the deepest snow cover. Much of the western portion of the NNR ROW is dominated by cheatgrass, especially on south-facing slopes. Areas with adequate sagebrush cover and a cheatgrass understory may provide suitable winter habitat, when sagebrush is the primary food resource, but are not suitable habitat during the breeding and summer seasons when forb and perennial grass cover is important (Stiver et al. 2010). Overall 23% of the NNR ROW was classified as suitable breeding habitat and 39% as marginal breeding habitat. For winter habitat, 44% was classified as suitable and 24% as marginal. During the summer (late brood-rearing) season, 35% provides suitable habitat and 32% provides marginal habitat. Specific habitat delineations are described for each route segment below and summarized in SDEIS Appendix B-2 - Habitat Assessment.

While a detailed, fine-scale habitat assessment was conducted within the NNR ROW, it was not feasible to use the same fine-scale methodology for the entire eight-mile-wide Project area. To estimate habitat suitability within the Project area, land cover data was used. A composite of United States Geological Survey Gap Analysis Program (USGS GAP) data, JBLM YTC vegetation data, and vegetation data collected during POWER Engineers' field surveys was used to delineate 12 categories of land cover type. Each of these was in turn assigned a sage-grouse habitat suitability value (suitable, marginal, or unsuitable). The assigned values were as follows: 1) suitable habitat includes "sagebrush/perennial grassland", 2) marginal habitat includes "sagebrush/annual grassland", "riparian", "intermittent stream", and "bitterbrush/perennial grassland" and 3) unsuitable habitat includes "forb", "perennial grassland", "rabbitbrush/annual grassland", "annual grassland and noxious weeds", "basalt cliffs/rock", "tree", and "other" (includes agriculture, developed/disturbed areas, and open water). Overall, approximately 61% of the eight-mile-wide Project area was classified as suitable habitat, 2% as marginal, and 37% as unsuitable. It should be noted that this is only a coarse-scale approximation of true habitat suitability for sage-grouse, which is ultimately dependent on the condition of the vegetation community. In addition to the appropriate species composition within the vegetation community, an assessment of habitat conditions includes structural components such as canopy cover and height that provide additional information on the quality and habitat suitability for sage-grouse. For example, within the habitat classified as "sagebrush/perennial grassland" (and therefore considered as suitable sage-grouse habitat) some areas are likely to have insufficient sagebrush cover to provide truly suitable habitat.

### **6.3 Existing Infrastructure and Disturbances**

Within the Project area, sagebrush-steppe habitat has been fragmented by the invasion of non-native plants, roads, residential development, livestock grazing, agricultural land use, existing transmission lines and altered fire-regimes. The proposed NNR Alternative closely parallels the existing Pacific Power Pomona-Wanapum 230 kV transmission line that primarily uses H-frame poles similar to the ones identified for the proposed Project. At the eastern end of the Project area (NNR-7 and NNR-8), one additional 230 kV transmission line (Puget Sound Energy Wanapum-Wind Ridge) and two 500 kV lines (BPA Schultz-Wautoma and BPA Schultz-Vantage) exists within one mile of the proposed NNR Alternative. Other prominent infrastructure and disturbance within the Project area includes urban and suburban development, JBLM YTC facilities, bivouac areas and training activities, road networks (I-82, state and county highways, all-weather gravel access roads for military training, and numerous light-duty dirt roads), agricultural areas, communication towers, canals, and fire breaks. Generally speaking, infrastructure and disturbance is heaviest at the southwestern end of the NNR Alternative Project area (NNR-1 and NNR-2) and lightest along the north-central portion, near Route Segment NNR-6. Locations of existing infrastructure and disturbance are discussed in Section 6.5 (Route Segment Considerations).

Wildfires have occurred within and near the eight-mile-wide Project area, the majority of which were concentrated within the JBLM YTC boundary. Due to the type and intensity of military training that occurs at the JBLM YTC, the incidence and risk of fire is higher compared with adjacent lands and naturally occurring fire cycles. The incidence of fire ignition and spread at the JBLM YTC has been declining since 1996 due to improvements to their fire management policy, increased support and maintenance of firebreaks (JBLM YTC 2002).

Livestock grazing occurs outside of JBLM YTC on both public and private lands. In addition to grazing on private land, grazing leases are authorized on BLM land and WDNR state trust land. Livestock grazing, which decreases cover of native forbs and perennial bunchgrasses, ended on JBLM YTC land in 1995 (Livingston 1998). Spring and summer habitat suitability for sage-grouse depends on sufficient cover of forbs and bunchgrasses.

#### **6.4 Sage-Grouse Population Range Estimates and Leks**

Based on location data provided by JBLM YTC, including telemetry data and incidental observations, it is apparent that sage-grouse use within the eight-mile-wide Project area occasionally occurs but is rare relative to the core area of sage-grouse use in the center of JBLM YTC, particularly in recent years (Figure 3). To generate a clearer picture of relative density of use by the JBLM YTC sage-grouse population, a fixed kernel density analysis was conducted using telemetry data. Fixed kernel density estimates were calculated in Geospatial Modeling Environment (GME Version 0.7.2., <http://www.spatialecology.com>, accessed 12 Feb 2014) at a scale of 100 x 100-m pixels using the least squares cross validation (lscv) bandwidth estimator. The kernel density method is commonly used to compute probabilistic estimates of utilization distribution (UD) within individual animal home ranges, using random location data consisting of discrete points (Fuller et al. 2005). The location data is usually collected using radio or satellite telemetry devices attached to animals to provide random, unbiased locations. While most often used to estimate distribution of use for individuals, the method has also been used to estimate UD for populations (Coates et al. 2013). The output of the UD analysis is a continuous probability surface. Among kernel density home range analysis studies, a 95% isopleth is commonly derived from a UD to represent the home range, and a core area is often represented by 80% or 50% isopleths. To yield easily interpretable metrics, 95% and 80% isopleths were generated in our analysis. Areas within the isopleths represent probabilities of utilization. The 95% isopleth encompasses 95% of the predicted distribution of all grouse habitat use for the JBLM YTC population; for the lay reader, this concept can be roughly approximated the following way: on an “average” day, 95% of the grouse would be expected to occur within the 95% isopleth, or alternatively the “average” grouse spends 95% of its time within the 95% isopleth. For the purposes of analysis, this will represent the “population range”. Likewise, 80% of the sage-grouse usage can be expected to occur within the 80% isopleth, i.e. the “core population range”. The estimated population range and core population range facilitate comparison of relative densities of sage-grouse use within and near each NNR segment and MR Subroute and aid in predicting the level of impact the proposed Project would have on the overall JBLM YTC sage-grouse population.

Available location data includes three telemetry studies from sage-grouse captured on JBLM YTC. These studies range from 25 years old to present, with specific years of study including 1989-1993, 1999-2001, and 2012-2014. Other available location data includes a telemetry study from sage-grouse translocated to JBLM YTC from Oregon and incidental observations collected from 1969 through 2012. All of these data are presented in Figure 3 to show documented sage-grouse use in and around the eight-mile-wide Project area. Data from translocated birds was not analyzed as it is unlikely that newly transplanted birds would provide an accurate picture of use by the local population. Incidental observations were not analyzed because the lack of standardized protocol and opportunistic nature of those observations would lead to biased results that would have as much or more to do with density of

use by human observers as density of use by sage-grouse. Sage-grouse experts from BLM, JBLM YTC and USFWS determined that data from the three telemetry studies of locally captured sage-grouse would be retained and use for the kernel analysis.

In each study, sage-grouse were captured at a broad array of lekking areas throughout the population area and are assumed to provide a spatially representative sample of the overall population (Cadwell et al. 1998; Livingston and Nyland 2002; SEE 2013). Migratory populations of sage-grouse utilize spatially discrete seasonal areas, defined by Stiver et al. (2012) as Breeding (March through June), Summer (late brood-rearing; July through September), and Winter (October through February). Though the JBLM YTC population of sage-grouse is known to be non-migratory, the possibility of seasonal differences in utilization was examined. Data was subsampled to include one randomly selected location from each telemetered bird during each of the three seasons. Data was subsampled to avoid pseudoreplication that would occur if numerous points were used for each animal when the question of interest was utilization by the entire population. Pseudoreplication would be expected to result in a model that overfits the data, i.e., the results would closely fit the sampled data, but would poorly fit the actual population. The biased probabilities would yield a convoluted UD that tightly fits the observed locations and underestimates the population range size. In fact, a comparison of the UDs from the subsample versus the original data confirmed the predicted difference in UD size and shape; the convoluted UD from the original data underestimated the population range size by 22% relative to the subsample. The subsamples included 346 location points from 1989-1993, 111 points from 1999-2001, and 82 points from 2012-2014. A comparison of UDs generated separately for each season confirmed that seasonal differences do not occur at the population scale, so the three seasons were lumped for subsequent analysis.

A comparison of UDs generated separately for each of the three study periods (1989-1993, 1999-2001, and 2012-2014) did reveal a substantial difference among study periods. Telemetry data from the 2012-2014 study was selected for the final analysis because impact of the proposed Project on sage-grouse can be most reliably assessed using the current distribution of sage-grouse (Figure 4 Sage-Grouse Estimated Population Range and Core Range, 2012-2014). A time series, displaying UDs from each study period, is displayed in Figure 5 (Time Series of Sage-Grouse Estimate Population Ranges, 1989-2014).

Based on the kernel density model, the current population range (95% isopleth) does not overlap the proposed NNR ROW (see Figure 4). This does not indicate that absolutely no sage-grouse use ever occurs in the proposed NNR ROW, but that use would be expected to be very rare relative to the area within the estimated population range; approximately 5% of all sage grouse use is expected to occur outside of the population range. Estimates beyond the 95% range are not typically attempted and would not be reliable (Fuller et al. 2005). During ground transect surveys conducted along the proposed NNR in May and July of 2013, no sage-grouse were observed; however, sage-grouse scat was observed in six locations adjacent to NNR-6, one location on NNR-5 and one location on NNR-4. These results indicate that some sage-grouse use of the ROW does occur, but that use is rare (i.e., less than 5%). The estimated 95% isopleth population range does overlap the eight-mile-wide Project area of the NNR and MR routes, but the core population range (80% isopleth) does not. Acreages of population range within the eight-mile-wide Project area are shown in Table 1 and described for each route segment (Section 6.5) by alternative (Section 8.0).

A time-series of the three study periods reveals a southeastward shift in the JBLM YTC sage-grouse population range and core population range since 1989. It is beyond the scope of this report to speculate at length on possible causes of the shift, but it should be noted that the existing 230 kV Pomona-Wanapum transmission line was built in the early 1970s, more than 15 years before the earliest available sage-grouse location data. An examination of fire history at JBLM YTC (see Figure

6) does not suggest a relationship between fire history and the shift in sage-grouse distribution. The formerly occupied area suffered minimal burns relative to areas within the current core population range. The shift in sage-grouse distribution may have been influenced by JBLM YTC training maneuvers. Most of the sage-grouse range shift occurred during the 1993 to 1999 period in JBLM YTC Training Areas TA-15 and TA-16. According to JBLM YTC (personal communication 2014), there was a period of heavy training maneuvers during the mid-1990s, with particularly high activity levels in TA-16. It is also possible that the population shift was not a response to any change in habitat or disturbance levels, but merely a response to population declines, such that if the TA-15 and TA-16 areas held inherently lower quality habitat to begin with relative to the core area, they simply may have been the first areas to be abandoned as the population declined from over 300 birds during the 1989-1993 period to approximately 200 birds during the most recent period.

The population range during the most recent period (2012-2014) provides the most useful information for predicting Project impacts on the current grouse population. Nevertheless, the historic population ranges might be indicative of areas likely to be reoccupied in the future if the JBLM YTC sage-grouse population recovers and expands into currently unoccupied areas. Future occupancy is speculative in nature and would depend on a number of factors including wildfire occurrence, military training activities and future habitat condition.

Active, inactive, and historical leks are shown in Table 2 and discussed in Section 6.5 for each NNR route segment. Leaks are classified by JBLM YTC as: 1) active - a lek with at least two male grouse observed displaying on at least two different days during the previous year or during the last year checked; 2) inactive - has been active sometime during the previous 10 years, but was not active during the last year checked; or 3) historical - a formerly active lek site in which no activity has been observed for the previous 10 years (JBLM YTC 2014; SEE 2013).

Lek complexes are defined as active leks within 1.8 miles of each other and have been used to estimate the JBLM YTC sage-grouse population size and trends (SEE 2013) (Schroeder et al. 2000). Fourteen lek complexes are known to occur within JBLM YTC, containing approximately 19 leks. Of the fourteen lek complexes, two have not been attended by male sage-grouse since the early 1990s. Lek surveys are conducted on JBLM YTC on a yearly basis with priority given to areas with prior sage-grouse sightings during the breeding period and active, inactive and historic lek locations. No new leks were documented on JBLM YTC during the 2013 lek surveys and it is unlikely that an undocumented major lek exists on JBLM YTC in searchable areas. Additional leks may be present on JBLM YTC in unsearchable areas (i.e., Central Impact Area) and on adjacent private lands (SEE 2013).

In 2013, seven active leks, from seven lek complexes were documented within the JBLM YTC sage-grouse population with a total count of 85 lekking males. Two of the seven active leks are within four miles of the proposed NNR (Table 2). Both of these leks were greater than three miles from the proposed NNR route and both are relatively small leks, accounting for a total of seven of the 85 lekking males on JBLM YTC (8%).

The first active lek (hereafter lek #1) is located approximately 3.4 miles from Route Segment NNR-3. Lek #1 was considered an active lek starting in 2011. In 2013, four males were observed attending lek #1 which was down from 2011 and 2012 attendance numbers (seven and six male sage-grouse, respectively). In 2011 a secondary (satellite) lek was used, located approximately 2,000 feet away from Lek #1. Use was not observed at the secondary lek in 2013.

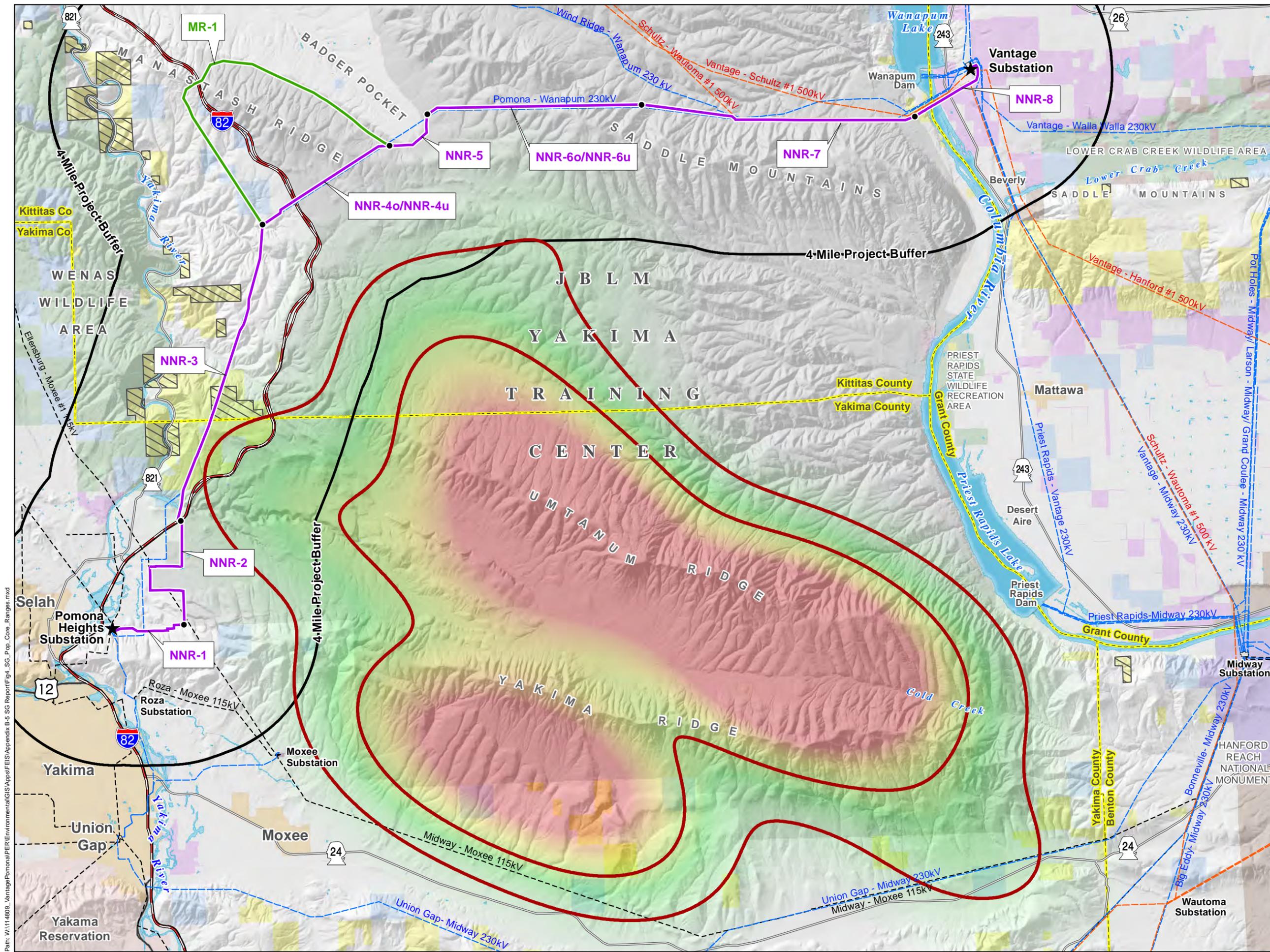
The second active lek (hereafter lek #2) occurs approximately 3.5 miles from NNR-6. Lek #2 was discovered in 2007 and was considered an active lek beginning in 2008. Lek #2 had three males

attending in 2013, with an average of 2 males attending during the past 6 years (SEE 2013). Table 3 shows lek counts from 1989 to 2013 for each lek complex within the entire JBLM YTC sage-grouse population, including leks greater than four miles from the proposed NNR segments.

Historical leks are known to have occurred within four miles of all route segments except Route Segment NNR-1 (see Table 2).

In 2013, the sage-grouse population at JBLM YTC was estimated to be at 221 birds, the highest population estimate since the 2006 estimate of 229 sage-grouse (SEE 2013; Table 3; Figure 7). The sage-grouse population at JBLM YTC is above the management goal of 200 for the second time in the last seven years (SEE 2013; JBLM YTC 2002). The 24-year average population estimate for JBLM YTC is 273 sage-grouse, although there has been an overall annual decline in the population. From 2007 through 2010 and again in 2012, population estimates were below 200. This may have been a result of habitat loss from fires (2006-2009); however, since 2009, little existing sage-grouse habitat has been lost to fire and areas that burned from 2006-2009 have experienced grass and shrub recovery due to restoration efforts (SEE 2013).

**Figure 4**  
**Sage-Grouse**  
**Population Range**  
**and Core Range**  
**(2012-2014)**



**Legend**

**Routes**

- New Northern Route (NNR) Alternative
- Manastash Ridge Subroute
- Route Segment Node
- Project Substation

**Sage Grouse**

- Grouse Distribution Isoleth

**Kernel Density - Relative Probability of Use by Grouse**

- High Relative Probability
- Low Relative Probability

**Existing Transmission**

- 500kV
- 230kV
- 115kV
- Substation

**Jurisdiction**

- Private Individual or Company
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Washington Department of Fish and Wildlife
- State of Washington
- JBLM Yakima Training Center
- U.S. Fish and Wildlife Service
- Department of Energy

**Roads**

- Interstate Highway
- US Highway
- State Highway

**Special Management Areas**

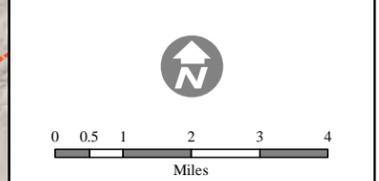
- BLM Area of Critical Environmental Concern (ACEC)

**Base Features**

- County Boundary
- Municipality



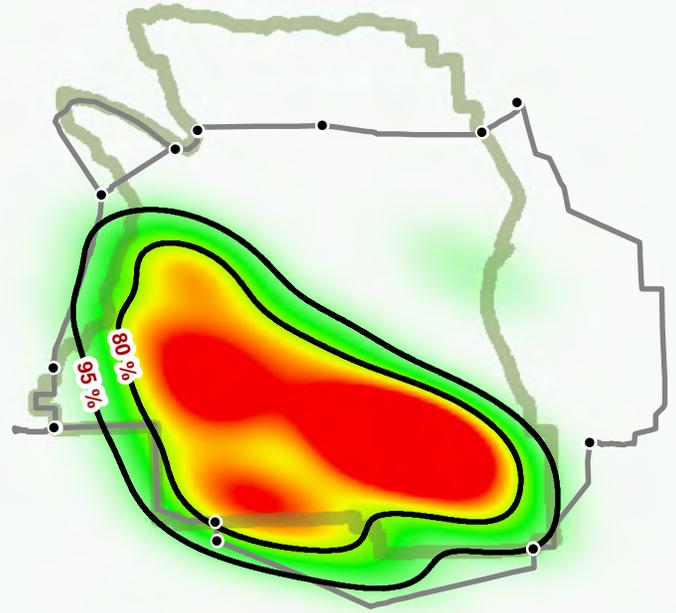
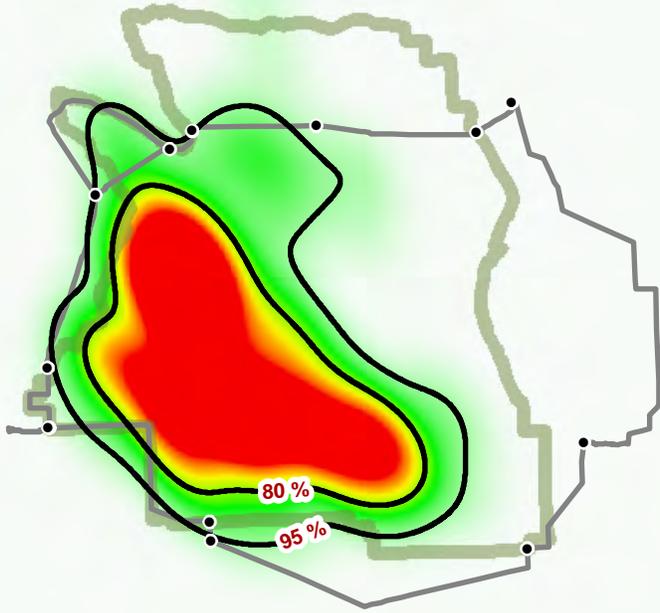
Data are projected in UTM Zone 10N, NAD83



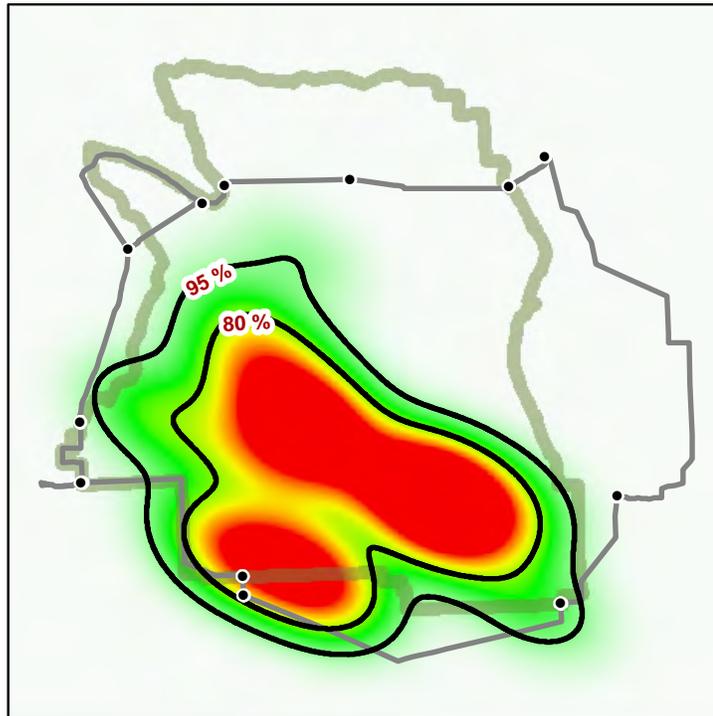
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1989 - 1993

1999 - 2001



2012 - 2014

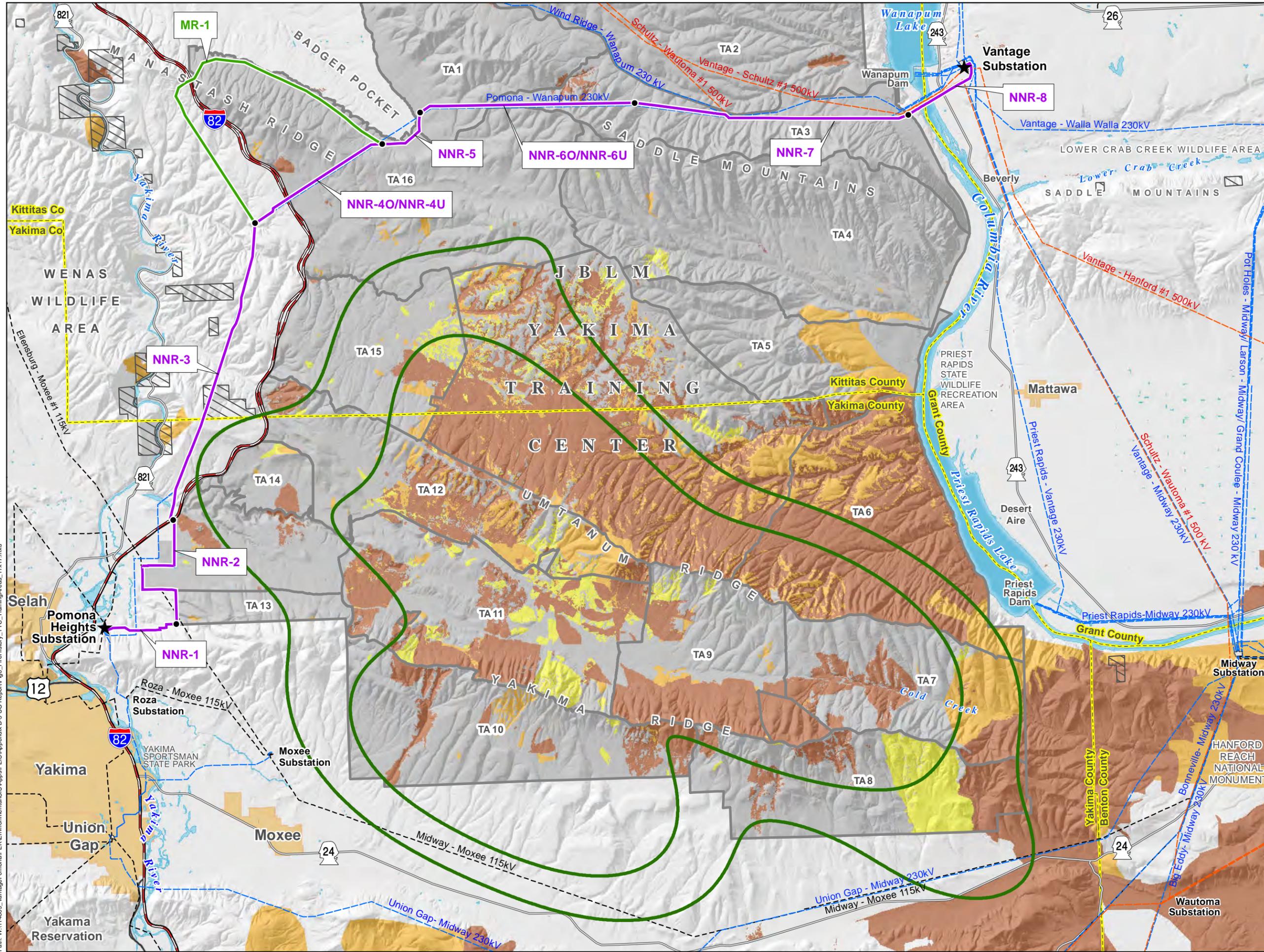


Vantage - Pomona Heights 230 kV  
Transmission Line Project

**Figure 5**  
**Time series of**  
**Sage-Grouse**  
**Population Ranges**

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**Figure 6**  
**Fire History and YTC Training Areas**



**Legend**

**Routes**

- New Northern Route (NNR) Alternative
- Manastash Ridge Subroute
- Route Segment Node
- Project Substation

**Sage-Grouse**

- 2012 - 2014 Sage-grouse Distribution

**Fires**

- 2000 - 2013
- 1990 - 1999
- 1987 - 1989

**Existing Transmission**

- 500 kV Transmission Line
- 230 kV Transmission Line
- 115 kV Transmission Line
- Substation

**Jurisdiction**

- JBLM Yakima Training Center: Training Area
- JBLM Yakima Training Center

**Roads**

- Interstate Highway
- US Highway
- State Highway

**Special Management Areas**

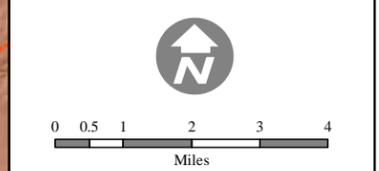
- BLM Area of Critical Environmental Concern (ACEC)

**Base Features**

- County Boundary
- Municipality

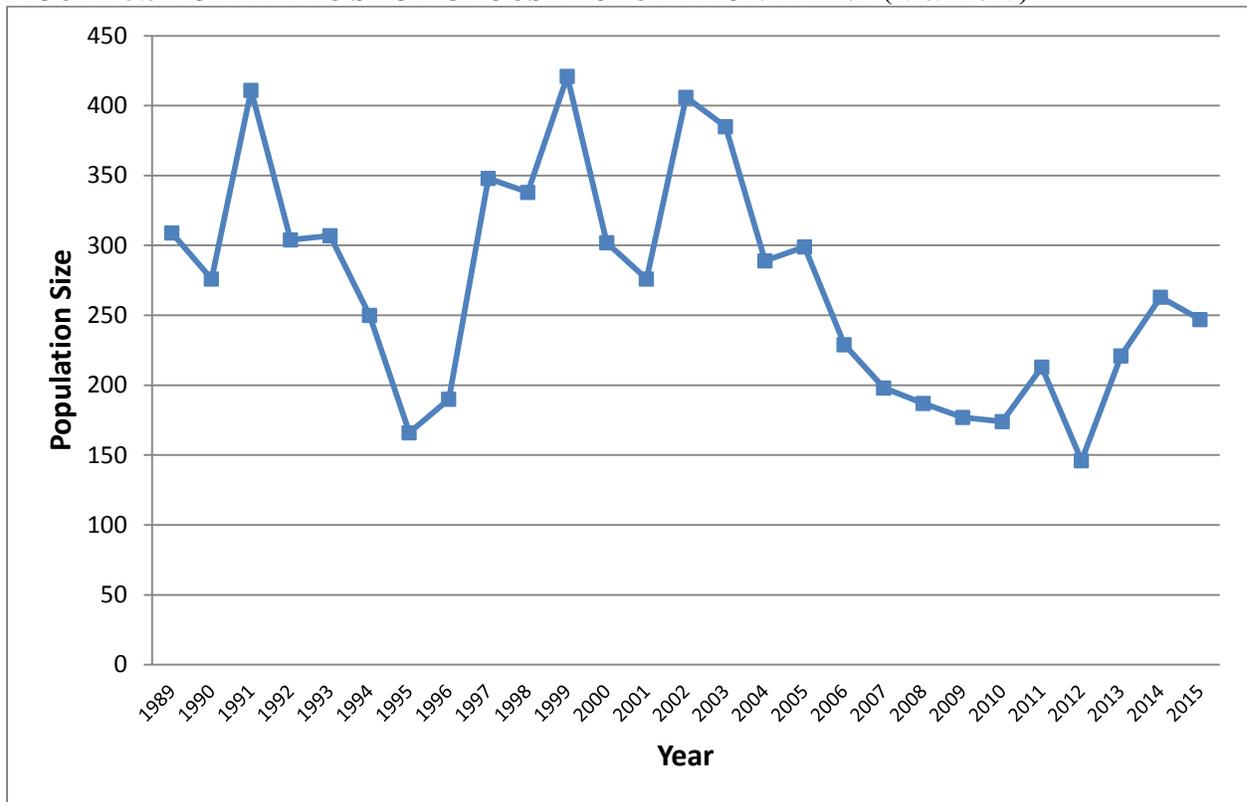


Data are projected in UTM Zone 10N, NAD83



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**FIGURE 3.3-7 JBLM YTC SAGE-GROUSE POPULATION TREND (1989-2015)**



**TABLE 1 ACRES OF SAGE-GROUSE ESTIMATED POPULATION RANGE WITHIN FOUR MILES OF THE PROPOSED NNR SEGMENTS**

ROUTE SEGMENT	POPULATION RANGE <sup>1</sup>				CORE POPULATION RANGE <sup>2</sup>			
	ACRES WITHIN ROW	% OF ROW	ACRES WITHIN 4-MILE BUFFER	% OF 4-MILE BUFFER	ACRES WITHIN ROW	% OF ROW	ACRES WITHIN 4-MILE BUFFER	% OF 4-MILE BUFFER
NNR-1	0	0%	360	10%	0	0%	0	0%
NNR-2	0	0%	850	22%	0	0%	0	0%
NNR-3	0	0%	1,184	19%	0	0%	0	0%
NNR-4o/NNR-4u	0	0%	136	3%	0	0%	0	0%
NNR-5	0	0%	103	3%	0	0%	0	0%
NNR-6o/NNR-6u	0	0%	1	0%	0	0%	0	0%
NNR-7	0	0%	0	0%	0	0%	0	0%
NNR-8	0	0%	0	0%	0	0%	0	0%
MR-1	0	0%	98	1%	0	0%	0	0%

Notes: <sup>1</sup> Population Range is based on 95% isopleth of fixed kernel analysis from 82 telemetry locations of 28 grouse in 2012-2014. <sup>2</sup> Core Population Range is based on 80% isopleth. The Isopleths define the area predicted to contain 95% and 80% of sage-grouse use.

**TABLE 2 NUMBER OF GREATER SAGE-GROUSE LEKS WITHIN FOUR MILES OF THE PROPOSED NNR ROUTE SEGMENTS**

ROUTE SEGMENT	ACTIVE OR INACTIVE LEKS (NUMBER) <sup>1</sup>				HISTORIC LEKS (NUMBER) <sup>11</sup>			
	WITHIN 0-0.6 MILE	WITHIN 0-2 MILES	WITHIN 0-3 MILES	WITHIN 0-4 MILES	WITHIN 0-0.6 MILE	WITHIN 0-2 MILES	WITHIN 0-3 MILES	WITHIN 0-4 MILES
NNR-1	0	0	0	0	0	0	0	0
NNR-2	0	0	0	1 (lek #1)	0	0	0	4
NNR-3	0	0	0	1 (lek #1)	0	0	3	9
NNR-4o/NNR-4u	0	0	0	0	3	4	5	6
NNR-5	0	0	0	0	1	3	6	6
NNR-6o/NNR-6u	0	0	0	1 (lek #2)	0	2	3	6
NNR-7	0	0	0	0	0	1	1	1
NNR-8	0	0	0	0	0	0	1	1
MR-1	0	0	0	0	1	3	5	6

Notes: <sup>1</sup> Leks are classified by JBLM YTC (2014; SEE 2013) as: Active - a lek with at least two male grouse observed displaying on at least two different days during the previous year or during the last year checked; Inactive - has been active sometime during the previous 10 years, but was not active during the last year checked; and Historical - a formerly active lek site in which no activity has been observed for the previous 10 years (JBLM YTC 2014; SEE 2013). <sup>2</sup>Includes documented sage-grouse species observations within the eight-mile-wide corridor (JBLM YTC, and PHS data).

**TABLE 3 MALE SAGE-GROUSE COUNTED AT LEK COMPLEXES AND JBLM YTC POPULATION ESTIMATES FROM 1989-2013**

YEAR	LEK COMPLEX														POPULATION ESTIMATE
	#1 <sup>1</sup>	#2 <sup>1</sup>	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	
1989	6						53	22	27	7	4				309
1990	7						50	17	25	7	0				276
1991	14						62	33	44	5	0				411
1992	19						55	15	28	0					304
1993	22						47	18	31	0					307
1994	13					3	41	15	24						250
1995	8					0	33	12	11						166
1996	7			17		16	19	8	6						190
1997	5			18		32	34	32	13						348
1998	0		5	22	14	18	42	25	4						338
1999	0		5	28	21	11	41	39	16						419
2000			4	23	21	4	32	22	10						302
2001			4	15	20	9	31	18	9						275
2002			2	19	17	20	31	28	15			5	19		406
2003			0	14	20	25	30	17	23			7	12		385
2004			0	8	18	11	28	19	18			2	7		289
2005			0	7	20	12	33	17	17			0	9		299
2006			0	5	17	13	24	7	16			0	6		229
2007		1	0	3	15	16	22	6	8			0	4	1	198
2008		2	0	1	9	15	26	5	10			1	4	1	187
2009		2	0	0	7	14	30	5	4			0	6	0	177
2010		2	0	0	5	16	25	11	4			0	4	0	174
2011	7	3	0	0	9	22	24	8	9			0	0	0	213
2012	6	0	0	0	5	17	10	4	14			0	0	0	146
2013	4	3	0	0	3	22	24	5	24			0	0	0	221

Notes: Data from SEE 2013.

<sup>1</sup>Lek located within four miles of the proposed NNR or MR.

## 6.5 Route Segment Considerations

### 6.5.1 Route Segment NNR-1

The landscape within the eight-mile-wide NNR-1 analysis area has experienced extensive alteration from rural and urban development and infrastructure including: the expansion of the cities of Yakima and Selah; road networks (i.e., rural, city, county, highway, I-82); canals; agriculture; JBLM YTC facilities and training activities; and existing transmission lines (e.g., 115 kV and 230 kV transmission lines). Route Segment NNR-1 is 2.4 miles long and follows Sage Trail Road for the majority of its length, following an existing distribution line and traversing through a rural residential area.

The entire route segment ROW is within the Rattlesnake Hills MU (Regularly Occupied Habitat). In addition to land not designated for sage-grouse management, the following additional MUs are present within the eight-mile-wide Project area of Route Segment NNR-1: the JBLM YTC (Regularly Occupied Habitat), Rattlesnake Hills (Occasionally Occupied Habitat) and Umtanum Ridge (Regularly Occupied Habitat and Occasionally Occupied Habitat) MUs (Table 4). The Project area also encompasses area set aside by JBLM YTC as a primary protection zone for sage-grouse.

The dominant land cover types within the analysis area of Route Segment NNR-1 are agriculture/developed/disturbed/open water areas (19,707 acres), annual grassland/noxious weeds (14,269 acres), and sagebrush with a perennial grass understory (6,904 acres). Because this route segment passes through a suburban residential area with heavily fragmented shrub-steppe habitat and a prevalence of disturbed ground and cheatgrass, the entire route segment ROW (100%) was classified as unsuitable sage-grouse habitat in all seasons (SDEIS Appendix B-2 Habitat Assessment). The eight-mile-wide analysis area for NNR-1 contains 6,904 acres of suitable sage-grouse habitat (16% of the analysis area), 1,497 acres of marginal habitat (3%), and 35,172 acres of unsuitable habitat (81%; Table 5).

The estimated sage-grouse population range does not overlap the NNR-1 ROW. The route segment analysis area overlaps approximately 1% (3,871 acres) of the total JBLM YTC 95% population range. The core population range does not overlap the Project area (Figure 4). NNR-1 was not surveyed during ground transect sage-grouse surveys in 2013 due to lack of suitable habitat within the ROW. No active, inactive or historical leks are known to occur within four miles of this proposed route segment (Table 2). Sage-grouse may occur in the area on an infrequent basis, but lack of habitat, estimated population range and lek data indicate that sage-grouse are unlikely to lek near Route Segment NNR-1.

**TABLE 4 SUMMARY OF DISTURBANCE TO DESIGNATED GREATER SAGE-GROUSE MANAGEMENT UNITS (ACRES) AND THE PERCENT (%) OF TOTAL DISTURBANCE THAT WOULD OCCUR WITHIN EACH MANAGEMENT UNIT**

ROUTE SEGMENT	TOTAL ACRES OF DISTURBANCE	WASHINGTON GREATER SAGE-GROUSE MANAGEMENT UNITS - ACRES DISTURBED, TOTAL ACRES PRESENT WITHIN ANALYSIS AREA, PERCENT (%) OF HABITAT DISTURBED WITHIN ANALYSIS AREA BY ROUTE SEGMENT <sup>1</sup>									LAND NOT DESIGNATED AS A SAGE-GROUSE MANAGEMENT UNIT (Acres Disturbed)
		REGULARLY OCCUPIED HABITAT (416,031 ACRES)			OCCASIONALLY OCCUPIED HABITAT (558,301 ACRES)			EXPANSION HABITAT (411,345 ACRES)			
		ACRES DISTURBED	ACRES PRESENT WITHIN ANALYSIS AREA <sup>2</sup>	PERCENT DISTURBED WITHIN ANALYSIS AREA	ACRES DISTURBED	ACRES PRESENT WITHIN ANALYSIS AREA	PERCENT DISTURBED WITHIN ANALYSIS AREA	ACRES DISTURBED	ACRES PRESENT WITHIN ANALYSIS AREA	PERCENT DISTURBED WITHIN ANALYSIS AREA	
NNR-1	13.1	13.1	20,171	<1%		2,410					
NNR-2	24.2	22.5	29,202	<1%	0.5	7,563	<1%				1.2
NNR-3	52.4	52.0	60,750	<1%	0.4	13,586					
NNR-4o*	23.0	23.0	52,361	<1%		1,608					
NNR-4u*	51.3	51.3	52,361	<1%		1,608					
NNR-5	9.0	9.0	39,630	<1%							
NNR-6o*	30.6	30.6	64,143	<1%							
NNR-6u*	64.3	64.3	64,143	<1%							
NNR-7	38.1	38.1	63,601	<1%		10,569					
NNR-8	13.5	2.7	22,590	<1%	10.8	19,358	<1%		804		
MR-1	79.7	79.7	63,352	<1%		8,112					

<sup>1</sup>No designated Connectivity Habitat is present within the analysis area. <sup>2</sup>The Project area is defined as an eight-mile-wide corridor; four miles from either side of route segment centerlines. \*o = overhead design option; u = underground design option. Numbers are rounded and may not sum exactly.

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**TABLE 5 SUMMARY OF DISTURBANCE TO SAGE-GROUSE HABITAT BY ROUTE SEGMENT**

ROUTE SEGMENT	SUITABLE HABITAT		MARGINAL HABITAT		UNSUITABLE HABITAT	
	TOTAL ACRES DISTURBED <sup>1</sup>	ACRES PRESENT WITHIN ANALYSIS AREA <sup>2</sup>	TOTAL ACRES DISTURBED <sup>1</sup>	ACRES PRESENT WITHIN ANALYSIS AREA <sup>2</sup>	TOTAL ACRES DISTURBED <sup>1</sup>	ACRES PRESENT WITHIN ANALYSIS AREA <sup>2</sup>
NNR-1	0	6,904	0	1,497	13.1	35,172
NNR-2	0	11,158	7.8	1,511	16.4	38,446
NNR-3	21.1	42,085	15.3	2,262	16.0	35,238
NNR-4o*	15.0	35,433	7.0	926	1.0	18,854
NNR-4u*	33.8	35,433	13.8	926	3.7	18,854
NNR-5	8.6	28,459	0.4	76	0	12,178
NNR-6o*	9.5	53,145	8.4	197	12.7	11,780
NNR-6u*	20.5	53,145	16.6	197	27.2	11,780
NNR-7	25.3	63,349	12.8	316	0	10,502
NNR-8	6.0	28,603	2.0	1,465	5.5	15,176
MR-1	50.0	44,010	13.3	4,019	16.4	35,410

<sup>1</sup>Acres disturbed are calculated using the disturbance model, with habitat suitability extrapolated from the ROW habitat assessment (SDEIS Appendix B-2 Habitat Assessment).

<sup>2</sup>Habitat Suitability within the eight-mile-wide Project area is derived from land cover types. Land cover types are a composite of GAP vegetation data, JBLM YTC vegetation data, and POWER field survey vegetation data. Suitable habitat includes sagebrush/perennial grassland. Marginal habitat includes sagebrush/annual grassland, riparian, intermittent stream, and bitterbrush/perennial grassland. Unsuitable habitat includes forb, perennial grassland, rabbitbrush/annual grassland, annual grassland and noxious weeds, basalt cliffs/rock, tree, and other (includes agriculture, developed/residential areas and open water).

\*o = overhead design option; u = underground design option.

### **6.5.2 Route Segment NNR-2**

Existing disturbance within the eight-mile-wide NNR-2 analysis area is largely from urban and rural development including: the expansion of the cities of Yakima and Selah; new suburban development; road networks (i.e., rural, city, county, highway, I-82); canals; agriculture; JBLM YTC facilities and training activities; and existing transmission lines (e.g., 115 kV and 230 kV transmission lines). Route Segment NNR-2 is 5.0 miles long and would parallel an existing, bladed JBLM YTC fire break road and existing roads for the majority of its length.

The entire route segment ROW is within the JBLM YTC (Regularly Occupied Habitat) MU, the Rattlesnake Hills (Regularly Occupied Habitat) MU, and Umtanum Ridge (Occasionally Occupied Habitat) MU. The eight-mile-wide Project area also encompasses land not designated for sage-grouse management, Regularly Occupied Habitat of the Umtanum Ridge MU, and Occasionally Occupied Habitat within the Rattlesnake Hills MU (Table 4). Approximately one mile of the route segment is adjacent to area set aside by JBLM YTC as a primary protection zone for sage-grouse. The eight-mile-wide Project area also includes additional JBLM YTC primary protection zones for sage-grouse.

The dominant land cover types within of the analysis area for Route Segment NNR-2 are annual grassland/noxious weeds (21,356 acres), agriculture/developed/disturbed/open water areas (14,861 acres), and sagebrush with a perennial grass understory (11,158 acres). On the outskirts of the developed areas, the ROW passes through a few patches of sagebrush with primarily an annual grass understory. These patches (31%) were classified as marginal winter habitat due to adequate sagebrush cover (SDEIS Appendix B-2 Habitat Assessment). The eight-mile-wide NNR-2 analysis area contains 11,158 acres of suitable sage-grouse habitat (22% of the analysis area), 1,511 acres of marginal habitat (3%), and 38,446 acres of unsuitable habitat (75%; Table 5). No suitable habitat was identified for any season within Route Segment NNR-2 ROW. The entire ROW was considered unsuitable during the breeding and summer seasons due to proximity to developed areas and the prevalence of a cheatgrass understory, as opposed to the native bunchgrasses and forbs that sage-grouse rely on for food and cover during the breeding and summer seasons.

The estimated sage-grouse population range does not overlap the NNR-2 ROW. The route segment analysis area overlaps approximately 2% (9,146.1 acres) of the total 95% population range. The core population range does not overlap the analysis area (Figure 4). NNR-2 was not surveyed during ground transect sage-grouse surveys in 2013 due to lack of suitable habitat within the ROW. One active lek (lek #1) is known to occur within four miles of Route Segment NNR-2 (Table 2). Lek #1 is located approximately 3.7 miles northeast of Route Segment NNR-2. As it is slightly closer to Route Segment NNR-3, lek #1 is described in more detail for Route Segment NNR-3. Additionally, four historic leks occur between three and four miles east of NNR-2.

### **6.5.3 Route Segment NNR-3**

Route Segment NNR-3 is 9.3 miles long and more or less parallels I-82. The interstate is within two miles of the route segment for its entire length and separates the segment from the core areas of the JBLM YTC sage-grouse population. Other existing disturbance within the eight-mile wide NNR-3 analysis area includes the existing Pacific Power Pomona-Wanapum 230 kV transmission line which runs alongside the proposed route segment approximately 200 feet away; State Highway 821 running more or less parallel to the west of the route segment and along the Yakima River; communication towers on Selah Butte within 1,000 feet of the route segment; urban and residential development associated with the city of Selah, along Burbank Creek and agricultural areas consisting primarily of fruit orchards.

The entire route segment ROW is within Umtanum Ridge (Regularly Occupied Habitat and Occasionally Occupied Habitat) MU. The eight-mile-wide Project area also encompasses the JBLM YTC (Regularly Occupied Habitat) MU and land not designated for sage-grouse management (Table 4). The eight-mile-wide Project area also includes area set aside by JBLM YTC as a primary protection zone for sage-grouse.

The dominant land cover types within the eight-mile-wide NNR-3 analysis area are sagebrush with a perennial grass understory (42,085 acres), annual grassland/noxious weeds (22,208 acres), agriculture/developed/disturbed/open water areas (8,202 acres) and perennial grassland (3,592 acres). Much of this route segment consists of annual grassland and perennial grassland, especially on south-facing slopes near the southern end of the route segment. The northern two-thirds of the route segment is dominated by sagebrush steppe with a perennial grass understory. Habitat suitability is influenced largely by varying densities of sagebrush. Overall, roughly one-third of the route segment ROW was considered unsuitable habitat for any season. Roughly one-third of the segment held suitable winter and summer habitat, and the remaining one-third provides marginal habitat during winter and summer. Due to a need for higher sagebrush cover during the breeding season, some of the suitable winter and summer habitat only provides marginal breeding habitat, overall 19% of the segment had enough sagebrush to be considered suitable for breeding and 47% was classified as marginal breeding habitat (SDEIS Appendix B-2 Habitat Assessment). The eight-mile-wide NNR-3 analysis area contains 42,085 acres of suitable sage-grouse habitat (53% of the analysis area), 2,262 acres of marginal habitat (3%) and 35,238 acres of unsuitable habitat (44%; Table 5).

The estimated sage-grouse population range does not overlap the NNR-3 ROW. The route segment analysis area overlaps approximately 7% (12,740 acres) of the 95% population range. The core population range does not overlap the analysis area (Figure 4). The four mile long stretch of NNR-3 that occurs on BLM land was surveyed using ground transect sage-grouse surveys in 2013; no grouse or grouse sign were observed (SDEIS Appendix B-1). One active lek (lek #1) is located approximately 3.3 miles east of the southern end of Route Segment NNR-3 (Table 2). Four males were observed attending this lek in 2013 which is down from 2011 and 2012 attendance numbers; however, a secondary lek may be being utilized (SEE 2013; Table 3). This lek is within JBLM YTC's Sage-grouse Protection Area, which has measures (see Section 3.3) that are enforced seasonally around leks (0.6 mile buffer) and within nesting and brood-rearing areas (limiting travel to existing roads and to specific ranges; JBLM YTC 2002). Additionally, nine historic leks are located between two and four miles southeast of this route segment.

#### **6.5.4 Route Segment NNR-4o/NNR-4u (Overhead and Underground)**

Route Segment NNR-4 is 4.5 miles long, crossing I-82 and passing through a JBLM YTC bivouac area with a very high density of dirt and gravel roads. Other existing disturbance within the eight-mile-wide NNR-4 analysis area includes an existing 230 kV transmission line which runs alongside the proposed route segment approximately 200 feet away, State Highway 821 located along the Yakima River, and a large swath of agricultural land north of this route segment.

The route segment ROW is within the JBLM YTC (Regularly Occupied Habitat) and Umtanum Ridge (Regularly Occupied Habitat) MUs (Table 4). The eight-mile-wide Project area also encompasses the Umtanum Ridge (Occasionally Occupied Habitat) MU and land not designated for sage-grouse management. The Project area includes area set aside by JBLM YTC as a primary protection zone for sage-grouse.

The dominant land cover types within the eight-mile-wide NNR-4 analysis area are sagebrush with a perennial grass understory (35,433 acres), annual grassland/noxious weeds (7,303 acres),

agriculture/developed/disturbed/open water areas (6,610 acres) and perennial grassland (2,332 acres). The majority of this route segment ROW provides suitable or marginal sage-grouse habitat. Designations were driven largely by sagebrush cover. Suitable breeding and summer habitat occurs on 39% of this route segment ROW, all of it occurring east of I-82; an additional 53% is marginal breeding habitat; and 57% is marginal summer habitat. Suitable winter habitat occurs on 65% of this route segment, including the areas west of I-82 with a sagebrush overstory and cheatgrass understory. Marginal winter habitat composes 31% of this route segment (SDEIS Appendix B-2 Habitat Assessment). The eight-mile-wide NNR-4 analysis area contains 35,433 acres of suitable sage-grouse habitat (64% of the analysis area), 926 acres of marginal habitat (2%), and 18,854 acres of unsuitable habitat (34%; Table 5).

The estimated sage-grouse population range does not overlap the NNR-4 ROW. This route segment analysis area overlaps approximately 1% (1,460 acres) of the total 95% population range. The core population range does not overlap the analysis area (Figure 4). Four walking transects surveyed during two visits in May and July of 2013 revealed just one sign of recent sage-grouse use of this route segment (SDEIS Appendix B-). No active leks are known to occur within the eight-mile-wide NNR-4 analysis area (Table 2). Six historic leks are located within four miles to the southeast of the route segment.

### **6.5.5 Route Segment NNR-5**

Existing disturbance within the eight-mile-wide NNR-5 analysis area includes primary all-weather gravel access roads and numerous light-duty dirt roads utilized for JBLM YTC military training, two JBLM YTC bivouac areas and a large swath of private agricultural land north of this route segment. This short route segment (1.8 miles) deviates slightly from the existing 230 kV transmission line to avoid private agricultural lands in the Badger Pocket area, but remains within 0.5 mile of the existing Pacific Power Pomona-Wanapum 230 kV transmission line for the entire route segment.

The entire route segment ROW is within JBLM YTC (Regularly Occupied Habitat) MU, consisting of approximately 39,630 acres within the eight-mile-wide Project area (Table 4). The Project area also encompasses land not designated for sage-grouse management and contains areas set aside by JBLM YTC as a primary protection zone for sage-grouse.

The dominant land cover type within the eight-mile-wide NNR-5 analysis area is sagebrush with a perennial grass understory (28,459 acres). Other common cover types within the analysis area include agriculture/developed/disturbed/open water areas (5,802 acres), forb (3,307 acres), and perennial grassland (2,134 acres). Suitable year-round habitat covers 95% of the ROW. The remaining 5% of the segment contains marginal winter and summer habitat and unsuitable breeding habitat (SDEIS Appendix B-2 Habitat Assessment). The eight-mile-wide NNR-5 analysis area contains 28,459 acres of suitable sage-grouse habitat (70% of the analysis area), 76 acres of marginal habitat (<1%) and 12,178 acres of unsuitable habitat (30%; Table 5).

The estimated sage-grouse population range does not overlap the NNR-5 ROW. The route segment analysis area overlaps approximately 1% (1,107 acres) of the 95% population range. The core population range does not overlap the analysis area (Figure 4). Four walking transects surveyed during two visits in May and July of 2013 revealed just one sign of recent grouse use of this route segment (POWER 2013b). No active leks are known to occur within four miles of Route Segment NNR-5 (Table 2). Six historic are located within four miles of the route segment.

### **6.5.6 Route Segment NNR-6o/NNR-6u (Overhead and Underground)**

Route Segment NNR-6 is 6.4 miles long and continues to closely parallel the existing 230 kV transmission line, staying within approximately 200 feet for the entire route segment. Other existing disturbance within the eight-mile-wide NNR-6 analysis area includes primary all-weather gravel access roads utilized for military training by the JBLM YTC, numerous light-duty dirt roads, two military bivouac areas west of the segment, a large swath of agricultural land west of the route segment and three existing transmission lines northeast of the segment, including one 230 kV transmission line and two 500 kV transmission lines.

The entire ROW for Route Segment NNR-6 is within JBLM YTC (Regularly Occupied Habitat) MU, consisting of approximately 64,143 acres within the eight-mile-wide Project area (Table 4). The Project area also includes land not designated for sage-grouse management and contains areas set aside by JBLM YTC as a primary protection zone for sage-grouse.

The dominant land cover type within the eight-mile-wide NNR-6 analysis area is sagebrush with a perennial grass understory (53,145 acres). Other common cover types within the analysis area include agriculture/developed/disturbed/open water areas (5,280 acres), forb (4,399 acres), and perennial grassland (2,023 acres). Although NNR-6 consists almost entirely of relatively intact sagebrush steppe with a perennial grass understory, in most areas the sagebrush cover is relatively low. Pockets of dense sagebrush occur primarily in swales and drainages; the same areas that would be expected to collect deep deposits of windblown snow on the relatively high elevation north facing slopes, likely limiting winter suitability during typical-weather years, but these same areas contain relatively mesic pockets of sagebrush with a lush, forb-rich understory that likely stays relatively green during the summer months in typical years. Overall, the ROW for this route segment consists of suitable summer habitat for 33% of its length and marginal summer habitat for 28%, while breeding habitat is suitable for 14% of its length and marginal for 36% and winter habitat is suitable for 16% of the segment and marginal for 23% (SDEIS Appendix B-2 Habitat Assessment). The eight-mile-wide NNR-6 analysis area contains 53,145 acres of suitable sage-grouse habitat (82% of the analysis area), 197 acres of marginal habitat (<1%), and 11,780 acres of unsuitable habitat (18%; Table 5). According to WHCWG analysis, Route Segments NNR-6 and NNR-7 cross the most promising zone for connectivity between the Moses Coulee sage-grouse population and the JBLM YTC grouse population (Robb and Schroeder 2012).

The estimated sage-grouse population range does not overlap the NNR-6 ROW. The route segment analysis area overlaps less than one percent (11.2 acres) of the 95% population range. The core population range does not overlap the analysis area (Figure 4). Ground based surveys of the preliminary NNR in May and July of 2013 revealed sage-grouse sign in six locations near this route segment. Each of these was located approximately 600 feet (200 hundred meters) north of the final location for Route Segment NNR-6, generally near Foster Creek (SDEIS Appendix B-1). One active lek (lek #2) is known to occur 3.5 miles south of Route Segment NNR-6 (Table 2). Three males were observed attending this lek in 2013. After the lek's discovery in 2007, lek counts have ranged from zero to three males and averaged two males per year (Table 3). Additionally, six historic leks are located within four miles of this route segment.

### **6.5.7 Route Segment NNR-7**

Route Segment NNR-7 is 8.2 miles long and continues to closely parallel the existing 230 kV transmission line, staying within approximately 200 feet for the entire segment. Three additional transmission lines are located within one mile of this proposed route segment, including one 230 kV transmission line and two 500 kV transmission lines. Other existing disturbance within the eight-mile-wide NNR-7 analysis area includes a paved highway, primary all-weather gravel access roads

for military training, numerous light-duty dirt roads and development along the Columbia River including the town of Beverly, numerous orchards and agricultural land.

This entire route segment ROW is within JBLM YTC (Regularly Occupied Habitat) MU, comprised of approximately 63,601 acres within the eight-mile-wide Project area (Table 4). The Project area also encompasses land within Saddle Mountains (Occasionally Occupied Habitat) MU. The Project area also overlaps an area set aside by JBLM YTC as a primary protection zone for sage-grouse.

The dominant land cover type within the eight-mile-wide NNR-7 analysis area is sagebrush with a perennial grass understory (63,349 acres). Other common cover types within the analysis area include agriculture/developed/disturbed/open water areas (5,244 acres), annual grassland/noxious weeds (2,686 acres), and forb (1,856 acres). The western three miles of the ROW for Route Segment NNR-7 have moderate cover of sagebrush, providing mainly marginal habitat. Much of the eastern five miles contains higher cover of sagebrush, which could potentially provide suitable grouse habitat, though relatively little use of the area has been documented. Overall, the ROW is composed of 43% suitable breeding habitat and 57% marginal breeding habitat. Winter and summer habitat is suitable for 67% of the segment and marginal for 32% of the segment (SDEIS Appendix B-2 Habitat Assessment). The eight-mile-wide NNR-7 analysis area contains 63,349 acres of suitable sage-grouse habitat (85% of the analysis area), 316 acres of marginal habitat (<1%), and 10,502 acres of unsuitable habitat (14%; Table 5). According to WHCWG analysis, Route Segments NNR-6 and NNR-7 cross the most promising zone for connectivity between the Moses Coulee sage-grouse population and the JBLM YTC grouse population (Robb and Schroeder 2012). NNR-7 is separated from more heavily occupied sage-grouse areas by the steep terrain of the Saddle Mountains and, on JBLM YTC, sage-grouse are known to prefer flatter areas (<15% slope; Livingston 1998). WHCWG did not include slope in their models, asserting that slope is not likely a factor impeding movement (Robb and Schroeder 2012).

The estimated sage-grouse population range does not overlap the NNR-7 ROW or the route segment analysis area. Four walking transects surveyed during two visits in May and July of 2013 did not reveal any sign of sage-grouse use of this route segment (POWER 2013b). No active leks are known to occur within the eight-mile-wide NNR-7 analysis area (Table 2). One historic lek is located approximately 0.75 mile north of the route segment.

### **6.5.8 Route Segment NNR-8**

Existing disturbance within the eight-mile-wide NNR-8 analysis area includes two existing 230 kV transmission lines (Pacific Power Pomona-Wanapum and Puget Sound Energy Wanapum-Wind Ridge) and two 500 kV transmission lines (BPA Schultz-Wautoma and BPA Schultz-Vantage), the BPA Vantage Substation, a paved highway, primary all-weather gravel access roads for military training, numerous light-duty dirt roads, and development along the Columbia River including the town of Beverly, orchards, and center-pivot-irrigated agricultural land.

This route segment ROW passes from the JBLM YTC (Regularly Occupied Habitat) MU into the Saddle Mountains (Occasionally Occupied Habitat) MU. JBLM YTC Regularly Occupied Habitat within the eight-mile-wide Project area consists of approximately 22,590 acres. The Project area also encompasses land within the Potholes (Expansion Habitat) MU and land not designated for sage-grouse management. The analysis area does not overlap any JBLM YTC protection zones for sage-grouse.

The dominant land cover type within the eight-mile-wide NNR-8 analysis area is sagebrush with a perennial grass understory (28,603 acres). Other common cover types within the analysis area include

agriculture/developed/disturbed/open water areas (9,858 acres), annual grassland/noxious weeds (5,181 acres) and sagebrush with an annual grass understory (1,034 acres). Patchy sagebrush with a perennial grass understory covers roughly half of the ROW; most of the remaining area is either rocks and open water or cheatgrass and other weeds. The habitat assessment classified breeding habitat as suitable for 26% of this route segment's ROW, and marginal for 23% of the ROW. Winter and summer habitat is classified as suitable for 34% of the ROW and marginal for 15% of the ROW (SDEIS Appendix B-2 Habitat Assessment). The eight-mile-wide NNR-8 analysis area contains 28,603 acres of suitable sage-grouse habitat (63% of the analysis area), 1,465 acres of marginal habitat (3%) and 15,176 acres of unsuitable habitat (34%; Table 5).

The estimated sage-grouse population range does not overlap the NNR-5 ROW or the route segment analysis area. Four walking transects surveyed during two visits in May and July of 2013 did not reveal any sign of safe-grouse use of this route segment (SDEIS Appendix B-1). No active leks are known to occur within the eight-mile-wide NNR-8 analysis area (Table 2). One historic lek is located approximately 2.1 miles northwest this route segment.

### **6.5.9 Route Segment MR-1**

This 12 mile long subroute is a proposed alternative to the 4.5 mile NNR-4 route segment. Shaped like a horseshoe, it circumnavigates to the west, north, and east of Manastash Ridge. Existing disturbance within the eight-mile-wide MR-1 analysis area includes I-82, State Highway 821, all-weather gravel access roads for military training, numerous light-duty dirt roads, two JBLM YTC bivouac areas, an existing 230 kV transmission line and a large swath of private agricultural land east of the segment.

The route segment ROW is within the Umtanum Ridge (Regularly Occupied Habitat) and the JBLM YTC (Regularly Occupied Habitat) MUs (Table 4). Regularly Occupied Habitat within the eight-mile-wide Project area comprises approximately 63,352 acres. The Project area also overlaps a portion of Umtanum Ridge (Occasionally Occupied Habitat) MU and land not designated for sage-grouse management. The Project area includes area set aside by JBLM YTC as a primary protection zone for sage-grouse.

The dominant land cover types within the eight-mile-wide MR-1 analysis area are sagebrush with a perennial grass understory (44,010 acres), agriculture/developed/disturbed/open water areas (21,366 acres), annual grassland/noxious weeds (9,100 acres), sagebrush with an annual grass understory (2,774 acres), forb (2,558 acres), and perennial grassland (2,385 acres). Based on the habitat assessment, breeding habitat is classified as suitable along 15% of the ROW and marginal on 49%. Summer habitat is suitable for 26% of this route segment and marginal for 53%. Winter habitat is suitable for 62% and marginal for 16%. Most of the west arm of this route segment has adequate sagebrush cover for winter use (as determined with aerial imagery), but cover type data indicates an annual grass understory that would limit suitability for breeding and summer use. Weedy disturbed ground is prevalent along parts of the eastern stretch adjacent to private agricultural lands in Badger Pocket (SDEIS Appendix B-2 Habitat Assessment). The eight-mile-wide MR-1 analysis area contains 44,010 acres of suitable sage-grouse habitat (53% of the analysis area), 4,019 acres of marginal habitat (5%), and 35,410 acres of unsuitable habitat (42%; Table 5).

The estimated sage-grouse population range does not overlap the MR-1 ROW. This route segment analysis area overlaps approximately 1% (1,057 acres) of the 95% population range. The core population range does not overlap the analysis area (Figure 4). No active leks are known to occur within the eight-mile- MR-1 analysis area (Table 2). Six historic leks are located within the analysis area of this route segment.

## 7.0 IMPACT ANALYSIS (INCLUDING CONSTRUCTION, OPERATION AND MAINTENANCE ACTIVITIES)

### 7.1 Analysis Methods

The analysis for sage-grouse focused on impacts that could occur as a result of the construction, operation and maintenance of the proposed NNR Alternative. These impacts included: habitat loss, degradation, and fragmentation; increased predation; behavioral avoidance; disturbance and displacement; impairment of habitat connectivity; and collision. Impacts may occur directly via habitat loss through surface disturbance and mortality from construction activities or collision, or indirectly through the reduction in habitat quality or increased predation due to the addition of perching opportunities associated with transmission structures. These impact types are discussed in more detail in Section 7.2.3. Refer to Chapter 2 of the SDEIS for a detailed description of the disturbance model.

Impacts to sage-grouse were evaluated using: 1) geographic information system (GIS) data analysis of existing habitat within the Project area; 2) habitat loss calculated by using typical disturbance types associated with the construction, operation and maintenance of the proposed NNR Alternative (e.g., new access road construction, work areas); 3) the total number of structures per route segment and the anticipated number of new structures located greater than 0.25 mile from an existing line; 4) analysis of JBLM YTC corvid (raven) data; 5) analysis of the WHCWG habitat connectivity and linkage reports; 6) GIS data on active, inactive and historical lek locations and observations; and 7) sage-grouse telemetry location data (Cadwell et al. 1998; Livingston and Nyland 2002; SEE 2013). Analysis of existing habitat was based on aerial photos, vegetation data, USGS GAP data, fire history data, plant surveys, and a habitat assessment (SDEIS Appendix B-2) conducted for the proposed Project.

Two metrics were used to evaluate the potential impact of new transmission line structures: 1) the total number of new structures and 2) the number of new structures located greater than 0.25 mile from an existing line. The second metric addresses the introduction of new perches and/or nesting substrates for avian predators in areas where these substrates are not currently present. This is discussed further in Section 7.2.3.

#### 7.1.1 Impact Criteria

Resource categories were identified for sage-grouse that included sage-grouse habitat, leks, and Washington Sage-Grouse Management Units. Sensitivity levels (i.e., high, moderate, or low) were assigned to each resource category based on potential impact types. The resource categories and sensitivity levels summarized in Table 6 served as the basis for assigning NNR Alternative impact levels, described below.

**TABLE 6 SAGE-GROUSE RESOURCE CATEGORIES AND SENSITIVITY LEVELS**

RESOURCE CATEGORY	SENSITIVITY	POTENTIAL IMPACTS
Sage-grouse lek – within 0 to 4 miles of the proposed NNR transmission line alternative	High	Disturbance and displacement of breeding grouse; increased predation; behavioral avoidance; reduction in breeding habitat.
Greater Sage-Grouse Regularly Occupied Habitat Management Unit	High	Reduction in habitat (abundance and quality) that serves as sage-grouse habitat.
Sagebrush/Perennial Grassland (Breeding, Late Brood-rearing/Summer, and Winter Habitat)	High	Reduction in quality habitat that is slow to recover from disturbance.

RESOURCE CATEGORY	SENSITIVITY	POTENTIAL IMPACTS
Sage-grouse lek – within > 4 miles from the proposed transmission line and within suitable habitat	Moderate	Disturbance and displacement of breeding grouse; increased predation; behavioral avoidance; reduction in breeding habitat.
Greater Sage-Grouse Connectivity Habitat Management Unit	High	Reduction in habitat (abundance and quality) that serves as a movement corridor between seasonally used areas.
Non-forested Riparian, Intermittent Stream (Breeding and Late Brood-rearing/Summer Habitat)	Moderate	Reduction in habitat that could serve as suitable seasonal habitat, especially during breeding and summer.
Bitterbrush/perennial grassland (Potential Breeding and Late Brood-rearing/Summer Habitat, depending on surrounding vegetation)	Moderate	Reduction in habitat that could be used as breeding and late brood-rearing/summer habitat
Sagebrush/Annual Grassland (Winter Habitat)	Moderate	Reduction in disturbed habitat that could provide potential suitable seasonal habitat.
Greater Sage-Grouse Expansion Habitat Management Unit	Low	Reduce habitat (abundance and quality) that could serve as expansion areas for sage-grouse.
Perennial Grassland (Potential Summer Habitat, depending on surrounding vegetation)	Low	Reduction in habitat that could be used as summer habitat.
Annual grassland, noxious weeds, rabbitbrush/annual grassland, developed/disturbed (Unsuitable Habitat)	Low	Reduction in unsuitable vegetation or disturbance in developed/disturbed areas.

### **7.1.2 Impact Types (Direct and Indirect)**

The main impacts to sage-grouse that could occur from construction, operation, and maintenance of the proposed NNR Alternative include:

- 1) Habitat loss and degradation, including direct habitat loss at structures and access roads and indirect habitat loss or degradation in the surrounding landscape resulting from spread of invasive exotic weeds and fires.
- 2) Potential predation opportunities, primarily from avian predators using the transmission structures as perches and nesting substrates.
- 3) Potential behavioral avoidance of infrastructure associated with the proposed NNR Alternative.
- 4) Disturbance and displacement from temporary human presence during construction and maintenance activities.
- 5) Impairment of habitat connectivity between sage-grouse populations in Washington.
- 6) Direct mortality to sage-grouse through collisions with the transmission line conductor and structures, destruction of sage-grouse nests during construction, and collisions with construction and maintenance vehicles.

Each of these impacts is discussed in more detail in Section 7.2.3.

### **7.1.3 Impact Levels**

The sage-grouse resource categories, sensitivity levels and potential impact were used to estimate potential Project level impacts for sage-grouse. In addition, the resource quality (context or the existing condition of the resource) and resource quantity (the amount of the resource potentially affected) were also considered. These criteria were applied to develop Project impact level categories of high, moderate, low and no identifiable. The impact levels are defined as follows:

**High** – A high level of impact would result if the construction, operation, or maintenance of the proposed Project would have the potential to cause a significant adverse change or stress to the sage-grouse population or sage-grouse habitat.

**Moderate** – A moderate level of impact would result if the construction, operation, or maintenance of the proposed Project would have the potential to cause some change or stress (ranging between significant and insignificant) to the sage-grouse population or sage-grouse habitat.

**Low** - A low level of impact would result if the construction, operation, or maintenance of the proposed Project would have the potential for an insignificant or small change or stress to the sage-grouse population or sage-grouse habitat.

**No Identifiable** - No identifiable impact or measurable change would occur to the sage-grouse population or sage-grouse habitat.

## **7.2 Impact Assessment**

### **7.2.1 Project Design Features**

The project design features (PDFs) and environmental protection measures described in this section have been incorporated into the Project design to avoid or minimize environmental impacts of the proposed Project. Pacific Power has committed to implementing these features during construction, operation and maintenance of the proposed Project. Consideration of the anticipated effectiveness of these PDFs has been incorporated into this impact assessment and, where applicable, is discussed by project impact in Sections 7.2.3 and 7.2.4.

The PDFs in this section will be reviewed, revised, and developed further, as appropriate, to reduce impacts to sage-grouse and other resources and will be included in the Plan of Development (POD) for this Project. The POD will be reviewed and approved by the federal land management agencies. If the Project is authorized, the POD will be used by the agencies in crafting the ROW and other Project-related authorizations as appropriate.

PDFs consist of features that apply to multiple resources (General) and features designed to reduce impacts for specific resources (e.g., sage-grouse, vegetation, fire, visual and cultural resources). The complete list of PDFs for all resources is presented in Chapter 2 of the SDEIS and design features relevant to sage-grouse are presented below.

#### **General**

##### **GEN-1**

All construction vehicle movement outside the ROW will be restricted to pre-designated access, contractor-acquired access, or public roads, unless approved by the authorized land management agency and/or landowner.

##### **GEN-2**

The spatial limits of construction activities will be predetermined, with activity restricted to those limits. Land management agencies and landowners will approve all construction spatial limits in coordination with the construction contractor. No paint or permanent discoloring agents will be applied to rocks, vegetation, fences, structures, etc., to indicate survey or construction activity limits. Work areas will be identified and sensitive areas will be flagged as described in the POD to alert construction personnel that those areas are to be avoided.

**GEN-3**

In construction areas where re-contouring is not required, vegetation will be left in place wherever possible and original contour will be maintained to avoid excessive root damage and allow for re-sprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.

**GEN-4**

To minimize ground disturbance, the alignment of any new access roads or cross country route will follow the landform contours where practicable, provided that such alignment does not cause additional impacts to resource values. Any new access road or cross country route will be approved by the appropriate land manager and/or landowner prior to use.

**GEN-5**

In construction areas (e.g., marshalling yards, structure site work areas, spur roads from existing access roads) where ground disturbance is significant or where re-contouring is required, surface reclamation will occur as required by the landowner or land management agency. The method of reclamation will normally consist of, but is not limited to, returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control, placing water bars in the road, and filling ditches.

All areas on BLM, JBLM YTC, and Reclamation lands that are disturbed as a part of the construction and/or maintenance of the proposed power line will be drill seeded where practicable with a seed mixture appropriate for those areas, unless an alternative method (e.g., broadcast seeding) is required due to slope or terrain. The BLM, JBLM YTC, and Reclamation will prescribe seed mixtures to fit each range site on their respective ownerships. Drill seeding will be done in late October or November to maximize the chance of success. The Agencies may recommend broadcast seeding as an alternative method in some cases. In these cases, seed will be applied at 1.5 to 2.0 times the drill seeding rate when broadcasted and the seed will be promptly covered by methods such as harrowing, raking, or rolling with a culti-packer.

A Reclamation, Revegetation, and Monitoring Framework Plan identifying the reclamation stipulations will be developed and incorporated in the final POD, which will be approved by the BLM, JBLM YTC, and Reclamation prior to issuance of their respective authorizations.

**GEN-6**

A POD including specific plans to address resource specific mitigation requirements will be prepared in consultation with the agencies prior to construction being authorized. These plans will detail additional measures required to minimize potential proposed Project impacts on cultural and natural resources and human health and safety. Plans typically include reclamation and re-vegetation of the ROW, resource protection, noxious weed control, dust control, hazardous spill prevention, fire protection and control, and storm water pollution prevention.

**GEN-7**

The POD will outline any required monitoring guidelines for the construction, operation, and maintenance of the line in order to avoid inadvertent impacts to resources. The authorizing land management agencies will appoint an authorized inspector to oversee construction activities, inspect construction, and determine if environmental protection is being accomplished in accordance with terms of applicable documents including the ROW and the approved POD. Pacific Power will conduct a training program to inform construction crews of all ROW, permit, and other requirements and restrictions relevant to proposed Project construction.

**GEN-8**

Prior to construction, all supervisory construction personnel will be instructed on the protection of cultural, paleontological and ecological resources, as outlined in the POD, PA, and HMP. To assist in this effort, the construction contract will address: (a) federal and state laws regarding antiquities, fossils, mineral materials, plants, and wildlife including collection and removal; (b) the importance of these resources and the purpose and necessity of protecting them.

**GEN-9**

All waste products and food garbage from construction sites will be deposited in covered waste receptacles, and removed daily. Garbage will be transported to an approved or designated suitable disposal facility.

**GEN-10**

Within the limits of standard design and in conformance with engineering and Pacific Power requirements, structures will be placed as to avoid sensitive features, including but not limited to, wetlands, riparian areas, water courses, sensitive habitats and species, and cultural resources.

**GEN-11**

Construction holes left open overnight will be covered to prevent livestock or wildlife from falling in.

**Biological Resources**

**BIO-1**

Prior to construction, all supervisory construction personnel will be instructed on the protection of ecological resources. To assist in this effort, the construction contract will address: (a) federal and state laws regarding plants and wildlife; (b) the importance of these resources and the purpose and necessity of protecting them; and (c) methods for protecting sensitive resources.

**BIO-2**

Reasonable and prudent measures and terms and conditions identified during the consultation period under Section 7 of the Endangered Species Act (1973) as amended will be adhered to as specified by the USFWS. Conservation measures identified by USFWS during consultation will be applied on a discretionary basis. If conferencing occurs on species proposed for listing under ESA, recommendations for reducing adverse effects provided by USFWS in a conference report will be considered.

**BIO-3**

Special status species or other species of particular concern will be considered in accordance with management policies set forth by appropriate land management agencies (e.g., the BLM, the JBLM YTC, and Reclamation). This would entail conducting surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities (e.g., access and spur roads, staging areas, etc.) as agreed upon by the agencies. In cases where such species are identified, appropriate action will be taken to avoid adverse impacts on the species and their habitats. This may include altering the placement of roads or structures, where practical, as approved by the agencies.

**BIO-5**

To eliminate the spread of noxious weeds and invasive species from Project activities, a Noxious Weed and Invasive Plant Management Plan will be developed and incorporated into the final POD. The plan will be developed in consultation with the Agencies and local weed control districts and will describe: the pre-construction inventory; prevention measures and treatment methods before and

during construction; and monitoring and treatment measures that would be implemented following construction. Out of elevated concern for sage-grouse, fire prevention, and sagebrush preservation, the Noxious Weed and Invasive Plant Management Plan would emphasize control of cheatgrass during follow-up visits to prevent, to the extent practical, the establishment of cheatgrass before, during, and after establishment of reclaimed vegetation.

**BIO-6**

Ground disturbance will be limited to that necessary to safely and efficiently install the proposed facilities and will be described in detail in the POD.

**BIO-7**

Pacific Power will prepare a Reclamation, Re-vegetation, and Monitoring Framework Plan in consultation with the agencies. The plan will specify disturbance types and appropriate re-vegetation techniques to be applied to proposed Project work areas and access roads. Techniques will be approved by the appropriate land management agency and would include reseeding with certified weed-free native or other acceptable species. The plan will include operation and maintenance procedures approved by the appropriate land management agency for use of access roads and temporary work areas.

**BIO-8**

Wildlife and plant protection plans will be developed identifying specific measures to protect biological resources. Required protection measures could include timing restrictions, ROW clearance surveys prior to construction and the use of biological monitors to protect biological resources during construction. In situations where impacts to sensitive plants cannot be avoided by construction activities, the transplanting of plants will be considered by the appropriate land management agency. The criteria for transplanting will be included in the POD for the Project. The criteria will be formulated in coordination with the BLM and state agencies, and in compliance with federal and state law, regulation, and policy regarding sensitive species.

If any new populations of plant species of concern are discovered on federal or state lands during Project surveys or construction, these findings will be reported within 48 hours to the appropriate land management agency. Any newly discovered populations will be protected the same as currently known populations.

If any new populations of federal or state listed wildlife species are discovered during Project surveys or construction, these findings will be reported within 48 hours to the appropriate federal and/or state land management agency. Any newly discovered populations will be protected the same as currently known populations.

**BIO-9**

Use an agency approved mixture of native and non-native species or seed for revegetation in areas where non-native species are already well established (i.e., disturbed grassland). Where possible, a mix of native species, especially native bunchgrasses and forbs, will be utilized for revegetation. Revegetation materials will meet the requirements of federal, state and county noxious weed control regulations and guidelines.

**BIO-10**

Comply with all federal, state and county noxious weed control regulations and guidelines.

**BIO-11**

Wash all equipment before entering the Project area and when leaving areas where noxious weeds are present.

**BIO-12**

Minimize the blading of native plant communities during construction, operation and maintenance consistent with safe construction practices.

**BIO-13**

Restrict construction and maintenance activities (including helicopter construction and blasting) during sensitive periods (described below). Restricting these activities would eliminate the potential disturbance of wildlife during these critical periods of their life cycles, as identified in the Plant and Wildlife Species Protection Measures Appendix of the POD and the Sage-grouse Habitat Mitigation Framework Plan.

- Avoid construction activities within 0.25 to 1.0 mile radius of an active raptor nest, if possible, unless specific features (e.g., terrain, barriers) dictate reduced buffers. Spatial buffers and seasonal restrictions would vary depending on the species (Romin and Muck 2002). Nests of any raptor species not specified here would be buffered by 0.25 mile. Specified nest buffers include:
  - Bald eagle nest – 1.0 mile buffer from January through August.
  - Burrowing owl – 0.25 mile buffer from March through August.
  - Ferruginous hawk – 0.5 mile buffer from March through July.
  - Golden eagle – 0.5 mile buffer from January through August.
  - Osprey – 0.5 mile buffer from April through August.
  - Peregrine falcon – 1.0 mile buffer from February through August.
  - Prairie falcon – 0.25 mile buffer from April through August.
- Greater sage-grouse:
  - Avoid construction or maintenance activities within four miles of active leks from February 1 to June 15 to protect lekking, nesting, and early brood-rearing (Stinson et al. 2004; Cadwell et al. 1994).
  - Avoid construction or maintenance activities within sage-grouse winter habitat from December 1 through February 1 if winter conditions are exceptionally severe. Severe winter conditions would consist of snow cover much higher than normal (e.g., above sagebrush height) or temperatures much lower than normal. Winter construction or maintenance activities within sage-grouse winter habitat will be coordinated with JBLM YTC (Public Works Department).
- Migratory birds:
  - Avoid construction or maintenance activities during the migratory bird breeding season, typically from March through July. If construction or maintenance activities must occur during this time period, qualified biologists will conduct clearance surveys prior to activity. If migratory bird nests are identified, spatial buffers of at least 100 feet around the nest will be initiated. Individual nests will not be marked. Spatial buffers and seasonal restrictions would vary depending on the species. No ROW mowing will occur during the nesting season.
- Bald eagle wintering areas:

- Construction or maintenance activities within 0.25 mile of a bald eagle winter roost would occur between 8:00 a.m. and 5:00 p.m.
- Big game seasonal restrictions:
  - Avoid construction or maintenance activities within big game wintering areas during the wintering season, typically December 1 through March 1, or as defined by WDFW for each big game population in question.

**BIO-14**

New or improved access (e.g., blading, widening existing access) that is not required for Project maintenance or by the land management agencies will be closed or rehabilitated following construction. Closing access roads would protect the resources in that area from further disturbance by limiting new or improved accessibility by off-highway vehicle (OHVs) and other motorized vehicles.

**BIO-15**

If sensitive wildlife species are discovered during construction, operation, and maintenance activities within the ROW or designated and approved work areas, a protective buffer zone will be established and the appropriate federal or state agency will be contacted immediately.

**BIO-16**

Speed limits for travel on newly constructed roads will be posted at 25 mph in order to reduce the potential for wildlife collision. Overland travel areas will have speed limits of 15 mph.

**BIO-17**

The Project will be designed to conform to raptor-safe design standards, including *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006), *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012) and PacifiCorp's *Bird Management Program Guidelines* (2006).

**BIO-18**

Any temporary fences constructed in sage-grouse habitat, as part of the proposed Project, will be fitted with markers to reduce the potential for sage-grouse collision. Any existing fences that are repaired during construction would also be fitted with markers.

**BIO-19**

Bird flight diverters will be installed in locations with known avian mortality through collision with transmission line infrastructure.

**BIO-20**

Routing and siting the proposed transmission line would maximize the use of existing utility corridors and closely parallel the existing transmission line within those corridors, typically staying within 200 feet of its centerline. The use of existing transmission line corridors will minimize impacts through the use of already established ROWs, road networks, etc.

**BIO-21**

Whenever possible, locations of the new structures will match the spans of adjacent transmission lines.

**BIO-22**

Perch deterrents will be installed on new transmission structures within four miles of an active lek.

**BIO-23**

No pets will be allowed on the Project site during construction, operation and/or maintenance.

**BIO-24**

No persistent surface water sources or other potential mosquito breeding habitat will be created.

**Wildland Fire**

**WF-1**

Pacific Power, and its contractors as appropriate, will initiate discussions with local fire districts, regional fire prevention staff, and JBLM YTC fire personnel prior to construction to provide transmission line safety training, including safety procedures for conducting fire suppression activities near a power line.

**WF-2**

The construction contractor will fuel all highway-authorized vehicles off-site to minimize the risk of fire. Fueling of construction equipment that is transported to the site via truck and is not highway authorized will be done in accordance with regulated construction practices, and federal, state and local laws. Helicopters will be fueled and housed at local airfields or at staging areas.

**WF-3**

Contractors will be required to carry fire suppression tools and equipment including (but not limited to) shovels, buckets, and fire extinguishers on all construction, operation and maintenance vehicles.

**WF-4**

A Fire Protection and Control Plan will be developed and incorporated into the POD. The Fire Protection and Control Plan will include measures to be implemented during construction and maintenance, such as: restricting smoking to designated areas; restricting equipment parking to sites cleared of all flammable material; equipping vehicles with appropriate fire suppression tools and equipment; and training Pacific Power and/or its contractors on fire safety, minimizing fire hazards, to safely suppress a fire until firefighters can respond.

Pacific Power and/or its contractors will notify the federal, state and local agencies of any fires, and comply with all rules and regulations administered by the federal, state and local land management agencies concerning the use, prevention, and suppression of fires, including any fire prevention orders that may be in effect at the time of the permitted activity. Pacific Power and/or its contractors will be held liable for the cost of fire suppression, stabilization, and rehabilitation when they are responsible for the cause of the fire event. In the event of a fire, personal safety will be the first priority of Pacific Power and/or its contractors.

**Land Use and Recreation**

**LU-7**

To limit new or improved accessibility into the area by OHVs and other non-authorized motorized vehicles, road access will be controlled in accordance with the management directives of the land management agencies and landowners.

**7.2.2 Design Options**

Overhead and Underground Design Options are being considered in the impact analysis for sage-grouse. The Underground Design Option was not analyzed in the DEIS, but is being analyzed for all

resources in the SDEIS, including sage-grouse, due to comments received from wildlife management agencies (USFWS and WDFW) about potential impacts to sage-grouse. Underground Design Options are included for Route Segments NNR-4 and NNR-6. Impact differences between the Underground and Overhead Design Options are discussed in Section 7.2.4.

### **7.2.3 Impacts Common to all Route Segments**

This section describes, in detail, potential impacts to sage-grouse that could occur for all NNR route segments. Section 7.2.4 Impacts by Route Segment highlights impact differences between the route segments.

Potential impacts that could occur as a result of Project construction, operation and maintenance are discussed in more detail below. Impacts including habitat loss and degradation, potential predation, behavioral avoidance of infrastructure, disturbance and displacement due to temporary human presence, habitat connectivity, and collision are discussed in detail below.

#### **Habitat Loss and Degradation**

Construction of the proposed Project and associated infrastructure could result in degradation and loss of sage-grouse habitat through direct and indirect impacts. Degradation of sage-grouse habitat could occur if vegetation composition and/or structure within currently suitable habitat became altered and did not adequately meet food and cover requirements for sage-grouse. Habitat loss would occur in areas where vegetation is completely removed or becomes altered such that sage-grouse are unlikely to use it.

Direct habitat loss would result from temporary trampling of herbaceous vegetation and removal of vegetation due to construction of the transmission line, access roads, and temporary work spaces. Vegetation would be permanently removed at structure bases and along permanent access roads. Vegetation removal could have a variety of effects on habitat including changes in plant community structure and composition. The degree of impact would depend on the type and amount of vegetation affected and the rate at which vegetation would regenerate after construction. Within the Project area, the recovery of vegetation would vary by plant community type. For sage-grouse, most habitat degradation and loss that occurs will be a long-term effect. While grasslands and herbaceous wetlands would generally recover within five to seven years, sagebrush steppe may require 30 to 120 years, depending on the subspecies and size of disturbance (Olson et al. 2000; Lesica et al. 2005; Baker 2006; Knick and Connelly 2011). Because the proposed NNR alternative closely parallels an existing Pacific Power transmission line for the majority of its length, utilizing nearby existing roads will reduce the need for new access roads, thus greatly decreasing the amount of direct habitat loss associated with the proposed NNR alternative. For sage-grouse, direct disturbance to sagebrush/perennial and sagebrush/annual grassland would be considered a long-term impact, regardless of disturbance type. For example, temporary work areas in sagebrush/perennial grasslands would be considered a temporary impact for some resources; however, because of the long recovery times for sagebrush, this disturbance was considered a long-term impact for sage-grouse.

Specific PDFs anticipated to be effective at minimizing direct habitat loss include: minimizing construction sites within native plant communities; maintaining intact vegetation wherever possible; utilizing overland travel wherever feasible; and reseeding disturbed areas using an appropriate land management agency or landowner approved mixture for revegetation, which will be detailed in the revegetation plan included in the POD.

Indirect impacts to habitat could occur because ground disturbance and vegetation removal increase the potential for the introduction and spread of noxious and invasive weeds (Olson 1999; Trombulak

and Frissell 2000; Levine et al. 2003). Disturbed areas, such as roads and construction work areas, can act as conduits for weeds to become established in native habitats adjacent to the disturbed areas (Gelbard and Belnap 2003). Linear features such as power lines and roads are also associated with a greater abundance of noxious and invasive weeds that decrease with increasing distance from the linear feature (Gelbard and Belnap 2003; Bradley and Mustard 2006; Bradley 2010). Non-native plant invasions have the potential to alter wildlife habitat quality by outcompeting native plants, altering the natural fire regime, and by changing ecosystem processes (e.g., nitrogen cycling). Construction of access roads and the movement of construction equipment and other vehicles along these roads would increase the potential for the spread of noxious weeds in the affected areas (Sheley et al. 1999; Gelbard and Belnap 2003). PDFs would be implemented to reduce the potential spread of noxious weeds and invasive species from Project activities and include the following: reseeding disturbed areas with certified weed-free materials (e.g., seed, borrow material, straw wattles and bale barriers); washing all equipment before entering the Project area and when leaving areas where noxious weeds are present; closing or rehabilitating new or improved access roads that are not required for maintenance; and complying with all federal, state and county noxious weed control regulations and guidelines. In addition, a Noxious Weed and Invasive Plant Management Plan would be developed in consultation with land management agencies and local weed control districts and would be incorporated into the final POD. The Noxious Weed and Invasive Plant Management Plan would emphasize control of cheatgrass during follow-up visits to prevent, to the extent practical, the establishment of cheatgrass before, during, and after establishment of reclaimed vegetation.

Habitat loss and degradation could also occur in the Project area by a wildland fire event. The Washington Sage-Grouse Recovery Plan (Stinson et al. 2004) and the range wide USFWS 12-Month Findings for Petitions to List the Greater Sage-Grouse as Threatened or Endangered (USFWS 2010) identify habitat loss and degradation from large-scale fires as the primary threat to remaining sage-grouse populations. The Recovery Plan states that fire prevention is critical to maintain sage-grouse populations on the JBLM YTC (Stinson et al. 2004). Non-native plants, particularly cheatgrass, create a more continuous fuel bed than native bunchgrasses, resulting in shorter intervals between occurrence of wildfires (Brown 2000; Paysen et al. 2000). Wildfires in turn, increase opportunities for cheatgrass establishment. This creates a positive feedback loop, often resulting in a self-sustaining cycle that permanently converts large portions of the landscape from sagebrush steppe to annual grasslands dominated by cheatgrass (Brown 2000; Paysen et al. 2000).

To minimize the potential for wildland fire and the resulting loss of sage-grouse habitat, the following PDFs would be implemented: all applicable fire laws and regulations would be observed during construction and operation and construction personnel would be advised of their responsibilities under these laws and regulations, including taking practical measures to report and suppress fires; the development and implementation of a Noxious Weed and Invasive Plant Management Plan with an emphasis on cheatgrass control; closing or rehabilitating new or improved access roads that are not required for maintenance; and developing and implementing a Fire Protection and Control Plan. The Fire Protection and Control Plan would be incorporated into the POD and will include measures to be implemented during construction and maintenance, such as: restricting smoking to designated areas; restricting equipment parking to sites cleared of all flammable material; equipping vehicles with appropriate fire suppression equipment; and training Pacific Power and its contractors on fire safety, minimizing fire hazards, and to safely suppress a fire until firefighters can respond. Applicable fire management measures from JBLM YTC Wildland Fire Management Plan will be incorporated into the Fire Protection and Control Plan.

A potential indirect effect of habitat loss is habitat fragmentation, which may affect habitat connectivity and predation risk. Fragmentation of habitat may be caused by the replacement of sagebrush steppe with early successional grassland habitat or by the presence of the infrastructure

which may cause behavioral avoidance of the ROW, even where habitat is not directly removed. Loss of connectivity through habitat fragmentation may inhibit daily movements of sage-grouse within their home-ranges as well as migration movements. Fragmentation may also inhibit dispersal ability, leading to greater isolation among habitat patches (Saunders et al. 1991; WHCWG 2010; WHCWG 2012; Robb and Schroeder 2012). Fragmentation may increase the risk of predation by attracting predators. Howe et al. (2014) found a positive correlation between sagebrush steppe/annual grassland habitat edge and density of common ravens, a common nest predator of sage-grouse.

### **Predation**

Transmission lines may result in increased predation on sage-grouse, particularly from avian predators (corvids and raptors) that may perch and/or nest on transmission structures and conductors. Sage-grouse are preyed upon by a variety of species, including raptors that prey on adults and chicks, and corvids and mammals that prey on eggs, newly hatched chicks, and adults. Avian predators are: golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), red-tailed hawk (*B. jamaicensis*), rough-legged hawk (*B. lagopus*), Swainson's hawk (*B. swainsoni*), gyrfalcon (*Falco rusticolus*), northern goshawk (*Accipiter gentilis*), Cooper's hawk (*A. cooperii*), American kestrel (*Falco sparverius*), merlin (*F. columbarius*), prairie falcon (*F. mexicanus*), northern harrier (*Circus cyaneus*), common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), and black-billed magpie (*Pica hudsonia*). Non-avian predators include coyote (*Canis latrans*), bobcat (*Lynx rufus*), red fox (*Vulpes fulva*), American badger (*Taxidea taxus*), weasel (*Mustela* spp.), ground squirrel (*Spermophilus* spp.) and bull snake (*Pituophis catenifer*; Schroeder et al. 1999; Connelly et al. 2011a, 2011b).

Mammalian predators and scavengers may use roads and transmission ROWs as travel corridors which may facilitate predation on sage-grouse (Bennett 1991; Forman and Alexander 1998). Because the Project ROW would occur within sagebrush steppe and grassland habitats that are already open, the effects of mammalian predation on sage-grouse are likely to be less pronounced compared with corridor effects in forested landscapes. In the relatively treeless environment of the NNR Project area, avian predators are more likely to benefit from a transmission line structures than mammalian predators. Armentrout and Haul (2005) reported that sage-grouse nests and adults associated with leks near transmission lines were lost at a higher rate to avian rather than mammalian predators. They reported that predation attributed to mammals actually occurred at a lower rate near transmission lines.

Transmission line structures provide substrates for perching, roosting and nesting for avian predators (i.e., raptors and corvids), particularly in open areas where natural substrates are limited (APLIC 2006; Knight et al. 1995; Steenhof et al. 1993). Common raven populations have increased fourfold in the western U.S. during the past 40 years (Sauer et al. 2012). Raven populations often increase following human alteration of landscapes due to increased availability of food (e.g., litter associated with human use, roadkill, refuse, landfills), water (e.g., stock ponds, reservoirs), and nesting substrates (e.g., transmission line structures, communication towers, buildings; Knight and Kawashima 1993; Kristan and Boarman 2004; Howe et al. 2014). In eastern Idaho, Howe et al. (2014) reported a 31% decrease in the odds of nesting by ravens for every 0.6 mile (1 kilometer [km]) increase in distance away from a transmission line ROW, with 48 of 82 nests in the study located on transmission poles. While specific studies linking transmission lines and predation risk for sage-grouse are lacking (UWIN 2010), raven research indirectly suggests a link between transmission lines and predation on sage-grouse. Sage-grouse nest failure has been positively correlated with raven abundance (Coates and Delehanty 2010) and occupancy (Bui et al. 2010). However, increased predation on sage-grouse might occur at some, but not all transmission line sites. A study in Nevada found no difference in sage-grouse nest success by distance to power line even though raven densities

increased dramatically post-construction (Blomberg et al. 2010). Even the relationship between raven abundance and sage-grouse nest success may be complicated. In southern Wyoming, Dinkins (2013) documented lower sage-grouse nest success (22%) when ravens were detected within 550 meters of the nest compared with success at nests with no ravens detected nearby (41%).

Long-term monitoring of raven nests at JBLM YTC began in 1994. In 1994, 28 raven nests were located on JBLM YTC; seven (25%) of them were located on anthropogenic structures, including one on a power line structure (Paulus and Malkin 1995). In 2013, 47 raven nests were located on JBLM YTC, a 68% increase relative to 1994. Only two of the 47 nests were located within one mile of all the proposed NNR route segments. Both were located near Route Segment NNR-6, including one in a tree along Foster creek, and one on a building one mile south of NNR-6 and one mile east of NNR-5. Although an attempt is made to locate all raven nests on JBLM YTC each year, search efforts have not been spatially and temporally consistent (JBLM YTC personal communication 2014).

A correlation between raven abundance and transmission lines has been established elsewhere (Howe et al. 2014); at JBLM YTC the distribution of raven nests does not appear to be spatially correlated with the locations of transmission lines. None of the active raven nests identified in 2013 were located on the existing Pomona-Wanapum 230 kV transmission line structures that the proposed NNR alternative closely parallels. It is unclear if the apparent nesting patterns of ravens are real or just an artifact of spatial variation in search effort.

The Terrace Heights Landfill is located approximately 3.5 miles southeast of NNR-1 and NNR-2, and is likely to provide an abundant source of food for ravens (Paulus and Malkin 1995). Transmission line structures may be more likely to be used by ravens in areas near this abundant food supply, but, raven use may have less impact on grouse within NNR-1 and NNR-2, where urban influence and lack of suitable habitat may already limit potential for sage-grouse use.

Because raptor and corvid populations are not likely to be limited by availability of nesting and perching substrates in areas where those resources currently exist, it is reasonable to expect the effect of new transmission structures to be greatest where other tall structures, including transmission lines, do not currently exist. The NNR closely parallels an existing 230 kV transmission line (Pacific Power Pomona-Wanapum) that primarily uses H-frame poles similar to the ones proposed for the NNR Alternative. As part of the NNR alternative design, whenever feasible, new structures will match the spans of the existing Pacific Power Pomona-Wanapum transmission line; such that most new structures will be located within approximately 200 feet of an existing structure. Given the territorial nature of raptor and corvid species and density limitations imposed by food availability, it seems unlikely that adding a structure 200 feet from a similar existing one would have much, if any, effect on the density of corvids or raptors. The new structures would offer new perching opportunities that would increase the amount of sage-grouse habitat that is within view of a perch and effectively widen the corridor of increased predation risk, typically by about 200 feet.

To assess impacts to sage-grouse from the presence of additional perching sites, the total number of structures per route segment was estimated and, using a conservative approach, an assumption of one perch per structure was made. In general, the number of perching opportunities for a given route segment is directly related to its length. Table 7 presents the number of transmission structures for the proposed NNR alternative by route segment and identifies if they are located greater than 0.25 mile from an existing transmission line. As discussed in the previous paragraph, new structures in new areas are likely to have a higher impact than new structures in close proximity (<0.25 mile) to existing structures because they may encourage predators to occupy previously unoccupied areas. The proposed NNR alternative would not result in any new structures further than 0.25 mile from existing structures for Route Segments NNR-4, NNR-6, NNR-7, or NNR-8. Route Segment MR-1 would

require considerably more new structures farther than 0.25 mile of an existing line compared with all other route segments combined (85 compared with 50).

**TABLE 7 SUMMARY OF THE LENGTH AND NUMBER OF NEW TRANSMISSION STRUCTURES THAT WOULD NOT BE LOCATED WITHIN A QUARTER MILE OF AN EXISTING TRANSMISSION LINE**

ROUTE SEGMENT	LENGTH OF ROUTE SEGMENT (MILES)	LENGTH AND PERCENT OF ROUTE SEGMENT LOCATED >0.25 MILE FROM AN EXISTING TRANSMISSION LINE	TOTAL ESTIMATED NUMBER OF NEW STRUCTURES	TOTAL ESTIMATED NUMBER OF NEW STRUCTURES LOCATED >0.25 MILE FROM AN EXISTING TRANSMISSION LINE
NNR-1	2.4	1.1 (44%)	31	14
NNR-2	5.0	2.1 (42%)	48	21
NNR-3	9.3	0.6 (7%)	69	5
NNR-4o*	4.5	0	35	0
NNR-4u*	4.5	0	4	0
NNR-5	1.8	1.2 (67%)	16	10
NNR-6o*	6.4	0	48	0
NNR-6u*	6.4	0	2	0
NNR-7	8.2	0	61	0
NNR-8	2.7	0	20	0
MR-1	11.9	11.2 (94%)	90	85

Source: Number of structures and types is based on preliminary engineering and design. \*o = overhead design option; u = underground design option. The number of structures for undergrounding took into account transitions stations. For this table, transition stations were considered as a structure.

Sage-grouse predators that may nest on power line structures include golden eagle, red-tailed hawk, and common raven (Schroeder et al. 1999). Average foraging distances from nests is 0.4 mile for ravens (Boarman and Heinrich 1999) and 2.2 miles for golden eagles (Marzluff et al. 1997). An average radius of territories is: 1.0 mile for ravens (Boarman and Heinrich 1999), 1.8 miles for golden eagles (Kochert et al. 2002), and 0.5 mile for red-tailed hawks (Janes 1984). Non-breeding corvids and raptors often have larger home ranges than breeding individuals. Territories of non-breeding eagles average 2.8 miles in radius (Kochert et al. 2002). Average foraging distances for non-breeding ravens averaged 4.3 miles in southwestern Idaho (Engel and Young 1992). Non non-breeding ravens are also more likely to congregate in flocks than are territorial breeders. However, Bui et al. (2010) suggested that resident territorial ravens, rather than non-breeding transient ravens, were most likely responsible for the majority of sage-grouse nest predation because sage-grouse nest survival at their Wyoming site was correlated with raven occupancy, not density.

To minimize the potential for increased predation rates the following PDFs will be implemented: the line will closely parallel an existing 230 kV transmission line, typically staying within 200 feet; whenever possible, locations of the new structures will match the spans of adjacent transmission lines; to avoid providing food subsidies to ravens or other predators, food waste will be kept in covered receptacles and removed daily; and perch deterrents will be used within four miles of active leks.

**Behavioral Avoidance of Infrastructure**

Behavioral avoidance of infrastructure may be an indirect cause of habitat loss if the proposed NNR Alternative results in sage-grouse avoiding existing suitable habitat. It may be difficult to differentiate between behavioral avoidance and other effects that may decrease abundance of sage-grouse near

project infrastructure such as increased predation, collisions, habitat degradation, or avoidance of human presence. This section discusses effects of behavioral avoidance on sage-grouse abundance and lek persistence, in spite of the uncertainty surrounding the mechanism for these effects.

Possible explanations for sage-grouse avoidance and extirpation of leks near transmission power lines are: 1) sage-grouse directly avoid the tall structures lines because they are adapted to inhabit treeless environments; 2) sage-grouse indirectly avoid power lines because they are avoiding the avian predators that are more abundant near power lines; or 3) a combination thereof. To date, no studies have examined mechanisms for sage-grouse avoidance of tall structures (UWIN 2010).

As discussed above, use of transmission lines by avian predators is well documented (APLIC 2006; Knight et al. 1995; Steenhof et al. 1993) and densities of avian predators may increase near transmission lines (Howe et al. 2014). Dinkins et al. (2012) documented sage-grouse avoidance of avian predators in Wyoming. Nests and brood-rearing areas were located in areas with lower densities of ravens, magpies, golden eagles, and *Buteo* hawks compared with random locations.

Reports on direct sage-grouse avoidance of power lines and effects on lek persistence are conflicting. Ellis (1984) observed that sage-grouse stopped displaying in the presence of a perched golden eagle 500 meters from the lek. Schroeder (2010) reports that in Washington, 19 of 20 leks documented within 4.6 miles of 500 kV transmission lines are now vacant compared with vacancies of 59% for leks further than 4.6 miles from 500 kV lines. The timing of the lek vacancies relative to transmission line construction is not known. Within the reintroduced Lincoln County sage-grouse population in northeastern Washington, Stonehouse (2013) found that translocated birds selected home ranges and nest sites further from roads/distribution lines. Because roads and power distribution lines were combined into a single variable, it's not possible to determine how much of the avoidance was due to distribution lines and how much was due to roads. In a coal bed methane gas development area in northeast Wyoming, Braun et al. (2002) reported significantly slower growth rates during 11 years of monitoring for 40 sage-grouse leks within 0.25 mile of overhead power lines compared to 160 leks further from the lines. The authors speculated that high raptor predation rates because of perches were a likely cause. Wisdom et al. (2011) conducted a landscape-scale study for greater sage-grouse and Gunnison sage-grouse, comparing 22 landscape variables within currently occupied range and formerly occupied, extirpated range. Distance to transmission line was among the five most predictive variables. Mean distance to transmission lines was two times farther for occupied range than for extirpated range. Blomberg et al. (2010) compared lek attendance before construction of a transmission line in Nevada with lek attendance seven years after construction. At the 11 leks varying in distance up to 12.5 miles from the 345 kV line, overall lek attendance decreased approximately 50% following construction but there was no apparent affect of distance from the transmission line. The authors attributed the decline to a regional trend (Blomberg et al. 2010). Johnson et al. (2011) found no relationship between 11 years of lek count trends from across the sage-grouse range and the distance of the nearest power line; however, as the majority of power lines were in place before the 1997-2007 study period, the effects of the power lines may have already been manifested before the study began.

A report from Idaho Power examined lek persistence along power lines 42 years after lek surveys began and did not find a relationship between distance to power line and lek persistence. Sixty-one percent of leks within 0.6 mile of a power line were still active and lek persistence ranged from 40-84% out to 11.3 miles from a power line. Ten leks were within 0.2 mile of a power line and remained active for at least 28 years after construction (IPC 2010).

While evidence for sage-grouse behavioral avoidance of power lines is minimal and evidence of decreased lek attendance and/or persistence is inconsistent, avoidance of power lines has been well

documented for other prairie grouse species and sage-grouse avoidance and/or lek decline has been well documented for other infrastructure, including communication towers, roads, and oil and gas development areas. It remains unclear which, if any, of the effects documented for oil and gas development might also apply to transmission lines.

Transmission line avoidance has been demonstrated for two related prairie grouse species. Lesser prairie chickens (*Tympanuchus pallidicinctus*) have been documented to avoid transmission lines in general (Hagen 2003; Robel et al. 2004; Pruett et al. 2009) and when selecting nest sites (Robel et al. 2004; Pitman et al. 2005). Greater prairie chickens (*Tympanuchus cupido*) have also been documented to avoid transmission lines. Documented avoidance distances ranged from greater than 328 feet up to 2,067 feet (100 meters to 630 meters). Both species cross transmission lines significantly less frequently than would be expected if movements were random (Pruett et al. 2009).

For sage-grouse, decreased lek count trends were associated with communication towers (Johnson et al. 2011). Road avoidance by sage-grouse has been documented in oil and gas development (Holloran 2005; Dzialak et al. 2012) and within two miles of I-80 in Wyoming (Connelly et al. 2004), but road avoidance may be site and season dependent (Harju et al. 2013). Several studies have found that oil and gas development affects sage-grouse negatively, but the mechanisms responsible for population declines are not understood (Reviewed by Naugle et al. 2011).

To minimize the potential for behavioral avoidance, the following PDFs will be implemented: the line will closely parallel the existing Pacific Power 230 kV transmission line, with typical transmission line separations of 200 to 300 feet; whenever possible, locations of the new structures will match the spans of the existing line; to avoid providing food subsidies to ravens or other predators, food waste will be kept in covered receptacles and removed daily; and perch deterrents will be used within four miles of active leks.

The PDFs would likely minimize the beneficial effect to avian predators which would reduce sage-grouse avoidance due to predators. These PDFs may also minimize the visual impact of the structures on sage-grouse which would reduce an avoidance effect of the structures.

The proposed NNR alternative ROW is located outside of the current JBLM YTC grouse population range, where 95% of sage-grouse use is estimated to occur (Figure 4). The eight-mile-wide Project area slightly overlaps the population range (by approximately 8%), but does not overlap the core range, where 80% of sage-grouse use is estimated to occur (Figure 4). Recent use has been documented near route segments NNR-4, NNR-5, and NNR-6, but use appears to be infrequent. No grouse were seen during ground transect surveys conducted in May and July of 2013; scat was observed in six locations adjacent to NNR-6, one location on NNR-5, and one location on NNR-4.

Based on 2013 data, there are two active leks and 12 historic leks known to occur within four miles of the proposed NNR alternative (Table 2). To ascertain the length of the proposed NNR alternative route segments that could have an impact on active leks, the length (miles) of the centerline within four miles of active leks was calculated (Table 8). Route Segment NNR-3 has the longest length of line that is within four miles of an active lek (4.1 miles). A visual analysis conducted indicates that approximately 1.6 miles (approximately 11 transmission line structures) of NNR-3 would not be visually obstructed by terrain and would therefore be visible from lek #1. Within four miles of lek #2, all transmission line structures would be visually obstructed by terrain and, therefore, not visible from the lek.

**TABLE 8 MILES OF CENTERLINE WITHIN FOUR MILES OF ACTIVE GREATER SAGE-GROUSE LEKS**

ROUTE SEGMENT	ACTIVE LEKS WITHIN 4 MILES (NUMBER) <sup>1</sup>	MILES OF CENTERLINE WITHIN 4 MILES OF ACTIVE LEK
NNR-1	0	0
NNR-2	1	1.2
NNR-3	1	4.1
NNR-4o and NNR-4u*	0	0
NNR-5	0	0
NNR-6o and NNRu6u*	1	3.7
NNR-7	0	0
NNR-8	0	0
MR-1	0	0

Notes: <sup>1</sup>Active leks are defined as a lek that has been attended by at least 2 male sage-grouse within the past 24 months (2012-2013; Stinson et al. 2004; SEE 2013). \*o = overhead design option; u = underground design option.

### **Disturbance and Displacement from Temporary Human Presence**

Construction, operation and maintenance activities associated with the proposed NNR alternative as well as increased access resulting from the new ROW may result in increased human disturbance to sage-grouse. Sage-grouse are known to be sensitive to human presence (Connelly et al. 2000) as well as vehicle traffic and noise (Holloran 2005; Dzialak et al. 2012). For NNR alternative locations outside of JBLM YTC, which has controlled access, the proposed NNR alternative may also result in increased human presence to areas previously inaccessible, as well as to off-road vehicle recreation (USFWS 2010).

Lek buffers recommended to protect sage-grouse from disturbance and displacement during the breeding season vary in the literature from 0.6 mile to three miles (Connelly et al. 2000; ISAC 2006). Due to heightened concern for sage-grouse within Washington, USFWS recommended this Project avoid disturbance during the breeding season within a four mile buffer of occupied leks.

The PDFs include avoiding construction and/or maintenance activities within four miles of active leks from February 1 to June 15 to protect lekking, nesting, and early brood-rearing and avoiding construction and/or maintenance activities within sage-grouse winter habitat from December 1 through February 1 if winter conditions are exceptionally severe, i.e., snow cover is much higher than normal (e.g., above sagebrush height) or temperatures are much lower than normal. Winter construction and/or maintenance activities within sage-grouse winter habitat will be coordinated with JBLM YTC. Seasonal restrictions will protect grouse during vulnerable breeding and winter periods. To further minimize disturbance to sage-grouse, additional PDFs include: restricting construction activity to predetermined spatial limits, including restrictions on use outside of the ROW; conducting pre-construction clearance surveys for sage-grouse in overland access areas; closing and/or rehabilitating new or improved access that is not required for maintenance; and imposing 25 mph speed limits on access roads and 15 mph speed limits for overland travel.

### **Habitat Connectivity and Linkage**

The WHCWG modeled connectivity potential among the four sage-grouse populations in Washington (two established populations and two reintroduced populations). The purpose, context, and methods of the analysis are discussed in Section 5.2 Habitat Connectivity.

The WHCWG analysis identified the linkage between the JBLM YTC HCA and the Mansfield Plateau/Moses Coulee HCA as “fairly good” (Figure 8). Much of the habitat along this linkage zone is shrub steppe that is protected within state-owned wildlife areas (e.g., WDFW Colockum Wildlife Area). Impediments to this linkage include the relative steepness of the terrain and disturbance associated with I-90, several existing transmission lines, and wind energy development. Conditions for movement are best in the central portion of the linkage, but there are areas of concern at both ends. Near its northern end, the modeled linkage zone is constricted as it crosses the Columbia River near Rock Island Dam. Near the southern end, north of I-90 and the NNR, the linkage is constricted by wind energy development on state and private land (Robb and Schroeder 2012).

The lowest-cost pathway appears to intersect the NNR alternative Project area near Route Segments NNR-6 and NNR-7. Local patterns of sage-grouse distribution suggest that NNR-6 is likely to be the most important connectivity zone. Telemetry data, observational data, and population range modeling indicates a higher probability of sage-grouse use near NNR-4, NNR-5 and western NNR-6 than near eastern NNR-6 and NNR-7, but the presence of existing wind development north of I-90 reduces the linkage value of the more western segments, according to the WHCWG model. Nevertheless, it appears that the entire stretch between Badger Pocket and the Columbia River could serve as valuable linkage habitat. Route Segment NNR-7 is separated from the existing population range by the steep terrain of the Saddle Mountains. On JBLM YTC, sage-grouse prefer flatter areas (less than 15% slope; Livingston 1998). WHCWG did not include slope in their models, asserting that slope is not likely a factor impeding movement (Robb and Schroeder 2012).

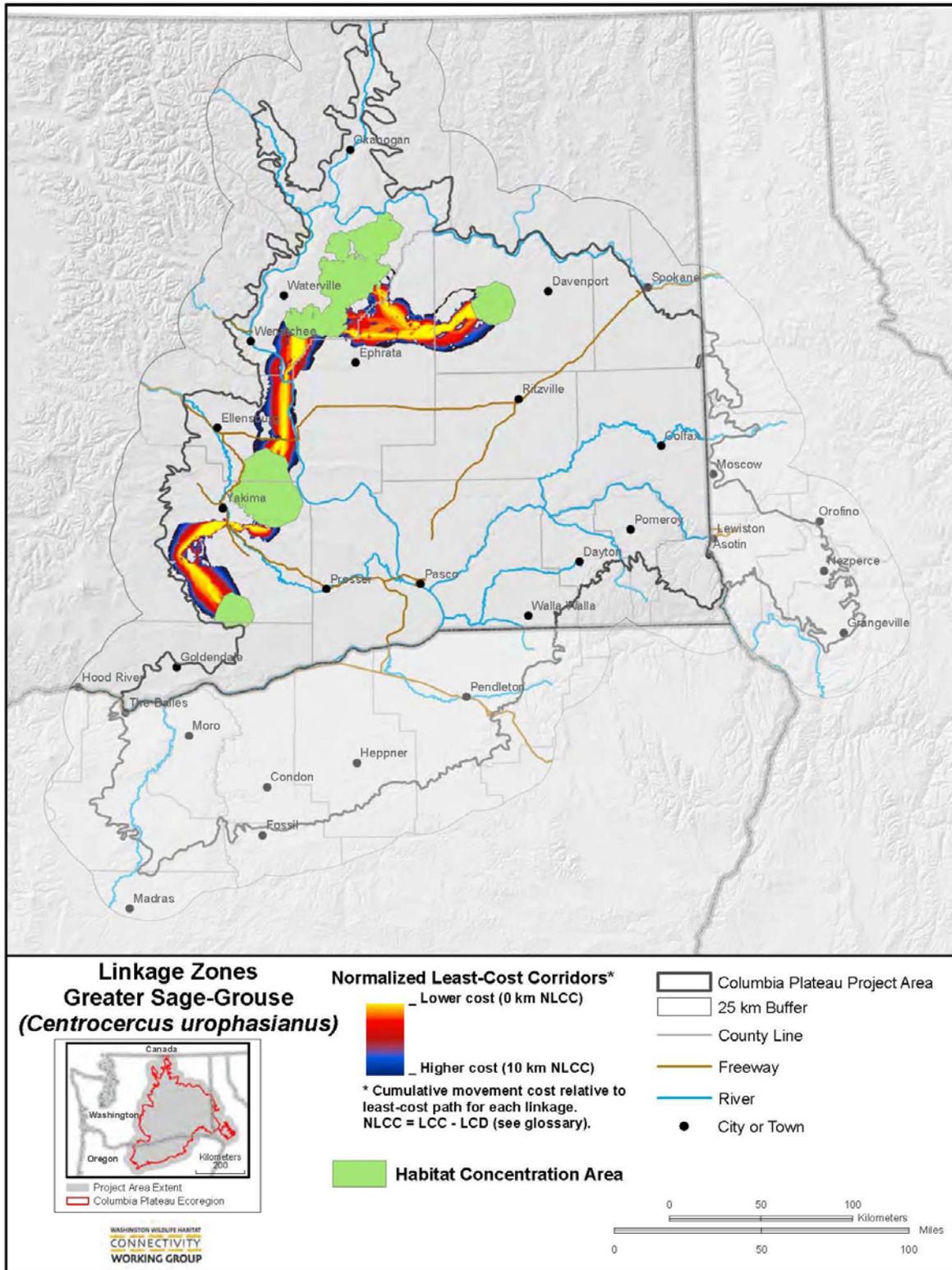
The HCA on Yakama Nation lands is separated from the JBLM YTC HCA due to urban development and freeway infrastructure along I-82. The least-cost pathway connects to the JBLM YTC HCA south of the proposed Project; therefore, connectivity with the Yakima Nation HCA is unlikely to be affected by the NNR.

Because the proposed NNR closely parallels an existing Pacific Power 230 kV transmission line as it crosses the identified linkage area, the magnitude of its effect on sage-grouse movement will depend on a number of unknown variables, including the perception of the vertical structures by sage-grouse, and the potential for the structures to attract avian predators. The proposed NNR transmission line would impede sage-grouse movement, but only to the extent that sage-grouse avoid the transmission line (refer to the Behavioral Avoidance of Infrastructure discussion above). There is no research indicating how the width of a disturbance corridor (such as a transmission line ROW) influences sage-grouse movement. The resistance values assigned by WHCWG indicate that they predict that adding a second transmission line to an existing ROW corridor will increase the existing impediment by roughly 25%.

The impact of the proposed NNR alternative line also depends on the behavior of sage-grouse relative to other landscape features located between the two populations. If no movement occurs between the two populations currently, then adding an impediment would not result in a change. Genetic evidence suggests that currently there may be little movement between the two populations. Nevertheless, the effort by WHCWG to evaluate the linkages indicates motivation to restore and enhance connectivity and it is possible that impedance to movement by other existing landscape features in the linkage zone could be ameliorated in the future.

To minimize the potential for predation and behavioral avoidance and thus the impedance to movement and connectivity, the following PDF would be implemented: the line will closely parallel an existing 230 kV transmission line, with transmission centerline separation typically staying within 200 to 300 feet; whenever possible, locations of the new structures will match the spans of adjacent transmission lines; and perch deterrents will be used within four miles of active leks.

Given the current location of active leks, perch deterrents will be installed on transmission line structures within a four mile stretch of NNR-6 that is within the most likely zone for movement between populations to occur. The PDFs would likely minimize the benefits to avian predators (discussed in section 7.4.2), which would reduce sage-grouse avoidance due to predators. These PDFs may also minimize the visual impact of the structures on sage-grouse which would reduce an avoidance effect of the structures.



**FIGURE 8** CONNECTIVITY ZONES IDENTIFIED BY WHCWG MODELING (FIGURE TAKEN FROM ROBB AND SCHROEDER 2012).

## **Collisions**

Because research data on sage-grouse collisions with power lines are minimal, the number of sage-grouse collisions with transmission lines is difficult to evaluate (Johnson and Holloran 2010). A study in Idaho that outfitted 58 juvenile sage-grouse with radio transmitters, found two of the 11 mortalities observed (18%) resulted from collisions with a power line; however, the study does not indicate what size of transmission line was present in the study area (Beck et al. 2006). In contrast, a study in Nevada on the response of sage-grouse to construction of a 345 kV transmission line did not find any collision mortalities of the 240 hens which were outfitted with radio transmitters (Blomberg and Sedinger 2009). Additional incidental discoveries or anecdotal accounts of sage-grouse collisions with power lines exist (Schroeder 2010).

Power line collision risk may depend on several factors. Collision risk is highest with the static wire or shield wire (Faanes 1987), while collision risk with guy wires is unknown for sage-grouse (USFWS 2010). Collision risk also may depend on power line structures and configuration, location of a power line in relation to bird use areas, weather, as well as flight behavior and physiology of birds (Bevanger 1998). The placement of the proposed NNR alternative line along the northern periphery of the habitat occupied by the existing JBLM YTC grouse population (instead of through the population) and closely paralleling an existing line should reduce the risk of collision.

Although it is not possible to quantify impacts associated with each NNR route segment, it can be assumed that those route segments that affect the greatest amount of sage-grouse habitat would also likely have the highest level of collision mortality. Collision risk would have important implications for sage-grouse conservation and recovery within the linkage zone identified by WHCWG, along Route Segments NNR-6 and NNR-7.

The implementation of PDFs is anticipated to be effective at reducing the potential for injury or mortality to sage-grouse from collisions with the transmission line conductor and structures, fences, and vehicles (APLIC 2012). Applicable PDFs include: installing bird flight diverters in locations with known avian collision mortality; installing markers on any new fences constructed or repaired in sage-grouse habitat; moving vehicles and equipment at slow speeds; and restricting construction vehicle movement to pre-designated locations. In addition, direct mortality from vehicles would be reduced by avoiding construction or maintenance activities within four miles of active leks from February 1 to June 15.

### **7.2.4 By Route Segment**

The information included below, by NNR alternative route segment, is intended to focus on highlighting differences between route segments. Impacts described below take into account the implementation of committed PDFs (Section 7.2.1) by Pacific Power. Please refer to Section 7.2.3 for a description of the impacts common to all route segments and to Section 6.5 for route segment-specific descriptions of existing infrastructure, land cover types, sage-grouse habitat, and sage-grouse use.

#### **Route Segment NNR-1**

The landscape within the eight-mile-wide NNR-1 analysis area has experienced extensive alteration from rural and urban development and infrastructure, as described in Section 6.5.

All of the short-term (10.9 acres) and long-term (2.3 acres) habitat disturbance associated with Route Segment NNR-1 is within the Regularly Occupied Habitat MU for sage-grouse (Tables 4 and 7). Construction activities would disturb less than one percent of Regularly Occupied Habitat on a short-

term basis and less than one percent on a long-term basis (Tables 4 and 7). The majority of the disturbance for this route segment would occur in habitat that has been disturbed in the past and is currently dominated by rabbitbrush, exotic annual grasses, and developed areas such as agricultural and residential areas. No disturbance from construction, operation or maintenance of the NNR Alternative is anticipated to occur within suitable or marginal sage-grouse habitat; 13.1 acres of disturbance will occur in unsuitable habitat (Table 5). PDFs implemented during construction and operation are anticipated to be effective at reducing impacts to sage-grouse habitat (refer to Sections 7.2.1 and 7.2.3). Considering the existing degraded habitat available within Route Segment NNR-1 and with the implementation of PDFs, the scale of disturbance and degradation to sage-grouse habitat is anticipated to be low for the entire route segment (2.4 miles).

Existing perching, roosting and nesting sites are available along Route Segment NNR-1 from buildings, trees, fences associated with developed areas and existing distribution and 230 kV H-frame transmission lines. Construction of Route Segment NNR-1 would require approximately 31 new structures; approximately 17 (55%) of these new structures would be located greater than 0.25 mile from an existing transmission line (Table 7).

There are no active leks within four miles of Route Segment NNR-1. Potential impacts to lekking sage-grouse would be minimized by the implementation of PDFs (refer to Sections 7.2.1 and 7.2.3). With the implementation of PDFs combined with no known active or inactive leks within four miles, impacts to lekking sage-grouse with the construction of Route Segment NNR-1 is anticipated to be low.

### **Route Segment NNR-2**

Existing disturbance within the eight-mile- NNR-2 analysis area is largely from urban and rural development, as described in Section 6.5.

The majority of short-term (18.8 acres) and the entirety of long-term (3.7 acres) habitat disturbance associated with Route Segment NNR-2 would be located within the Regularly Occupied Habitat MU for sage-grouse (Tables 4 and 7). Construction activities would disturb less than one percent of Regularly Occupied Habitat on a short-term basis and less than one percent on a long-term basis (Tables 4 and 7). The majority of disturbance for this route segment would occur in habitat that has been disturbed in the past and is currently dominated by rabbitbrush, exotic annual grasses, and developed areas, such as agricultural and residential areas. No disturbance is predicted to occur within suitable sage-grouse habitat; 7.8 acres of disturbance is anticipated to occur in marginal habitat, and 16.4 acres within unsuitable habitat (Table 5). With the implementation of PDFs (refer to Sections 7.2.1 and 7.2.3), the scale of disturbance and degradation to sage-grouse habitat is anticipated to be low for the entire route segment (5.0 miles).

Existing perching, roosting and nesting sites for avian predators are available along Route Segment NNR-2 from buildings, trees, fences associated with developed areas and existing low-voltage distribution and 230 kV H-frame transmission lines. Construction of Route Segment NNR-2 would require an estimated 48 new structures; approximately 21 (44%) would be located greater than 0.25 mile from an existing transmission line (Table 7).

Approximately 1.2 miles of Route Segment NNR-2 is within four miles of an active lek. All of the structures within four miles of the active lek would be visually obstructed by terrain and therefore not visible from the lek. The lek is described in Section 6.5. Potential impacts to lekking sage-grouse would be minimized by the implementation of PDFs (refer to Sections 7.2.1 and 7.2.3). Lek impact levels are anticipated to be low for 3.7 miles and moderate for 1.3 miles.

### **Route Segment NNR-3**

Route Segment NNR-3 more or less parallels I-82 to the west; I-82 is within two miles of the route segment for its entire length and separates the segment from the core areas of the JBLM YTC sage-grouse population. Other existing disturbance is described in Section 6.5.

The majority of short-term (34.4 acres) and the entirety of long-term (17.6 acres) habitat disturbance associated with Route Segment NNR-3 would be located within the Regularly Occupied Habitat MU for sage-grouse (Tables 4 and 7). Construction activities would disturb less than one percent of Regularly Occupied Habitat on a short-term basis and less than one percent on a long-term basis (Tables 4 and 7). Anticipated ground disturbance includes 21.1 acres of suitable sage-grouse habitat, 15.3 acres of marginal habitat, and 16 acres of unsuitable habitat (Table 5). PDFs are anticipated to be effective at reducing impacts to sage-grouse habitat (refer to Sections 7.2.1 and 7.2.3). The scale of disturbance and degradation to sage-grouse habitat is anticipated to be low for 6.1 miles and moderate for 3.2 miles.

Existing perching, roosting and nesting sites for avian predators are available along Route Segment NNR-3 from buildings, trees, fences associated with developed areas and existing distribution and 230 kV H-frame transmission lines. Construction of Route Segment NNR-3 would require an estimated 69 new structures; approximately five (7%) would be located greater than 0.25 mile from an existing transmission line (Table 7).

Approximately 4.1 miles of Route Segment NNR-3 is within four miles of an active lek. Of the 4.1 miles of line within four miles of the active lek, approximately 1.6 miles and 11 structures would not be visually obstructed by terrain. The lek is described in Section 6.5. Potential impacts to lekking sage-grouse would be minimized by the implementation of PDFs (refer to Sections 7.2.1 and 7.2.3). Lek impact levels are anticipated to be low for 5.2 miles and moderate for 4.1 miles.

### **Route Segment NNR-4o/NNR-4u**

Route Segment NNR-4 crosses I-82 and passes through a JBLM YTC bivouac area with a very high density of dirt and gravel roads. Other existing disturbance is described in Section 6.5.

Route Segment NNR-4 is being considered as either an underground segment (NNR-4u) or as a standard, overhead transmission segment (NNR-4o). Undergrounding would create a larger area of ground disturbance than an overhead line would, because the overhead line would cause relatively little ground disturbance along the spanned areas between structures and the underground design option would require trenching and a permanent access road. All of the short-term (17.6 acres) and long-term (5.4 acres) habitat disturbance associated with Route Segment NNR-4o would be located within the Regularly Occupied Habitat MU for sage-grouse (Tables 4 and 7). All short-term (33.5 acres) and long-term (17.8 acres) ground disturbance associated with Segment NNR-4u would also be located within the Regularly Occupied Habitat MU for sage-grouse. For either option construction activities would disturb less than one percent of Regularly Occupied Habitat on a short-term or long-term basis.

For NNR-4o, anticipated disturbance includes 15 acres of suitable sage-grouse habitat, seven acres of marginal habitat, and one acre of unsuitable habitat. Undergrounding NNR-4 would increase the anticipated disturbance to 33.8 acres of suitable habitat, 13.8 acres of marginal habitat, and 3.7 acres of unsuitable habitat (Table 5). PDFs implemented during construction and operation are anticipated to be effective at reducing impacts to sage-grouse habitat (refer to Sections 7.2.1 and 7.2.3). Habitat impact levels would be low for 1.6 miles and moderate for 3.0 miles.

Existing perching, roosting and nesting sites for avian predators are available along Route Segment NNR-4 from buildings, trees, fences associated with developed areas and existing distribution and 230 kV H-frame transmission lines. Construction of Route Segment NNR-4o would require an estimated 35 new structures, all of which would be located within 0.25 mile of an existing transmission line (Table 7). The underground option, NNR-4u would need to be overhead for a short-stretch as it crosses I-82. This would require two transmission towers, both within 0.25 mile of existing structures. In addition, at each of the four transitions between above-ground and underground transmission, a transition station would be required resulting in approximately five acres of disturbance at each transition station.

No active leks are known to occur within four miles of Route Segment NNR-4 (Table 2). With the implementation of PDFs (refer to Sections 7.2.1 and 7.2.3), impacts to lekking sage-grouse associated with the construction of Route Segment NNR-4, both the overhead and underground design option, is anticipated to be low for the entire route segment (4.5 miles).

### **Route Segment NNR-5**

Existing disturbance within the eight-mile-wide NNR-5 analysis area includes primary all-weather gravel access roads for military training, numerous light-duty dirt roads, two JBLM YTC bivouac areas, and a large swath of agricultural land north of the segment. The route deviates slightly from the existing 230 kV transmission line but remains within 0.5 mile for the entire segment.

All of the short-term (7.5 acres) and long-term (1.5 acres) habitat disturbance associated with Route Segment NNR-5 would be located within the Regularly Occupied Habitat MU for sage-grouse (Tables 4 and 7). Construction activities would disturb less than one percent of Regularly Occupied Habitat on a short-term or long-term basis (Tables 4 and 7). Anticipated ground disturbance includes 8.6 acres of suitable sage-grouse habitat, 0.4 acre of marginal habitat, and 0 acres of unsuitable habitat (Table 5). With the implementation of PDFs (refer to Sections 7.2.1 and 7.2.3), habitat impact levels would be low for 0.1 mile and moderate for 1.7 miles.

Existing perching, roosting and nesting sites for avian predators are available along Route Segment NNR-5 from buildings, trees, fences associated with developed areas and existing distribution and 230 kV H-frame transmission lines. Construction of Route Segment NNR-5 would require an estimated 16 new structures; approximately 10 (63%) would be located greater than 0.25 mile from an existing transmission line (Table 7).

No active leks are known to occur within four miles of Route Segment NNR-5 (Table 2). With the implementation of PDFs (Sections 7.2.1 and 7.2.3), impacts to lekking sage-grouse associated with the construction of Route Segment NNR-5 is anticipated to be low for the entire length of the route segment (1.8 miles).

### **Route Segment NNR-6o/NNR-6u**

Existing disturbance within the eight-mile-wide NNR-6 analysis area includes primary all-weather gravel access roads for military training, numerous light-duty dirt roads, two military bivouac areas west of the segment, a large swath of agricultural land west of the segment, and three existing transmission lines northeast of the segment, including one 230 kV line and two 500 kV lines.

Route Segment NNR-6 is being considered as either an underground segment (NNR-6u) or as a standard, overhead transmission segment (NNR-6o). Undergrounding would create a larger area of ground disturbance than an overhead line would, because the overhead line would cause relatively

little ground disturbance along the spanned areas between structures and the underground design option would require trenching and a permanent access road. The amount of disturbance within each landcover type is similar for the two design options. All of the short-term (24.0 acres) and long-term (6.6 acres) habitat disturbance associated with Route Segment NNR-60 would be located within the Regularly Occupied Habitat MU for sage-grouse (Tables 4 and 7). All short-term (47.3 acres) and long-term (17.0 acres) ground disturbance associated with Segment NNR-6 U would also be located within the Regularly Occupied Habitat MU for sage-grouse. For either option construction activities would disturb less than 1 percent of Regularly Occupied Habitat on a short-term or long-term basis.

For NNR-60, anticipated disturbance includes 9.5 acres of suitable sage-grouse habitat, 8.4 acres of marginal habitat, and 12.7 acres of unsuitable habitat. Undergrounding NNR-6 would increase the anticipated disturbance to 20.5 acres of suitable habitat, 16.6 acres of marginal habitat, and 27.2 acres of unsuitable habitat (Table 5). With the implementation of PDFs (Sections 7.2.1 and 7.2.3), habitat impact levels would be low for 4.5 miles and moderate for 1.9 miles.

Existing perching, roosting and nesting sites for avian predators are available along Route Segment NNR-6 from buildings, trees, fences associated with developed areas and existing distribution and 230 kV H-frame transmission lines. Construction of Route Segment NNR-60 would require an estimated 48 new structures, all of which would be located within 0.25 mile of an existing transmission line (Table 7). Although the underground option would not require transmission towers, at both transitions between above-ground and underground transmission, a transition station would be required, resulting in approximately five acres of disturbance at each transition station.

Approximately 3.7 miles of Route Segment NNR-6 is within four miles of an active lek. All of the structures within four miles of the active lek would be visually obstructed by terrain and therefore not visible from the lek. The lek is described in Section 6.5. With the implementation of PDFs (Sections 7.2.1 and 7.2.3), lek impact levels are anticipated to be low for 2.1 miles and moderate for 4.3 miles.

### **Route Segment NNR-7**

Route Segment NNR-7 continues to closely parallel the existing 230 kV transmission line, staying within approximately 200 feet for the entire segment. Existing disturbance is described in Section 6.5.

All of the short-term (30.8 acres) and long-term (7.2 acres) habitat disturbance associated with Route Segment NNR-7 would be located within the Regularly Occupied Habitat MU for sage-grouse (Tables 4 and 7). Construction activities would disturb less than one percent of Regularly Occupied Habitat on a short-term or long-term basis (Tables 4 and 7). Anticipated ground disturbance includes 25.3 acres of suitable sage-grouse habitat, 12.8 acres of marginal habitat, and 0 acres of unsuitable habitat (Table 5). With the implementation of PDFs (Sections 7.2.1 and 7.2.3), habitat impact levels would be low for 2.8 miles and moderate for 5.4 miles.

Existing perching, roosting and nesting sites for avian predators are available along Route Segment NNR-7 from buildings, trees, fences associated with developed areas and existing distribution and 230 kV H-frame transmission lines. Construction of Route Segment NNR-7 would require an estimated 61 new structures; all would be located within 0.25 mile of an existing transmission line (Table 7).

No active leks are known to occur within four miles of Route Segment NNR-7 (Table 2). With the implementation of PDFs (Sections 7.2.1 and 7.2.3), impacts to lekking sage-grouse associated with the construction of Route Segment NNR-7 is anticipated to be low for the entire route segment (8.2 miles).

### **Route Segment NNR-8**

Existing disturbance within eight-mile-wide NNR-8 analysis area includes two existing 230 kV transmission lines, two 500 kV transmission lines, and the Vantage Substation. Other existing disturbance is described in Section 6.5.

The majority of the short-term (9.0) and long-term (1.7 acres) habitat disturbance associated with Route Segment NNR-8 would be located within the Regularly Occupied Habitat MU for sage-grouse (Tables 4 and 7). Construction activities would disturb less than one percent of Regularly Occupied Habitat on a short-term or long-term basis (Tables 4 and 7). Anticipated ground disturbance includes 6.0 acres of suitable sage-grouse habitat, 2.0 acres of marginal habitat, and 5.5 acres of unsuitable habitat (Table 5). With the implementation of PDFs (Sections 7.2.1 and 7.2.3), the scale of disturbance and degradation to sage-grouse habitat is anticipated to be low for 1.7 miles and moderate for 1.0 mile.

Existing perching, roosting and nesting sites for avian predators are available along Route Segment NNR-8 from buildings, trees, fences associated with developed areas and existing distribution and 230 kV H-frame transmission lines. Construction of Route Segment NNR-8 would require an estimated 20 new structures; all would be located within 0.25 mile of an existing transmission line (Table 7).

No active leks are known to occur within four miles of Route Segment NNR-8 (Table 2). With the implementation of PDFs (Sections 7.2.1 and 7.2.3), impacts to lekking sage-grouse associated with the construction of Route Segment NNR-8 is anticipated to be low for the entire length of the route segment (2.7 miles).

### **Route Segment MR-1**

This 12-mile subroute is a proposed option to the 4.5-mile NNR-4 route segment. Existing disturbance within the eight-mile- MR-1 analysis area is described in Section 6.5.

All of the short-term (45.2 acres) and long-term (34.0 acres) habitat disturbance associated with Route Segment MR-1 would be located within the Regularly Occupied Habitat MU for sage-grouse (Tables 4 and 7). Construction activities would disturb less than one percent of Regularly Occupied Habitat on a short-term or long-term basis (Tables 4 and 7). Anticipated ground disturbance includes 50 acres of suitable sage-grouse habitat, 13.3 acres of marginal habitat, and 16.4 acres of unsuitable habitat (Table 5). With the implementation of PDFs (Sections 7.2.1 and 7.2.3), habitat impact levels would be low for 4.3 miles and moderate for 7.6 miles.

Existing perching, roosting and nesting sites for avian predators are available along Route Segment MR-1 from buildings, trees, fences associated with developed areas and existing distribution and 230 kV H-frame transmission lines. Construction of Route Segment MR-1 would require an estimated 90 new structures; approximately 85 (94%) would be located greater than 0.25 mile from an existing transmission line (Table 7).

No active leks are known to occur within four miles of Route Segment MR-1 (Table 2). With the implementation of PDFs (Section 7.2.1 and 7.2.3), impacts to lekking sage-grouse associated with the construction of Route Segment MR-1 are anticipated to be low for the entire length of the route segment (11.9 miles).

## **8.0 COMPARISON OF IMPACTS BY ALTERNATIVE**

Table 9 presents a comparison of the impacts to sage-grouse and impact levels (i.e., high, moderate, low) following the implementation of PDFs for the NNR Alternative - Overhead Design Option, NNR Alternative - MR Subroute, the NNR Alternative - Underground Design Option, and the DEIS Agency Preferred Alternative. A discussion of the impacts by alternative is presented below.

A portion of the proposed NNR Alternative would be located within the JBLM YTC PAC. Of the three NNR Alternative options and the DEIS Agency Preferred Alternative, the NNR Alternative - Overhead Design Option or the NNR - Underground Design Option would have the lowest number of miles within the PAC (38.2 miles each; 94.7% of their overall lengths). In addition, the location of the NNR Alternative - Overhead Design Option and the NNR Alternative - Underground Design Option are consolidated with an existing transmission line for the majority of their length within the PAC (36.4 miles; 95% of the length within the PAC). The NNR Alternative - MR Subroute has the most miles within the PAC (46.0 miles; 96.4% of its overall length). The DEIS Agency Preferred Alternative is within the PAC for 42.9 miles (64.7% of its overall length). All of the NNR Alternative options would be just within the boundary of the JBLM YTC Primary Sage-Grouse Protection Area for approximately one mile.

Overall, direct habitat loss to suitable sage-grouse habitat would be the greatest with the DEIS Agency Preferred Alternative (144.3 acres) and the NNR Alternative - Overhead Design Option would disturb the least amount of suitable habitat (85.3 acres). The NNR Alternative -Underground Design Option would disturb more suitable habitat than the NNR Alternative - Overhead Design Option (115.1 acres vs. 85.3 acres) because it would require more vegetation removal through the excavation of a continuous trench for underground portions and would require a permanent road to access underground locations. For all alternatives, disturbed areas would be restored following construction; however, because of the long recovery times for restoring sagebrush to a community (30 to 120 years), any direct disturbance to sage-grouse habitat would be considered a long-term impact.

Because the NNR Alternative -Overhead Design Option and the NNR Alternative -Underground Design Option closely parallel the existing Pomona-Wanapum 230 kV transmission line for the majority of their total length, utilizing nearby existing roads will reduce the need for new access roads, thus greatly decreasing the amount of direct habitat loss. Indirect habitat loss through the spread of noxious weeds and invasive species and potential increased fire frequency would occur for all alternatives. Ground disturbance and vegetation removal increase the potential for the introduction and spread of noxious and invasive weeds, with disturbed areas, such as roads and construction work areas, acting as conduits for weeds to become established in native habitats adjacent to the disturbed areas. Greater ground disturbance would occur with the construction of the NNR Alternative - MR Subroute and the NNR Alternative - Underground Design Option. The NNR Alternative - MR Subroute would require construction in areas that are not located adjacent to an existing line and in areas with few or no access roads. The NNR Alternative - Underground Design would require greater ground disturbance in underground construction locations through trenching and new, permanent access road construction.

The NNR Alternative - Overhead Design Option and the NNR Alternative -Underground Design Option closely parallel an existing 230 kV transmission line that primarily uses transmission structures similar to those proposed for the NNR Alternative options, with new structures located within approximately 200 feet of existing structures. Given the territorial nature of raptor and corvid species and density limitations imposed by food availability, it unlikely that the addition of a structure 200 to 300 feet from a similar existing structure would have much, if any, effect on the density of corvids or raptors. For the NNR Alternative - Overhead Design Option, the new perching

opportunities would increase the amount of sage-grouse habitat that is within view of a perch and effectively widen the corridor of increased predation risk, by approximately 200 to 300 feet from the existing condition.

Construction of the NNR Alternative - MR Subroute would require new H-frame poles in areas largely devoid of tall structures; corvid species may be most likely to use the new structures along Manastash Ridge that are closest to disturbance and agriculture. The DEIS Agency Preferred Alternative would require considerably more structures (499) than the other three alternatives compared in this report and the majority of these new structures (67.9%; 339 structures) would be located greater than 0.25 mile from an existing transmission line. As the NNR Alternative - Overhead Design Option and the NNR Alternative - Underground Design Option parallel an existing transmission line for the majority of their length, both alternatives would require fewer new structures (not adjacent to an existing line) to be placed on the landscape (50 each). Overall, fewer new structures would be required for the NNR Alternative - Underground Design Option (251 structures compared with 328 for the NNR Alternative - Overhead Design Option); however, the number of new structures located greater than 0.25 mile from an existing line would be the same for both.

The ROW for the three NNR Alternative options would be located outside of the current JBLM YTC sage-grouse population range, where 95% of sage-grouse use is expected to occur (based on the kernel density analysis). The eight-mile-wide sage-grouse Project area for the three NNR Alternative options overlaps approximately 8% of the total estimated 95% population range (15,271 to 15,430 acres, depending on NNR Alternative option). The NNR Alternative options do not overlap the core range, where 80% of sage-grouse use is estimated to occur. Recent grouse use has been documented near the NNR Alternative - Overhead Design Option, NNR Alternative - Underground Design Option and the NNR Alternative - MR Subroute Alternative options indicating that these areas are used by grouse occasionally, but telemetry data indicates that use near the proposed route is much lighter than areas within the population range. The DEIS Agency Preferred Alternative ROW would be located outside of the JBLM YTC sage-grouse population range. The eight-mile-wide Project area for the DEIS Agency Preferred Alternative overlaps the core range for approximately 39,312 acres and the population range for approximately 47,082 acres (approximately 44% of the total estimated population range).

The three NNR Alternative options would be located within four miles of two active leks. The DEIS Agency Preferred Alternative would be closer to leks; within two miles of two active or inactive leks and within three miles of three additional active or inactive leks. The NNR Alternative - Overhead Design Option and the NNR Alternative - Underground Design Option would be in close proximity to more historic leks (three leks within 0.6 mile) compared with the NNR Alternative - MR Subroute and the DEIS Agency Preferred Alternative (one lek within 0.6 mile). Currently, sage-grouse use near all three of the NNR Alternative options appears to be minimal. The DEIS Agency Preferred Alternative is located in closer proximity to the current population range and core population range.

For the NNR Alternative options, habitat connectivity between the JBLM YTC sage-grouse population and the Mansfield Plateau/Moses Coulee sage-grouse population appears to have the greatest potential where Route Segments NNR-6 and NNR-7 (all three NNR Alternative options) are located. Local patterns of sage-grouse distribution suggest that NNR-6 is likely to be the most important connectivity zone, but the presence of wind development north of I-90 reduces the linkage value, according to the WHCWG model. In addition, the kernel density analysis shows a southeastward shift in the JBLM YTC sage-grouse population range and core population range since 1989. This shift in use could be associated with increased training at JBLM YTC or, as sage-grouse populations have declined, sage-grouse are shifting into core, suitable habitat locations. Nevertheless, it appears that the entire stretch between Badger Pocket and the Columbia River could serve as

valuable linkage habitat. Because the proposed NNR Alternative options closely parallels an existing 230 kV transmission line as it crosses the identified linkage area, the magnitude of its effect on sage-grouse movement would depend on a number of unknown variables, including the perception of the vertical structures by sage-grouse, and the potential for the structures to attract avian predators. The NNR Alternative options may impede sage-grouse movement, but only to the extent that sage-grouse avoid the transmission line (refer to the Behavioral Avoidance of Infrastructure discussion above). The NNR Alternative - Underground Design Option could alleviate sage-grouse avoidance of the NNR; however, two existing 500 kV and two existing 230 kV transmission lines, I-90 and the two existing wind developments would still be present on the landscape. Based on information provided by the kernel density analysis, it appears that use of the area north of the proposed NNR alternative has been limited, even two decades ago when the JBLM YTC population was higher (over 400 birds). Of the three main sage-grouse connectivity zones identified by WHCWG, the one linking the JBLM YTC population with the reintroduced Yakama Reservation population was the weakest. That connectivity zone would cross the DEIS Agency Preferred Alternative, with the most valuable zone crossing Route Segment 2c, before detouring around far to the west (or to the east) in order to connect with the habitat on the Yakama Indian Reservation. But, according to Robb and Schroeder (2012), development along the I-82 corridor “essentially isolates” habitat on the Yakama Indian Reservation from the JBLM YTC population, and potential for movement between the two areas “looks dismal.” None of the proposed routes are likely to impact sage-grouse connectivity to the south; given the existing barriers, it is unlikely that movement would occur between the JBLM YTC and Yakama Indian Reservation populations with or without the proposed DEIS Agency Preferred Alternative or any of the NNR Alternative options.

**TABLE 9 SUMMARY OF IMPACTS TO SAGE-GROUSE BY ALTERNATIVE**

ALTERNATIVES	MILES WITHIN PAC	DISTURBANCE TO SAGE-GROUSE HABITAT (ACRES) <sup>1</sup>					ESTIMATED NUMBER OF NEW TRANSMISSION LINE STRUCTURES		SAGE-GROUSE POPULATION RANGE				ACTIVE OR INACTIVE LEKS (NUMBER)				PHS HISTORIC LEKS (NUMBER)				DIRECT IMPACT LEVELS (MILES) <sup>3</sup>		
		SUITABLE	MARGINAL	UNSUITABLE	TOTAL DISTURBANCE	TOTAL DISTURBANCE WITHIN THE PAC	TOTAL NUMBER OF NEW STRUCTURES	TOTAL NUMBER OF NEW STRUCTURES GREATER THAN 0.25 MILE FROM AN EXISTING TRANSMISSION LINE	ACRES WITHIN ROW		ACRES WITHIN 4 MILES (195,248 ACRES TOTAL)		WITHIN 0-0.6 MILE	WITHIN 0-2 MILES	WITHIN 0-3 MILES	WITHIN 0-4 MILES (SDEIS ONLY) <sup>2</sup>	WITHIN 0-0.6 MILE	WITHIN 0-2 MILES	WITHIN 0-3 MILES	WITHIN 0-4 MILES (SDEIS ONLY) <sup>2</sup>	HIGH	MODERATE	LOW
									0-80% CORE POPULATION RANGE	95% POPULATION RANGE	0-80% CORE POPULATION RANGE	95% POPULATION RANGE											
NNR Alternative Overhead Design Option NNR-1, NNR-2, NNR-3, NNR-4o, NNR-5, NNR-6o, NNR-7, NNR-8 40.3 miles	38.2	85.3	54	64.7	204	193.3	328	50	0	0	0	15,430 (8%)	0	0	0	2	3	6	8	14	0	23.9	16.4
NNR Alternative MR Subroute NNR-1, NNR-2, NNR-3, NNR-5, NNR-6o, NNR-7, NNR-8, MR-1 47.7 miles	46.0	120.1	60.1	80	265.8	255.3	383	135	0	0	0	15,271 (8%)	0	0	0	2	1	5	8	14	0	28.5	19.2
NNR Alternative with Underground Design Option NNR-1, NNR-2, NNR-3, NNR-4u, NNR-5, NNR-6u, NNR-7, NNR-8 40.3 miles	38.2	115.1	69	81.7	260.2	249.5	251	50	0	0	0	15,430 (8%)	0	0	0	2	3	6	8	14	0	23.9	16.4
DEIS Agency Preferred Alternative 1a, 1b, 2a, 2c, 2d, 3a, 3c 66.3 miles	42.9	144.3	26.8	158.4	329.5	*	499	339	140.2	255.7	39,312	86,395 (44%)	0	2	5	*	1	2	4	*	0	28.7	37.6

Notes: PHS = Priority Habitats and Species <sup>1</sup>Sage-grouse habitat was assessed using the sage-grouse habitat survey data and, in locations not surveyed, through aerial interpretation using adjacent survey information, 2001 JBLM YTC vegetation data, GAP data and fire history data. Habitat was considered suitable if suitable breeding, late brood-rearing or winter habitat was present. <sup>2</sup>The DEIS assessed leks out to 3 miles. Based on input from wildlife management agencies, the SDEIS analysis was expanded to include leks out to 4 miles. <sup>3</sup> Impact levels are presented in linear miles. Impacts may be reduced further through site specific engineering and design in conjunction with mitigation. Items with an \* indicate information that was not included in the DEIS, but will be added into the FEIS.

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## **9.0 CONSISTENCY WITH REGULATORY ENVIRONMENT**

A regulatory overview for sage-grouse was provided above in Section 3.0. Table 10 summarizes each regulatory policy and guideline, identified conservation measures, and the proposed NNR Alternative's consistency with these regulatory requirements and guidelines.

## **10.0 PROPOSED MEASURES TO OFFSET PROJECT IMPACTS**

The impact analysis presented above for the proposed NNR Alternative identified six categories of potential impacts to greater sage-grouse. These impact categories are described in detail in Section 7.2.3 and include:

- Habitat loss and degradation
- Predation
- Behavioral avoidance of infrastructure
- Disturbance and displacement from temporary human presence
- Habitat connectivity and linkage
- Collision

Section 7.2.1 presents Pacific Power committed PDFs and other conservation measures pertinent to greater sage-grouse. Additional mitigation measures may be developed following the identification of the Preferred Alternative and will be included in the Mitigation Framework Plan.

### **10.1 Framework for Implementing Mitigation for the Proposed Project**

The BLM is in the process of developing a Greater Sage-Grouse Mitigation Framework Plan to minimize the amount and significance of impacts from the proposed Project. This Mitigation Framework Plan will be cooperatively developed by project stakeholders and is intended to be a living document that will undergo future revisions. This Greater Sage-Grouse Mitigation Framework Plan will provide the basis for developing Project-specific sage-grouse habitat mitigation that, when initially prepared, will provide an overview of mitigation opportunities.

### **10.2 Residual Impacts**

Residual impacts will be added following the identification of the Preferred Alternative and mitigation options. An Agency Preferred Alternative was identified in the DEIS. Based on the analysis of the alternatives and options, a new Agency Preferred Alternative may or may not be identified.

**TABLE 10 SUMMARY OF THE NNR ALTERNATIVE’S CONSISTENCY WITH SAGE-GROUSE REGULATORY POLICIES AND GUIDELINES**

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED NNR ALTERNATIVE’S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
USFWS COT Report – Guidance document	Maintain and restore healthy native sagebrush plant communities.	<p>Fire:</p> <ul style="list-style-type: none"> <li>• Restrict and contain fire.</li> <li>• Design, implement, and monitor restoration activities for burned sagebrush habitat.</li> </ul> <p>Invasive Species:</p> <ul style="list-style-type: none"> <li>• Reduce or eliminate disturbances that promote the spread of invasive species.</li> <li>• Monitor and control invasive vegetation post-wildfire for at least three years.</li> <li>• Require best management practices for construction projects in and adjacent to sagebrush habitats to prevent invasion.</li> <li>• Restore altered ecosystems so that non-native invasive plants are reduced to levels that do not put the area at risk of conversion if a catastrophic event were to occur.</li> </ul>	<ul style="list-style-type: none"> <li>• Committed PDF Gen-6, Committed PDF WF-1-4: Fire prevention training, fire suppression equipment, and developing a Fire Protection and Control Plan.</li> <li>• Project Description, Section 2.4.3.13 Fire Prevention and Suppression.</li> <li>• Committed PDF Bio-5: Noxious Weed and Invasive Plant Management Plan.</li> <li>• Committed PDF Bio-6: Limiting ground disturbance.</li> <li>• Committed PDF Bio-7: Reclamation, Revegetation and Monitoring Framework Plan.</li> <li>• Committed PDF Bio-9: Revegetating following construction.</li> <li>• Committed PDF Bio-11: Washing all equipment to prevent noxious weed introduction.</li> <li>• Committed PDF Bio-12: Minimizing blading of native plant communities during construction.</li> </ul>
USFWS COT Report – Guidance document	Avoid development of infrastructure within PACs.	<ul style="list-style-type: none"> <li>• Avoid infrastructure construction in sage-grouse habitat, both within and outside of PACs.</li> <li>• Power transmission corridors which cannot avoid PACs</li> </ul>	<ul style="list-style-type: none"> <li>• The COT Report which identified PACs became available in February 2013,</li> </ul>

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED NNR ALTERNATIVE'S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
		<p>should be buried (if technically feasible) and disturbed habitat should be restored.</p> <ul style="list-style-type: none"> <li>○ If avoidance is not possible, consolidate new structures with existing features and/or preclude development of new structures within locally important sage-grouse habitats. <ul style="list-style-type: none"> <li>▪ Consolidation with existing features should not result in a cumulative corridor width of greater than 600 feet (ft) (200 meters [m]).</li> <li>▪ Habitat function lost from placement of infrastructure should be replaced.</li> </ul> </li> <li>○ Infrastructure corridors should be designed and maintained to preclude introduction of invasive species.</li> <li>○ Restrictions limiting use of roads should be enforced.</li> <li>○ Remove transmission lines and roads that are duplicative or are not functional.</li> <li>○ Transmission line towers should be constructed to severely reduce or eliminate nesting and perching by avian predators, most notably ravens, thereby reducing anthropogenic subsidies to those species.</li> <li>○ Mitigate impacts to habitat.</li> <li>○ Remove (or decommission) non-designated roads within sagebrush habitats.</li> </ul>	<p>after the publication of the DEIS. The NNR was sited to avoid JBLM YTC identified sage-grouse Primary Protection Areas.</p> <ul style="list-style-type: none"> <li>● An Underground Design Option is being considered and analyzed in the SDEIS to reduce impacts to sage-grouse.</li> <li>● Committed PDF Bio-21: Locations of new structures will match the spans of adjacent transmission lines.</li> <li>● Committed PDF Bio-20: The line will closely parallel an existing transmission line, with transmission centerline separations typically staying within 200-300 ft. With the NNR/Overhead Design Option's consolidation with existing structures, the cumulative corridor is not anticipated to be greater than 600 ft (200 m).</li> <li>● Committed PDF Bio-5: Noxious Weed and Invasive Plant Management Plan.</li> <li>● Committed PDF Bio-14: Close and rehabilitate all new access roads not needed for maintenance.</li> <li>● Committed PDF Bio-22: Perch</li> </ul>

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED NNR ALTERNATIVE'S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
			<p>deterrents will be installed on new transmission structures within 4 miles of an active lek.</p> <ul style="list-style-type: none"> <li>Impacts to habitat will be mitigated. See Section 10.</li> </ul>
Washington Sage-Grouse Recovery Plan	Protect sage-grouse populations	<ul style="list-style-type: none"> <li>Protect active sage-grouse leks from human disturbance. Recommends minimizing disturbance from construction and development activities, particularly within 0.6 mile (1.0 kilometer) of breeding habitat during February - June.</li> <li>Protect nesting and brood rearing areas from disturbance. Wherever possible, prevent disturbance in sage-grouse nesting and brood rearing habitat between March 1 and June 15.</li> <li>Reduce collision and predation hazards posed by poles, wires and fences. New power lines and utilities should use existing corridors or be located so as to minimize collision risk and damage to habitat; existing power lines should be buried or modified with perch guards to prevent use as a raptor perch site; and unneeded fences in sage-grouse use areas should be removed.</li> </ul>	<ul style="list-style-type: none"> <li>There are no known active leks within 0.6 mile of any of the route segments.</li> <li>Committed PDF Bio-13: Construction and maintenance activities will be avoided within 4 miles of active leks from Feb to June 15 to protect lekking, nesting and early brood-rearing.</li> <li>Committed PDF Bio-18: Marking new fences to reduce collision risk; and</li> <li>Committed PDF Bio-22: Perch deterrents will be installed on new transmission structures within 4 miles of an active lek.</li> </ul>
Washington Sage-Grouse Recovery Plan	Protect sage-grouse habitat on public lands	<ul style="list-style-type: none"> <li>Protect habitat from fire. Fire management plans should be developed and implemented on public lands to prevent catastrophic destruction of sage-grouse habitat.</li> <li>Protect important sage-grouse habitat on public lands from development and agricultural conversion.</li> <li>Manage riparian habitats by promoting recovery of vegetation in riparian zones and avoiding road development and human disturbance in wet meadows.</li> <li>Discourage expansion of road system on public lands in management units. New roads, trails or right-of-ways should be avoided; avoid improvements to existing, unused, and unpaved roads; promote closures of</li> </ul>	<ul style="list-style-type: none"> <li>Committed PDF Gen-6, Committed PDF WF-1-4: Fire prevention training, fire suppression equipment, and developing a Fire Protection and Control Plan.</li> <li>Project Description, Section 2.4.3.13 Fire Prevention and Suppression.</li> <li>Committed PDF Bio-14: Close and rehabilitate all new access roads not needed for</li> </ul>

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED NNR ALTERNATIVE'S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
		unnecessary roads or those that are negatively impacting habitat quality.	maintenance; <ul style="list-style-type: none"> <li>• Committed PDF Bio-12: Minimizing blading of native plant communities during construction.</li> <li>• Committed PDF LU-7: Road access will be controlled in accordance with the management directives of the Agencies and landowners.</li> </ul>
Washington Sage-Grouse Recovery Plan	Restore degraded habitat	<ul style="list-style-type: none"> <li>• Shrub-steppe restoration projects should use native seed sources, suppress cheatgrass and weeds, restore bunchgrass and native forb understory, reestablish sagebrush, and restore degraded wet meadows or vegetation at developed streams.</li> </ul>	<ul style="list-style-type: none"> <li>• Committed PDF Bio-9: Use an Agency approved mixture of native and non-native species or seed for revegetation in areas where non-native species are already well established (i.e., disturbed grassland). Where possible, a mix of native species, especially native bunchgrasses and forbs, will be utilized for revegetation.</li> <li>• Committed PDF Bio-5: Noxious Weed and Invasive Plant Management Plan;</li> <li>• Committed PDF Bio-6: Limiting ground disturbance;</li> <li>• Committed PDF Bio-7: Reclamation, Revegetation and Monitoring Framework Plan.</li> <li>• Committed PDF Bio-9: Revegetating following construction.</li> </ul>

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED NNR ALTERNATIVE'S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
JBLM YTC Sage-Grouse Management Plan	Protect sage-grouse during breeding	<ul style="list-style-type: none"> <li>• Buffer leks by 0.6 mile. These areas are closed to all training activities and other land use practices between midnight and 9:00 a.m. from February 1-May 15; and</li> <li>• Sage-grouse protection areas are off limits to all military training activities between February 1 and June 15, except for the use of existing ranges.</li> </ul>	<ul style="list-style-type: none"> <li>• Committed PDF Bio-13: Construction and maintenance activities will be avoided within 4 miles of active leks from Feb to June 15 to protect lekking, nesting and early brood-rearing.</li> <li>• The NNR was sited to avoid JBLM YTC identified sage-grouse Primary Protection Areas.</li> </ul>

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**APPENDIX B-6  
FRAMEWORK FOR DEVELOPMENT OF A  
SAGE-GROUSE HABITAT MITIGATION PLAN**

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August 19, 2016

## BUREAU OF LAND MANAGEMENT

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### **Vantage to Pomona Heights 230 kV Transmission Line Project**

*Framework for Development of a Sage-Grouse Compensatory Mitigation  
Plan*

*PROJECT NUMBER: 114809*

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## **ACRONYMS AND ABBREVIATIONS**

ALI	Arid Lands Initiative
BLM	U.S. Bureau of Land Management
CAO	Critical Areas Ordinance
CMP	Compensatory Mitigation Plan
COT Report	Greater Sage-Grouse Conservation Objectives: Final Report
DNR	Washington Department of Natural Resources
FEIS	Final Environmental Impact Statement
Framework	Framework for Development of a Greater Sage-Grouse Compensatory Mitigation Plan
GIS	Geographic Information System
GMA	Growth Management Act
HQT	Habitat Quantification Tool
HSR	Habitat Services Reduction
IM	Instruction Memorandum
JBLM YTC	Joint Base Lewis-McChord Yakima Training Center
km	kilometer
kV	kilovolt
LCC	Landscape Conservation Cooperative
LI	Landscape Integrity
NEPA	National Environmental Policy Act
NNHP	Nevada Natural Heritage Program
PAC	Priority Area for Conservation
PHS	Priority Habitats and Species
Project	Vantage to Pomona Heights Transmission Line Project
Recovery Plan	Washington's Sage-Grouse Recovery Plan
RDF	Required Design Feature
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-way
SAGE	Service Areas; Appropriateness; Guarantees; and Evaluation
SEPA	State Environmental Policy Act
SETT	Sagebrush Ecosystem Technical Team
SGMU	Sage-Grouse Management Unit
TWG	Technical Working Group
U.S.	United States
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WWHCWG	Washington Wildlife Habitat Connectivity Working Group
YTC	Yakima Training Center

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## **I. INTRODUCTION**

### **A. Purpose and Objectives**

This Framework for Development of a Greater Sage-Grouse Compensatory Mitigation Plan (Framework) was developed to address the residual impacts (i.e., the unavoidable impacts) to the Greater Sage-Grouse (*Centrocercus urophasianus*; hereafter Sage-Grouse) which may result from the proposed construction, maintenance, and operation of the Vantage to Pomona Heights 230 kilovolt (kV) Transmission Line Project (Project). Mitigation will be required that provides a net conservation gain to the species and its habitat by following the mitigation hierarchy of avoiding, minimizing and compensating for unavoidable residual impacts from development (U.S. Fish and Wildlife Service [USFWS] 2015).

The Framework is intended to facilitate Pacific Power's development of a Greater Sage-Grouse Compensatory Mitigation Plan (CMP). With the development and implementation of the CMP, Pacific Power will be taking the necessary steps to compensate for the Project's residual impacts and to achieve *net conservation gain* for the species and its habitat. Net conservation gain will be achieved when mitigation results in an improvement above baseline conditions (i.e., when the magnitude of credits [benefits] are greater than the magnitude of the debits [impacts]).

The overall objectives of this Framework are to:

- Create a common understanding of the expectations that the authorizing agencies and wildlife agencies have for Pacific Power on the principles, standards, methods, time frames, and other considerations that will guide the development of the CMP; and
- Provide a methodology for assessing the adequacy of Pacific Power's CMP.

Pacific Power will utilize this Framework in developing a Project-specific CMP proposal. The CMP will identify compensatory mitigation projects intended to offset the Project's residual impacts across all affected land ownerships and jurisdictions. Subject to each federal, state, and local agency's determination that the CMP is sufficient and that its implementation is consistent with applicable laws and government policies, each agency may utilize the CMP in its environmental review documents and project authorizations (e.g., for U.S. Bureau of Land Management [BLM], CMP implementation will be made a condition of right-of-way [ROW] grants and permits issued to Pacific Power). Since the CMP's overall success may be dependent on the successful implementation of each CMP mitigation project component, each agency would retain discretion to suspend or terminate its authorization in the event that any CMP mitigation project is not successfully implemented, regardless of that project's location or jurisdictional considerations.

Pacific Power may include mitigation approaches, projects, actions, etc., in their CMP that are different than those described in this Framework; however, such approaches must be consistent with the law and should be consistent with agency policies and other relevant documents including, without limitation, the following: Washington's Sage-Grouse Recovery Plan (Stinson et al. 2004; hereafter Recovery Plan); Washington State's Growth Management Act (GMA; Washington Administrative Code [WAC] 365-190-130); Washington's Priority Habitats and Species (PHS) Program; Yakima, Kittitas, Benton and Grant Counties' Critical Areas Ordinances (CAOs; Yakima County 2007; Kittitas County 2013; Benton County 2006; Grant County 2006); Joint Base Lewis-McChord Yakima Training Center (JBLM YTC) Sage-Grouse Management Plan (Livingston 1998) and annual memoranda (Memorandum IMLM-YTC-PWE 2013); Greater Sage-Grouse Conservation Objectives: Final Report (COT Report; USFWS 2013); BLM Resource Management Plans (RMPs) (BLM 1985; BLM 1992), BLM Instruction Memoranda (IMs; BLM

2013, 2011, 2010, 2009, 2008); and applicable USFWS and U.S. Department of the Interior Sage-Grouse and mitigation related guidance (USFWS 2014).

This Framework has been cooperatively developed by the Project's Sage-Grouse Subgroup (see Appendix A). The Framework and Pacific Power's CMP apply only to the Vantage to Pomona Heights Transmission Line Project. Greater Sage-Grouse mitigation for JBLM YTC is guided by the JBLM YTC Integrated Natural RMP, 2011 Fort Lewis Grow the Army Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) and other federal and state Greater Sage-Grouse mitigation and recovery documents.

This Framework is intended to: be consistent with and to build upon the impact analysis published in the Project's FEIS, provide guidance for Pacific Power in its selection of mitigation actions within service areas, and provide direction on how the CMP will be assessed for mitigation adequacy. Compensatory mitigation actions identified in the CMP will require an assessment of potential impacts to other resources (e.g., visual resources, existing and future land-uses such as military mission, proposed military range projects, cultural resources, private land use, etc.) and may require additional National Environmental Policy Act (NEPA) and Washington State Environmental Policy Act review.

The CMP will include the following information, consistent with this Framework's guidance: an overview of Project impacts (as identified in the FEIS and this Framework); proposed mitigation actions and service areas; calculation of the amount of mitigation debits for direct and indirect impacts; and the calculation of the amount of mitigation credits for the implementation and management of compensatory mitigation actions. The CMP will address the Project's residual impacts and required compensating mitigation across all land ownerships and jurisdictions. More information on each of these components is described in detail throughout the remainder of this Framework.

## **II. COMPENSATORY MITIGATION PRINCIPLES AND TECHNICAL ELEMENTS**

The following general compensatory mitigation principles and technical elements provide an introduction to components that should be included in the CMP. More detailed, Project-specific information is provided in the remainder of this Framework (Sections III, IV, V, and VI) and will assist in Pacific Power's development of the CMP. The following discussion provides the principles and technical elements Pacific Power will consider when developing a CMP: landscape planning; species benefit; types of compensatory mitigation; governance; service areas; mitigation actions and outcomes; baseline and additionality; timeliness, durability, ratios, and reversals; land ownership and management; and metrics and accounting.

### **A. Landscape Planning**

Compensatory mitigation principles and technical elements in the CMP will be guided by existing landscape-level conservation plans (e.g., Recovery Plan, COT Report, BLM RMPs, etc.) developed to help protect and recover Sage-Grouse and the habitat upon which it depends.

### **B. Species Benefit**

Overall, the CMP mitigation will achieve a *net conservation gain* for the species and its habitat, with compensatory mitigation designed to preserve, enhance, and restore habitat.

## **C. Types of Compensatory Mitigation Measures**

Compensatory mitigation (also referred to as “offset”) are those measures taken to offset residual impacts that warrant compensation (residual impacts are those impacts that cannot be avoided, minimized, rectified, and/or reduced/eliminated over time). Compensatory mitigation can, for example, include the restoration of degraded habitats, improvement of marginal habitats, creation of new habitats, acquisition and protection of threatened habitats, or a combination thereof. Compensatory mitigation may include the following:

1. “in-kind” involving replacement or substitution of resources that result in similar habitat structure and function that benefit the same species as those being impacted;
2. “out-of-kind” involving replacement or substitution of resources that result in different habitat structure and function that may benefit the species other than those existing at the site prior to disturbance;
3. “in proximity” means habitat mitigation measures undertaken within the population or areas affected by a development action that is most likely to provide the greatest benefit; and
4. “off-site” involving mitigation actions outside the boundary of or area impacted by the Project.

## **D. Governance**

The CMP will clearly describe how the mitigation actions will be selected and governed including: what mitigation will be implemented; by whom the mitigation will be accomplished; when the mitigation will be implemented; who and how it will be administered, financed, monitored, and enforced; how compliance and effectiveness will be measured across multiple ownerships (private, state, federal, etc.) and jurisdictions; and how mitigation sites will ensure durability for the duration of the impacts from the Project, including the time it takes to achieve the reclamation standards and achieve restoration.

How mitigation actions will be funded and how funds will be managed should be clearly articulated in the CMP. The source(s) of adequate financing<sup>1</sup> for the interim and perpetual or long-term operation, management, monitoring and documentation associated with the CMP must be identified and secured. The CMP will clearly explain how the funds will be spent, tracked and accounted for and include guidelines and responsibilities for those administering the funds.

The CMP will identify how mitigation compliance and effectiveness will be measured across all land ownerships and jurisdictions, and will propose enforcement provisions that dictate consequences if the mitigation fails to meet performance standards. There are several options for monitoring and measuring mitigation compliance and effectiveness. More information on CMP implementation, management, and monitoring is described in Section VI.

## **E. Service Areas (Location)**

The CMP will identify Project-specific service areas (see Section IV Identification and Description of Mitigation Actions and Service Areas) where the mitigation actions will be implemented. Service areas are the geographic areas where impacts to sagebrush ecosystems will be mitigated (credits) to compensate

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<sup>1</sup> Adequacy is defined as funding necessary to carryout agreed to mitigation actions and the perpetual or long-term operation, management, monitoring, remedial actions, permitting, planning, and reporting to ensure the mitigation uplift remains intact over the life of Project impacts.

for Project's residual impacts (debits). Mitigation actions are more likely to sufficiently compensate for Sage-Grouse-related Project residual impacts if they are aggregated. Projects within the identified Project-specific service areas must be large enough so that they will, either in themselves or in conjunction with adjacent landscape conditions, provide the targeted habitat benefits. Cumulatively the compensatory mitigation actions within the service areas will be of greater habitat value than the Project's residual impacts to achieve a net conservation gain for the species and its habitat. More information on Project-specific service areas and mitigation actions is presented in Section IV Identification and Description of Mitigation Actions and Service Areas.

## **F. Mitigation Actions and Outcomes (Effectiveness)**

The purpose of the CMP is to develop and implement mitigation actions, within the Project-specific service areas to: compensate for the residual impacts to Sage-Grouse that will be calculated for the final selected alternative, including threats identified in the COT Report and Recovery Plan; and to utilize additional analytical guidance contained in Section III (Impact Assessment) and Section V (Calculation of the Amount of Required Mitigation) of this Framework. Proposed CMP mitigation actions must be measurable and proven to be reasonably likely (both ecologically and economically) to deliver expected conservation benefits (outcomes). In general, mitigation actions that have extensive time-lags before providing conservation benefits, or are otherwise unachievable will not be acceptable as mitigation actions in Pacific Power's CMP. To ensure mitigation actions are effective, monitoring plans and adaptive management triggers are important components to include in the CMP. More information on monitoring and adaptive management is presented in Section V Calculation of the Amount of Required Mitigation.

## **G. Baseline and Additionality**

Mitigation actions proposed in the CMP will provide benefits in addition to those that would have been achieved if the mitigation action had not taken place. The additional benefits (additionality) must be measured against the existing baseline conditions of the proposed compensatory mitigation site. Baseline conditions include conditions created by past and ongoing land management activities. Additionality would also take into account land management activities that are planned or required but not yet implemented. To ensure consistency, baseline conditions will be assessed in the CMP using the same methodology employed in the FEIS documents and this Framework (e.g., Functional Acres; see Section V Calculation of the Amount of Required Mitigation) to inform the determination of compensatory mitigation credits. Following the implementation of compensatory mitigation, the baseline conditions will be used to verify mitigation success and associated credits.

Mitigation actions should not be located in areas identified as being directly or indirectly impacted by the Project or areas already realizing management benefits for Sage-Grouse (e.g., land parcel under sage-steppe conservation easement) unless a mitigation action could provide an additional benefit to Sage-Grouse that is not being realized (i.e., compensatory mitigation measures will be additional). Merely maintaining existing baseline conditions on proposed mitigation sites/lands, even if such conditions support species needs, may not result in true compensation for the Project's residual impacts, as an overall net loss to the species might remain. For these reasons, additional restoration and enhancement actions on acquired and preserved lands, over the life of the Project's residual impacts, may be required. Some temporal credit consideration may be appropriate for contributions to substantively accelerated management actions on a case-by-case basis where benefits can be quantified.

## **H. Timeliness, Durability, and Reversals**

Mitigation actions proposed in the CMP will demonstrate timeliness (i.e., achieve targeted biological conditions in a timeframe that benefits Sage-Grouse) and durability (i.e., the length of time that the

mitigation actions persist and influence the landscape will meet or exceed the length of time of projected impacts). In order to ensure that mitigation is durable, the CMP will include legal, financial, and appropriate assurances that secure and preserve the conservation status of the mitigation site and mitigation actions for at least as long as Project's residual impacts persist. For example, on public lands managed by BLM, durability can be assured through various tools such as ROWs for conservation; withdrawals; conservation easements; cooperative agreements; and Recreation and Public Purposes Act leases. On private lands, durability is typically achieved through conservation easements.

Mitigation actions proposed in the CMP will achieve targeted biological conditions in a timeframe commensurate with both the life of the Project and the life of the associated Project's residual impacts. With respect to Sage-Grouse and their habitat, some impacts may persist beyond the operational life of the Project or there may be uncertainty as to the persistence of the impacts. Sagebrush-steppe habitat is considered to be a slow recovery ecological habitat due to slow-growth lifecycles of the dominant flora and low precipitation regimes. Therefore, the CMP will consider that:

1. Most Project impacts to sagebrush habitat are long-term (see the impact assessment in Chapter 4 of the FEIS).
2. The benefits derived from mitigation actions in sagebrush habitat must be long-term.

Because most impacts will begin to occur in the very early stages of the Project (i.e., during construction and initial operations), the benefits of the mitigation actions will also need to accrue as early in the life of the Project as possible; implementation of mitigation actions proposed in the CMP should be "front-loaded" to facilitate this. Any time-lags that exist between the occurrence of Project impacts and attainment of mitigation benefits, either due to the nature or schedule of the mitigation actions, will be accounted for through credit reduction factors applied to mitigation credits available for that action.

The CMP will include financial assurances to provide for mitigation implementation, operation, management, and monitoring (as well as provide for contingencies) to ensure that the target outcomes for each mitigation action will be achieved and maintained as necessary for the time period commensurate with Project's residual impacts. The most critical issues regarding assurances of implementation are related to retention of habitat conditions achieved through mitigation for the time period commensurate with Project's residual impacts; and securing funding in amounts sufficient for establishment (including any necessary retreatments), long-term management and monitoring of the mitigation actions.

On federal lands, mitigation actions will be proposed within land use designations or classifications that will provide the greatest ecological benefit for and reduce the greatest threats to Sage-Grouse. Mitigation actions proposed on federal lands that have management or land uses that would degrade, delay, or otherwise undermine establishment and long-term maintenance of desired Sage-Grouse conservation could be considered in the CMP; however, mitigation actions on these lands would receive fewer credits and would be handled on a case-by-case basis.

An otherwise-ecologically sound CMP offers limited value if the mitigation area may be affected by future disturbance or if mitigation success is uncertain. Reduced mitigation credits, accounted for through credit adjustment factors, may be used to address this risk and uncertainty as long as that risk and uncertainty of the mitigation action has not rendered it unsuitable for inclusion in the CMP. Strong projected ecological durability, accounted for through credit adjustment factors, will favorably influence mitigation credits available from a mitigation action. Lower levels of protective durability will result in reduced mitigation credits. Section V Calculation of the Amount of Required Mitigation discusses proposed Project mitigation crediting and ratios in more detail.

Additionally, mitigation will not be located in areas where the success of the actions or maintenance of the required benefits are likely to be hindered over time by incompatible land-uses (i.e., mitigation

measures will be durable). For more information see Subsection I - Land Ownership/Management below. Durability on state or federally managed lands may be difficult to guarantee because of agency multiple use requirements for those lands as well as rules and policies (e.g., Federal Land Policy and Management Act) that preclude many legal land protection mechanisms that can assure protection and management commensurate with the life of the Project's residual impacts. However, on federal lands managed by BLM, durability could be assured through various tools such as ROWs for conservation, withdrawals, conservation easements, cooperative agreements, and Recreation and Public Purposes Act leases.

The CMP will clearly define how additionality and durability for proposed mitigation actions will be addressed on various land ownership types (private, county, state and federal). Close coordination between Pacific Power, county, state, and federal agencies during development of the CMP will be necessary to successfully align federal, state, local, and regional mitigation strategies, plans and actions. To ensure durable protection for those lands identified as suitable for use as compensatory mitigation, each mitigation action and/or project should have a legally-valid instrument that provides for durable protection(s). The durable protection should be deemed to be appropriate given the location and mitigation purpose to the compensatory mitigation lands and to be valid for the duration of the impacts for which those lands provide compensatory mitigation.

Unexpected loss of mitigation actions and outcomes will be addressed in the CMP. Reversals of mitigation actions may be caused by natural disturbances (unintentional reversal; e.g., wildfire) or anthropogenic disturbances (intentional reversal; e.g., development), which shorten the intended duration of compensatory mitigation actions. Unintentional reversals could be addressed by Pacific Power in the CMP by establishment of an insurance or reserve pool (for funding, land, etc.) and intentional reversals could be addressed by requiring compensation for the reversal. The CMP will include policies and procedures that, if unforeseen intentional reversals occur, ensure that any mitigation action replacements are timely and do not diminish the intended conservation benefits of the original mitigation action.

## **I. Land Ownership and Management**

Compensatory mitigation for Sage-Grouse can occur on private, state, tribal, and federally managed land. Generally, conservation actions used as compensatory mitigation should be focused on those actions identified as the most important for Sage-Grouse conservation, in the applicable geographic setting, and that yield the most substantial benefit regardless of land ownership<sup>2</sup>.

Mitigation actions proposed on state and/or federally managed lands to mitigate for the Project's residual impacts on public or private lands will need to enhance the biological values of the state and/or federally managed lands beyond those already provided by the existing state and/or federal land management programs. In other words, the mitigation value (credit) assigned to the proposed mitigation actions will be based only on those biological conditions that are supplemental or additive to conditions that would be derived from the existing, planned, or anticipated public program(s) which have reasonable certainty of funding.

However, universal adherence to the above principles may not be practicable or advisable when: 1) appropriate and/or high valued mitigation opportunities on private lands are not available; 2) land management policies require that impacts incurred on state or federal lands are also mitigated on state or

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<sup>2</sup> BLM's 2013 draft MS-1794 policy echoes this consideration: "Mitigation site, projects, and measures should be focused where the impacts of the use authorization can be best mitigated and BLM can achieve the most benefit to its resource and value objectives, regardless of land ownership. The most appropriate area for mitigation actions may be on Federal lands (the BLM or another agency) or on non-Federal lands."

federally managed lands; and 3) some biological conditions associated with proposed mitigation actions on state or federally managed lands would otherwise be provided through planned or required public programs, but actual attainment of the desired conditions is unlikely because of funding constraints or other obstacles<sup>3</sup>.

## **J. Metrics, Accounting and Mitigation Ratios**

The metrics and accounting used to calculate the Project's residual impacts (debits) and the measures proposed to compensate for those impacts (credits) must be the same. The metric and accounting approach employed must be able to estimate the habitat functions and values (available or not available) of a given location on the landscape utilizing reliable and repeatable methods resulting in a "common currency" between credits and debits that will apply equally across all land ownerships.

A common currency representing functional acres will allow for a more accurate accounting of the exchange of the habitat function and value in a landscape context. Functional acres are the unit of value that expresses the quantity (acreage) and quality (or functionality) of the habitat. The functionality of a site represents its level of performance relative to optimal conditions and takes into account species-specific habitat features that are known to be meaningful to Sage-Grouse, including the quality and structure of vegetation on the site and the degree of human disturbance on and surrounding the site. Section V Calculation of the Amount of Required Mitigation presents guidance on habitat classes, direct and indirect impacts, adjustments applied to indirect impacts to account for differing severity of these impacts (e.g., distance from disturbance [disturbance bands]), and metrics and accounting approaches such as the quantification of functional habitat services and proposed mitigation ratios.

Mitigation ratios have been established to ensure that mitigation actions proposed in the CMP fully compensate for the residual impacts of the Project and provide for a net conservation gain for the species and its habitat, with compensatory mitigation designed to preserve, enhance, and restore habitat. Mitigation ratios were established using habitat-based criteria, including the habitat function and value. For example, habitats that have higher value to Sage-Grouse conservation and important habitats for Sage-Grouse dispersal would be assigned higher mitigation ratios. Section V Calculation of the Amount of Required Mitigation discusses mitigation ratios in more detail.

Mitigation actions receiving credits must be reasonably likely to deliver expected conservation benefits (see Principles and Technical Elements above). The metrics included in the CMP will be tied back to a net conservation gain to the species and its habitat. Mitigation credits will be determined using the "Service Areas; Appropriateness; Guarantees; and Evaluation Mitigation Analysis Tool" (SAGE Project Evaluation Tool) described in Section V (Subsection E - Mitigation Credit Adjustment) which screens proposed mitigation actions for consistency against the principles, standards and technical elements described in this Framework.

Monitoring and adaptive management are also important components to include in the CMP to ensure mitigation success. The CMP will include an accounting system whereby mitigation effectiveness and compliance can be monitored, unexpected results can be addressed, mitigation reporting is accomplished, and debits and credits can be tracked. The accounting system should foster transparency, accountability, and credibility.

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<sup>3</sup> For example, in the CMP Pacific Power may propose funding mitigation actions that have been identified in state and or federal land management plans, but that do not have and are not expected to have, funding within a reasonable time frame.

## **K. Types of Compensatory Mitigation Mechanisms**

Compensatory mitigation will consist of one or a combination of the following four approaches:

1. *Permittee-Responsible Mitigation*

In this approach, Pacific Power would retain full responsibility for meeting all of the mitigation-related terms of the authorizations it receives. If this approach is adopted, Pacific Power will have the obligation to implement the CMP (not transferred to another entity) to meet the compensatory mitigation obligations specified by the authorizing agencies for grant of ROWs, permits, and other authorizations.

2. *In-Lieu Fee Contributions (Mitigation Funds)*

In this approach, Pacific Power would retain an in-lieu fee mitigation program administrator or sponsor to fulfill its obligation to provide compensatory mitigation (sometimes referred to as “debits”) associated with the Project. If this approach is adopted, the operation and use of an in-lieu fee program is governed by an in-lieu fee program instrument (agreement). If Pacific Power enters into such an agreement, the administrator will have the obligation to implement the CMP (i.e., restoration, establishment, enhancement, and/or preservation, acquisition, etc.) under the terms of the program instrument. The obligation to fulfill the compensatory mitigation obligations then transfers to the mitigation fund administrator.

3. *Habitat Credit Trading (Mitigation Exchanges)*

Habitat credit trading mitigation programs or “marketplace programs” connect entities seeking an authorization to impact a regulated natural resource with those interested in committing to fulfill some or all of the permittee’s compensatory mitigation obligations. In this approach, as in an in-lieu fee program described above, Pacific Power would make a payment(s) or purchases (“credits”) to meet their compensatory mitigation requirements from an authorized and approved habitat credit trading program provider. The obligation to fulfill the compensatory mitigation obligations then transfers to the habitat credit trading program provider.

4. *Mitigation Banking*

Mitigation or conservation “banks” are sites, or a suite of sites, where natural resources are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation for impacts to similar resources authorized by federal or state permits. Mitigation “bankers” are required to enter into a legal agreement with the regulatory agency based on a set of actions they will take on a given tract of land. The regulatory agency determines how many “credits” the activities will generate and sets conditions the banker must meet in order to sell the credits to offset adverse but authorized impacts (“debits”). The obligation to fulfill the compensatory mitigation obligations then transfers to the mitigation banker.

## **III. IMPACT ASSESSMENT**

The assessment of the Project’s residual impacts and mitigation actions proposed by Pacific Power in the CMP (Section V - Calculation of the Amount of Required Mitigation below) will be based on the analysis published in the FEIS as well as additional assessment information provided in this Framework and will focus on the direct and indirect impacts that could occur as a result of the construction, operation, and maintenance of the Project. Project-specific impacts used to analyze and define residual impacts including: habitat loss due to habitat degradation and fragmentation; direct mortality; increased predation; behavioral avoidance of infrastructure; disturbance and displacement; reduced productivity, decreased survival, impairment of habitat connectivity and linkage; and loss due to cumulative effects. These impact types are discussed in more detail in the FEIS documents and herein. The magnitude of direct and indirect impacts included a consideration of cumulative impacts.

The impact assessment conducted for Sage-Grouse in the Project's FEIS documents are described below. Additional impact assessments provided for indirect impacts are discussed in Section V (Calculation of the Amount of Required Mitigation) of this Framework.

1. An analysis of existing habitat based on aerial photos, JBLM YTC vegetation data, U.S. Geological Survey (USGS) Gap Analysis Program data, fire history data, plant surveys, and a Sage-Grouse habitat assessment conducted for the proposed Project (see FEIS Appendices B-2, B-3, and B-4).
2. Determining Project-related direct habitat loss using a disturbance model of typical disturbance types associated with construction, operation and maintenance (e.g., new access road construction, work areas for FEIS action alternatives, subroutes, and design options).
3. Determining Project-related indirect impacts to Sage-Grouse from increased perching opportunities and potential habitat loss through behavioral avoidance of tall structures using the total number of structures per route segment, the anticipated number of new structures located greater than 0.25 mile from an existing line, through an analysis of JBLM YTC corvid (raven) data, and through other Sage-Grouse-avian predation literature.
4. Project-related indirect impacts to Sage-Grouse habitat connectivity determined through an analysis of the Washington Wildlife Habitat Connectivity Working Group (WWHCWG) habitat connectivity and linkage reports.
5. Determining Project-related direct and indirect impacts to Sage-Grouse active, inactive, and historical lek locations using JBLM YTC and Washington PHS lek data and a lek survey conducted for the Project (see FEIS Appendix B-1).
6. Determining Project-related indirect impacts due to Sage-Grouse avoidance of transmission lines.
7. Project-related indirect impacts to nesting and brood-rearing habitat, as measured by reductions in female survival and nest success within a four-mile buffer around active Sage-Grouse leks.
8. Determining Project-related direct and indirect impacts to high-probability use areas of the JBLM YTC Sage-Grouse population through a fixed kernel density analysis using telemetry data.
9. Determining the amount of direct and indirect disturbance that would occur within Washington Department of Fish and Wildlife (WDFW) Sage-Grouse Management Units (SGMUs), USFWS Sage-Grouse Priority Area for Conservation (PAC), and JBLM YTC Sage-Grouse Protection Zones.
10. A cumulative effects analysis for Sage-Grouse was presented in the FEIS that addressed impacts from reasonably foreseeable future actions including the proposed Project (see FEIS Section 4.17).

It is expected that most direct habitat impacts will remove all ecological function (synonymous with habitat services) from the affected habitats for a period of time (defined as short- or long-term). As sagebrush recovery is slow, most Project impacts to sagebrush habitat have been considered as long-term (see the impact assessment in the FEIS). Depending upon the type of indirect impact, not all Sage-Grouse habitat services would be removed from the impacted habitat. A reduction (expressed as a percentage) in the mitigation compensation required (debits) will occur where indirect impacts are not anticipated to result in full loss of ecological function or Sage-Grouse habitat services. Therefore, for each type of indirect impact, an adjustment (reduction) would be applied to the acres of indirectly impacted habitats reflecting the amount of habitat services remaining. See Section V - Calculation of the Amount of Required Mitigation for more information on indirect impacts.

## **IV. IDENTIFICATION AND DESCRIPTION OF MITIGATION ACTIONS AND SERVICE AREAS**

### **A. Mitigation Actions**

The CMP will identify specific mitigation actions within the specified service areas. The CMP will demonstrate that mitigation actions are:

1. Available and on a scale that is ecologically meaningful to conservation.
2. Commensurate with the assessed impacts (debts).
3. Reasonably certain to be initiated within the time frames established through the federal and state permitting, ROWs, and other authorization processes.
4. Measurable and enforceable by the authorized agencies.
5. Consistent with the Compensatory Mitigation Principles and Technical Elements, per Section II.

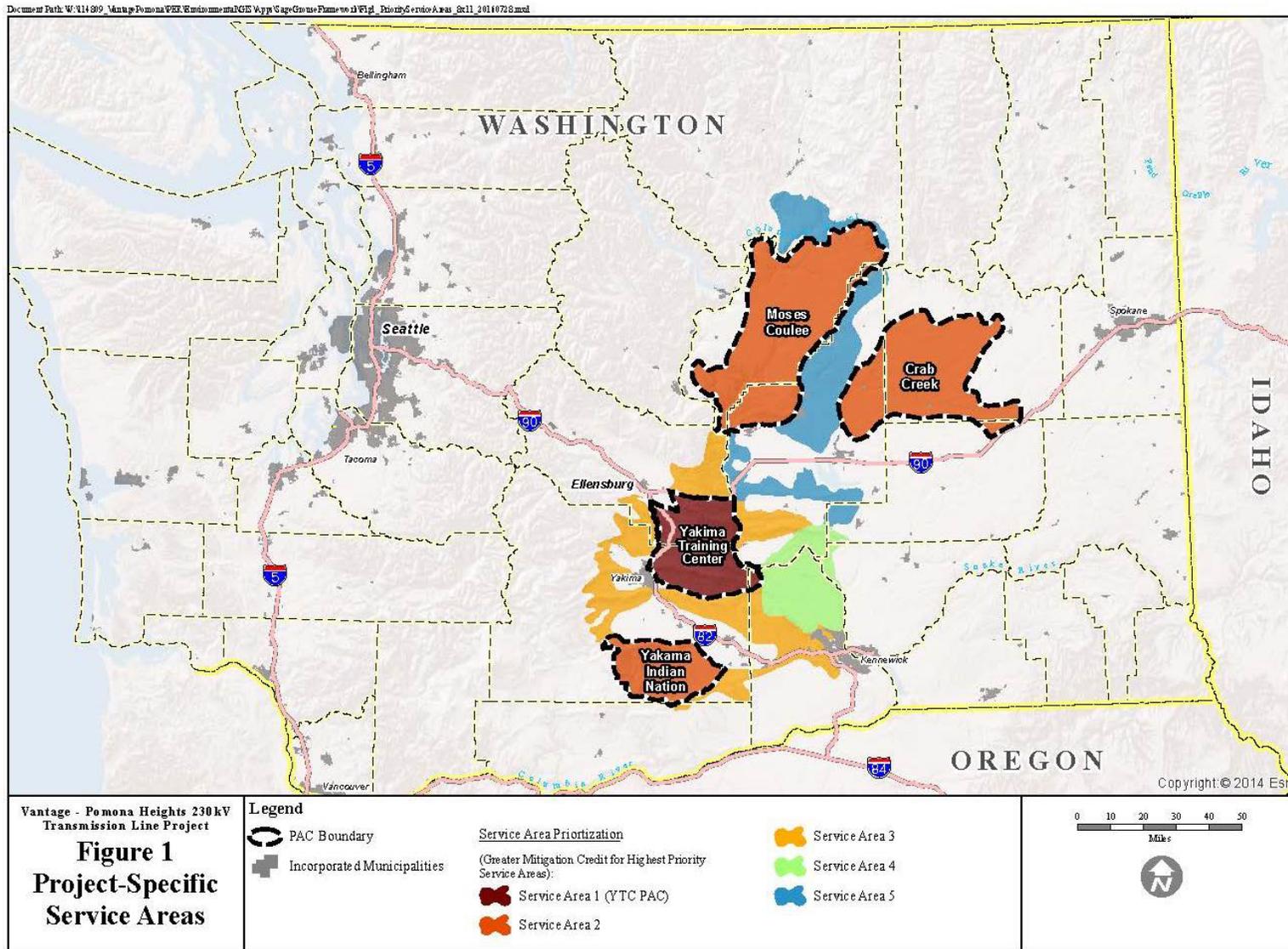
Approved mitigation actions that will be undertaken in the Project-specific service area(s) (Section IV B - Service Areas below) will be designed to: a) enhance, to a net conservation gain standard for the species and its habitat, the baseline condition of the habitat at the mitigation site(s) in order to compensate for the residual impacts (debts) that have been assessed for the proposed Project; b) preserve and maintain the habitat and other ecological attributes required for effective mitigation within the mitigation site(s) for the life of the Project or the Project's residual impacts, whichever is greater; and c) benefit Sage-Grouse from the landscape-scale perspective, with a particular focus on limiting factors for the species (e.g., connectivity zones or expansion areas). Figure 1 below, depicts the service areas that have been identified and prioritized by the Project's Sage-Grouse Subgroup.

The following are examples of the types of mitigation actions or projects that will be considered. In addition, Appendix B includes a table of potential mitigation projects and actions. The purpose of including these potential mitigation actions and projects is to provide Pacific Power a list of mitigation actions that would be considered as appropriate examples to address and compensate for the Project's residual impacts. These potential mitigation actions could be developed in detail by Pacific Power in collaboration with the authorizing agencies, wildlife agencies, and other interested parties (Technical Working Group [TWG]; see Section IV - Implementation, Management and Monitoring) to meet the principles and technical elements outlined in this Mitigation Framework. In addition and depending upon available opportunities, the CMP should include a suite of mitigation actions or projects that includes habitat acquisition/preservation, habitat restoration, and habitat enhancement.

Types of Mitigation Actions or Projects to Consider:

1. Projects that eliminate indirect impacts to Sage-Grouse, such as removing tall structures that provide perching and nesting opportunities for avian predators within the service area(s).
2. Preserving Sage-Grouse habitat (nesting, brood-rearing, summer, winter, and connectivity) through acquisition and/or conservation easements with the explicit purpose of providing habitat for Sage-Grouse and compatible uses. Additional restoration and enhancement actions on acquired and preserved lands, over the life of the Project's residual impacts, will be credited.
3. Actions that address habitat-related factors that may be limiting population growth and sustainability of Sage-Grouse in the service area(s) (e.g., fire management and/or habitat restoration).

FIGURE 1 PROJECT-SPECIFIC SERVICE AREAS



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4. Actions to improve habitat quality (not listed in order of preference), such as:
  - a. General improvement of Sage-Grouse habitat condition through revegetation, particularly in habitats that appear to be limiting for Sage-Grouse; and
  - b. Management agreements with private landowners to implement grazing management techniques that would improve Sage-Grouse habitat conditions on private lands or grazing operations managed on public lands.

## **B. Project-Specific Service Areas (Location)**

Service areas are geographic areas within which impacts to a species' habitat can be compensated. These Project-specific service areas are based on the key Sage-Grouse management areas that are essential for Sage-Grouse conservation and recovery. Proposed mitigation actions and projects will be sited within service areas that will contribute positively to the species and its habitat including the service area that is being impacted which is the Yakima Training Center (YTC) PAC. The Sage-Grouse PACs, the Arid Lands Initiative (ALI) Priority Core Areas, Landscape Integrity (LI) Core Areas, and Washington SGMUs are considered key Sage-Grouse management areas essential for Sage-Grouse conservation and recovery (see Figure 1 Project-Specific Service Areas).

The majority of the proposed Project (65% to 94% of the total length, depending upon Alternative) is located within the YTC PAC. Three additional PACs have been designated in Washington State: Moses Coulee PAC (contains extant Sage-Grouse population), and the Crab Creek and Yakama Nation PACs (reestablishment efforts underway). In addition, the proposed Project is within or adjacent to the following WDFW SGMUs: YTC Regularly Occupied Habitat, Rattlesnake Hills Regularly Occupied and Occasionally Occupied Habitat, Umtanum Ridge Regularly Occupied and Occasionally Occupied Habitat, Saddle Mountains Occasionally Occupied Habitat, Colockum Connectivity Habitat, Hanford Expansion Habitat, Potholes Expansion Habitat, and Ahtanum Ridge Expansion Habitat.

Mitigation credits will be adjusted based on service area prioritization with greater credit assigned to mitigation actions proposed in the highest priority service areas and less credit assigned to actions proposed in lower priority service areas (Figure 1).

The guidance provided in Section II (Compensatory Mitigation Principles and Technical Elements) describes what criteria Pacific Power will use in its CMP to identify potential mitigation actions and site(s) within the Sage-Grouse service areas depicted in Figure 1 (Project-Specific Service Areas). The following are some examples of principles and technical elements that Pacific Power will need to consider when proposing mitigation actions, projects, and sites within these service areas:

- Mitigation actions will result in improved Sage-Grouse habitat conditions for the duration of the Project's residual impacts.
- Preferred mitigation sites are sites within the service areas that: 1) can be geographically consolidated into a large contiguous parcel at a landscape level in contrast to small isolated parcels, 2) can be managed for Sage-Grouse over the long-term, and 3) will attain and maintain CMP objectives.
- Mitigation actions that are proposed on private lands within the service areas will only be pursued if the landowner is willing to sell or enter into a conservation easement or agreement. Pacific Power will not be expected to use eminent domain to acquire property for compensatory mitigation purposes. Compensatory mitigation in the form of landowner

- management agreements must be above and beyond any existing land management requirements, authorization or agreements (e.g., any existing Candidate Conservation Agreements or any existing requirements of an annual grazing authorization).
- Mitigation actions will focus on sites within the YTC PAC; however, there are limited areas available in the YTC PAC with sufficient durability due to current land use practices such as military training operations, agricultural use, and urban development.
  - Mitigation actions will address the specific habitat factors (such as lack of large areas of contiguous sagebrush, sagebrush overstory, forb understory, etc.) that may be limiting Sage-Grouse use and population growth within the individual service areas.
  - Mitigation actions will provide additional contributions to conservation and/or habitat quality and/or quantity relative to the existing conservation and/or habitat services, and consider the time lag to achieving the conservation maturity of selected actions (i.e., a shorter time to provide habitat is preferred over a longer-time frame). This will be evaluated as the length of time for a mitigation action to deliver conservation at a maturity level (or ecological state) similar to what was lost at the Project impact site.
  - If mitigation is proposed within the zone of the Project's direct and indirect impacts, the mitigation credits will be adjusted (reduced) to account for the reduced services that the already impacted habitat is providing.

Pacific Power's proposed CMP mitigation credits may require adjustment (see Section V.F - Mitigation Credit Adjustments) depending upon the consistency of each proposed mitigation action with the Framework's Principles and Technical Elements.

### **C. Service Area and Mitigation Action Selection**

The mitigation actions, when implemented for the proposed Project, will measurably compensate for the Project's direct and indirect impacts, to a net conservation gain standard for the species and its habitat. It will be important to pair/align mitigation actions with impact types. For example, acquisition and protection of suitable Sage-Grouse habitats or habitats with site potential that are located in the priority service areas and which are currently insufficiently protected but could be used by Sage-Grouse in the reasonably foreseeable future would provide adequate compensation for habitat loss from Project impacts (see Figure 1 – Project-Specific Service Areas). Additional examples of paired/aligned mitigation actions and impact types are listed below:

#### ***Examples of Potential Mitigation Actions for Direct Impacts***

- Land acquisition of suitable or potentially suitable Sage-Grouse habitats in the Project-specific service areas.
- Acquisition and establishment of conservation easements on lands suitable or potentially suitable for Sage-Grouse habitat in the Project-specific service areas.
- Additional restoration and enhancement actions on acquired and protected lands, over the life of Project's residual impacts, would also be credited.

### **Examples of Potential Mitigation Actions for Indirect Impacts**

1. Behavioral Avoidance
  - Actions that reduce behavioral avoidance, which may include removal of abandoned utility poles on JBLM YTC.
  - Land acquisition or establishment of conservation easements in the Project-specific service areas.
  - Funding and assurances for translocation efforts for the Washington population of Sage-Grouse commensurate with the Project's impacts and accounting for durability of the mitigation action.
    - Funding of landscape restoration actions (e.g., fire suppression and restoration; control of invasive species; wild horse management) commensurate with the Project's impacts in the Project-specific service areas.
2. Increased Predation
  - Actions that reduce avian predation, which may include installation of perch deterrents or removal of abandoned utility poles on JBLM YTC.
  - Land acquisition or establishment of conservation easements with known Sage-Grouse nesting locations within the Washington PACs.
  - Actions that decrease avian predator impacts to Sage-Grouse in the Project-specific service areas.
  - Nesting habitat restoration/improvements.
3. Decreased Nest Success and Hen Survival
  - Actions that reduce avian predation, which may include installation of perch deterrents or removal of abandoned utility poles on JBLM YTC.
  - Land acquisition or establishment of conservation easements with known Sage-Grouse nesting locations within the Washington PACs.
  - Funding and assurances for translocation efforts for the Washington population of Sage-Grouse commensurate with the Project's residual impacts.
  - Land acquisition or establishment of conservation easements with known Sage-Grouse nesting locations outside of the Washington PACs.
  - Funding landscape restoration actions (e.g., fire suppression and habitat restoration; control of invasive species; wild horse management) commensurate with the Project's impacts.
4. Decreased Population Connectivity
  - Actions that repair impaired connectivity.
  - Land acquisition or establishment of conservation easements in the Project-specific service areas.
  - Land acquisition or establishment of conservation easements inside connectivity habitats.
  - Funding and assurances for translocation efforts for the Washington population of Sage-Grouse commensurate with the Project's impacts.
  - Funding landscape restoration actions (e.g., fire suppression and habitat restoration; control of invasive species; wild horse management) commensurate with the Project's impacts.

## **V. CALCULATION OF THE AMOUNT OF REQUIRED MITIGATION**

Mitigation debits will be calculated in a sequential fashion, based on the following steps (described in more detail below):

1. Calculate acres of direct impacts.

2. Adjust direct impacts based on habitat quality using a functional acre approach (Nevada Natural Heritage Program [NNHP] and the Sagebrush Ecosystem Technical Team [SETT] 2014).
3. Multiply adjusted direct impact functional acres (debits) by the base mitigation ratio for priority landscape classes and additive mitigation ratios for Sage-Grouse features.
4. Calculate acres for indirect impacts utilizing disturbance bands and change in connectivity methodology (NNHP and SETT 2014).
5. Adjust indirect impacts based on functional acres (NNHP and SETT 2014).
6. Multiply indirect impact functional acres by the base mitigation ratio for priority landscape classes and additive mitigation ratios for Sage-Grouse features.
7. The acreages from Step 3 (direct impacts) and Step 6 (indirect impacts) are then summed to determine the total acres of mitigation debits.

## **A. Direct Impacts**

Direct disturbance to Sage-Grouse habitat was determined through the FEIS impact analysis conducted for the proposed Project and will be refined based on final engineering and design. Direct habitat loss would occur through the removal and damage of vegetation during construction of the transmission line, access roads, and work areas. Vegetation removal would have a variety of effects on habitat, including changes in plant community structure and composition. The degree of impact would depend on the type and amount of vegetation affected and the rate at which vegetation would regenerate during post-construction restoration. While grasslands and herbaceous wetlands would generally recover within five to seven years, sagebrush steppe may require 30 to 120 years to recover, depending on the subspecies, size of disturbance, and precipitation (Olson et al. 2000; Lesica et al. 2005; Baker 2006; Knick and Connelly 2011). In the FEIS impact analysis, direct disturbance to sagebrush/perennial and sagebrush/annual grassland was considered a long-term impact, regardless of disturbance type. For example, temporary work areas in sagebrush/perennial grasslands would be considered a temporary impact for some resources; however, because of the long recovery times for sagebrush, this disturbance was considered a long-term impact for Sage-Grouse.

## **B. Mitigation Ratios for Priority Landscape Classes and Sage-Grouse Features**

The Project's Sage-Grouse Subgroup identified priority landscape classes and Sage-Grouse features to delineate and value Sage-Grouse habitat attributes in the Project impact areas and (for mitigation ratio calculations) to provide a relative scaling of the priority landscapes class and Sage-Grouse feature's importance to Sage-Grouse conservation. These priority landscape classes, Sage-Grouse features, and assigned mitigation ratios were developed by the Sage-Grouse Subgroup for the proposed Project. The priority landscape classes, Sage-Grouse features, and assigned mitigation ratios were developed for the proposed Project only and are not intended to be used for other projects. Mitigation for JBLM YTC projects is governed by other authorities and the JBLM YTC Integrated Natural RMP.

The PACs, ALI Priority Core Areas, LI Core Areas, and WDFW SGMUs are considered the key habitats essential for Sage-Grouse conservation and recovery. Mitigation ratios were assigned to each priority landscape class and were scaled from a base ratio for the priority landscape class of lowest

importance (e.g., WDFW SGMUs) to the highest base ratio (e.g., PACs). Incrementally larger base ratios were assigned to reflect the relatively greater importance of each of the higher priority landscape class. For this Project, a base ratio of greater than 1:1 was assigned for all priority landscape classes. This was to maintain substantive consistency with relevant management and planning documents that informed the FEIS analysis for Project impacts and to achieve net conservation gain for the species and its habitat. The Sage-Grouse Subgroup has worked collaboratively with the goal of reaching agreement on this Framework and the principles and technical elements contained therein. The mitigation ratios presented in Table 1 are represented by the best available science and have incorporated feedback provided by the Sage-Grouse Subgroup and lead federal agency management guidance.

Priority landscape classes, Sage-Grouse features and assigned mitigation ratios are presented in Table 1 in order of relative importance to Sage-Grouse. Rationale for the mitigation ratios is presented below Table 1.

**TABLE 1 SUMMARY OF MITIGATION RATIOS FOR PRIORITY LANDSCAPES CLASSES AND SAGE-GROUSE FEATURES**

CATEGORY	BASE RATIO	ADDITIVE RATIO
<b>Priority Landscape Classes</b>		
YTC PAC	2.5:1	N/A
ALI Priority Core Areas and LI Core Areas	2:1	N/A
WDFW SGMUs	1.5:1	N/A
<b>Sage-Grouse Features</b>		
Active lek <sup>1</sup>	N/A	0.5:1
Inactive lek <sup>2</sup>	N/A	0.4:1

<sup>1</sup> Active lek is defined as a lek that has been active in the past 0-2 years.

<sup>2</sup> Inactive lek is defined as a lek where no activity has been observed in the past 3-10 years.

N/A = Not applicable

Considering that the YTC PAC is deemed key habitat essential for Sage-Grouse conservation in Washington and that the majority of the Project’s impacts to Sage-Grouse will occur within or adjacent to the YTC PAC, a 2.5:1 base ratio for direct and indirect impacts occurring within the YTC PAC will be used. The ALI Priority Core Areas and LI Core areas are outside of the YTC PAC and may not be currently used by Sage-Grouse; however, these areas may become important for Sage-Grouse conservation and connectivity. For these important but lower priority Sage-Grouse habitats, a 2:1 ratio will be used for mitigation compensation for direct and indirect impacts to ALI and LI lands. The Recovery Plan outlines strategies to increase Sage-Grouse population size and distribution. The Recovery Plan delineated distinctive regions in Washington, called SGMUs, to focus recovery efforts in those areas most likely to contribute to reaching recovery objectives. Therefore, areas designated as SGMUs which are outside of YTC PAC and ALI/LI designations, may be important to the recovery of the species. SGMU habitats will be mitigated at a slightly lower ratio than ALI/LI habitats, but higher than a no net loss (generally 1:1) ratio, therefore a 1.5:1 ratio will be used for direct and indirect impacts to designated SGMUs.

Additive ratios for Sage-Grouse features (active leks and inactive leks) were assigned to account for the Project’s residual impacts that would occur in priority landscapes classes, as well as overlapping areas that represent sensitive life cycle stages for Sage-Grouse. A lek is the center of breeding activity for Sage-Grouse and is reflective of nearby nesting habitat. Recent studies indicate that nesting and hen survival during the breeding life stage are most impacted by transmission lines and the associated infrastructure (Gibson et al. 2013; Howe et al. 2014). Therefore, additional mitigation compensation through an additive ratio will be used to account for the impact that this proposed transmission line Project may have on leks and their associated nesting habitat. An additive mitigation ratio of 0.5:1

will be used for direct and indirect effects to lands within a four-mile radius of active leks and 0.4:1 ratio for direct and indirect effects to inactive leks. These ratios would be additive to the priority landscape class ratios (identified above) and only be applicable where these Sage-Grouse features intersect with the priority landscape class.

### **C. Habitat Functionality Calculation**

The COT Report (USFWS 2013) identified four PAC's in Washington State (Management Zone VI). Described as key habitats necessary for Sage-Grouse habitat conservation, PACs were identified based on the best available information at the time the report was published. As Dr. Michael Schroeder (WDFW Upland Bird Research Scientist who was a member of the Conservation Objectives Team and assisted with the identification of the PACs in Washington State) explained, because Sage-Grouse in Washington are in a recovery mode (versus maintenance), the Washington PAC boundaries were delineated differently than other states and focused on core use areas. Washington PACs actually encompass large areas that are not currently occupied by Sage-Grouse and/or that do not currently contain suitable habitat. These larger boundaries were intended to encompass areas where habitat or potential habitat exists for the purpose of furthering recovery and/or expansion of the current population (M. Schroeder personal communication, May 2015).

As a result of the identification of the PAC boundaries on this coarse scale, there are areas within the Washington PACs that not only lack the vegetation components or conditions necessary to be considered suitable or potentially suitable Sage-Grouse habitat, they are effectively non-habitat due to anthropogenic disturbances. Anthropogenic disturbances in Washington PACs include: urban and residential development, agriculture, wind farms, interstates, various types of infrastructure (e.g., roads, powerlines including distribution and transmission, and communication towers), and military training facilities. Treating all areas within the PACs as suitable Sage-Grouse habitat presents a net bias when accounting for debits associated with direct and indirect impacts and calculating the credits applied to mitigation actions.

Several states, including Wyoming, Colorado, Nevada, and Oregon are developing various versions of a habitat quantification tool (HQT) to quantify the functionality of sage-grouse habitat (Southern Rockies Landscape Conservation Cooperative [LCC] 2015; Wyoming Conservation Exchange Advisory Group 2015). These HQT programs apply a functional acre approach at multiple scales. The functional acre approach provides a measure of habitat quantity (acres) and quality (or habitat functionality) by identifying suitable and potential habitat and accounting for anthropogenic disturbance at multiple scales important to Sage-Grouse. Habitat functionality refers to the quality of the habitat for meeting life history requirements (reproduction, recruitment, and survival) for Sage-Grouse and includes the direct and indirect effects of anthropogenic disturbances. To determine habitat quantity and quality for the proposed Project, a functional acre approach is being used to determine debits for project impacts, credits for compensatory mitigation actions, and provide for a common currency (acres).

In order to calculate acreages of impact (debit) and compensatory mitigation (credit) for Sage-Grouse, it is necessary to differentiate existing Sage-Grouse habitat, potential future habitat, and non-habitat. The overall Project area and service areas consist of: 1) patchworks of lands that currently provide Sage-Grouse habitat; 2) lands that are not currently sagebrush-dominated but that have the site potential to support Sage-Grouse habitat in the future; and 3) lands that are not likely to provide habitat in the foreseeable future either because they do not have the site potential to support sagebrush habitat, or because they are highly disturbed areas occupied by human infrastructure. Therefore, debits or credits accrued for these three habitat classes should be weighted differently. Simply put, an

acre of pavement does not have the same habitat functionality to Sage-Grouse as an acre of sagebrush.

To quantify habitat function, mid-scale habitat suitability is assessed using second order (population scale) and third order (habitats within the population) habitat modifiers. Due to the extent of the Project and the potential mitigation service areas, fourth order habitat data (fine-scale vegetation structure and composition that provides for daily needs) is not readily available, would require a very large field effort to acquire, and would be challenging to apply consistently across the impact and mitigation service areas. While the habitat modifiers are represented by Geographic Information System (GIS) layers with 30-meter by 30-meter grid cells, the functional acre approach is not intended to make decisions at the 30-meter scale, but rather to estimate overall functional acreage at the Project and mitigation site scale. The habitat modifiers include anthropogenic disturbance, current vegetation (sagebrush versus non-sagebrush vegetation), and site potential vegetation (sagebrush versus non-sagebrush). Each modifier adjusts the habitat function by a factor ranging from 0.0 (for non-habitat) to 1.0 (for optimal habitat). Table 2 presents the habitat functionality modifiers used to calculate functional acreage and these are discussed more below.

**TABLE 2 HABITAT FUNCTIONALITY MODIFIERS USED TO CALCULATE FUNCTIONAL ACREAGE**

HABITAT MODIFIER	GIS LAYERS USED	CATEGORY	HABITAT FUNCTIONALITY MODIFIER FACTOR <sup>1</sup>
Existing Sagebrush	Existing Sagebrush <sup>2</sup>	Sagebrush steppe	1
		Not sagebrush steppe	0.75
Site Potential	Biophysical Settings <sup>2</sup>	Sagebrush steppe	1
		Not sagebrush steppe	0
Anthropogenic Disturbance	NOC <sup>3</sup> Disturbance (excluding transmission); Additional Site Specific Disturbance <sup>4</sup>	Disturbed	0
		Not Disturbed	1
	Electric Transmission Lines EV Energy Map <sup>5</sup> ; Transmission Lines	0-600 meters from transmission line	0.25
		600-1200 meters from transmission line	0.5
		1200-5000 meters from transmission line	0.9

<sup>1</sup> Factor by which the number of landscape acres is multiplied by to calculate habitat function. Functional acreage is the product of all applicable factors multiplied by the quantity (acres) for each 30-meter x 30-meter grid cell.

<sup>2</sup> Greater Sage-Grouse Disturbance and Monitoring Subteam, BLM and U.S. Forest Service

<sup>3</sup> National Operations Center, Bureau of Land Management

<sup>4</sup> Heads up digitized

<sup>5</sup> Ventyx data service

Areas that currently have sagebrush cover are considered fully functional Sage-Grouse habitat (100 percent; i.e., multiplied by a factor of 1.0), areas that have the potential to support a sagebrush vegetation type but are not currently sagebrush are given partial value (75 percent; i.e., multiplied by a factor of 0.75), and areas that do not have the potential to support sagebrush are considered non-habitat (multiplied by a factor of 0.0). With the exception of transmission lines, areas with anthropogenic disturbance are also considered non-habitat (multiplied by a factor of 0.0). In order to maintain consistency with the disturbance bands used to calculate and adjust for indirect impacts from transmission lines and the proposed Project (Habitat Services Reduction [HSR], see Section V.D Indirect Impacts), the following habitat modifiers are used: 0-600 meters - multiplied by HSR factor of 0.25; 600-1200 meters multiplied by HSR factor of 0.5; and 1200-5000 meters multiplied by HSR factor of 0.9. Functional acreage is the product of spatial size (quantity) and the habitat functionality

modifier factor determined by the values of each GIS layer for a given 30-meter by 30-meter grid cell.

For each grid cell:

$$\text{Functional Acres} = \text{Acres} \times \text{Functionality}$$

And:

$$\text{Functionality} = \text{Existing Sagebrush factor} \times \text{Biophysical Settings factor} \times \text{Anthropogenic Disturbance factor} \times \text{Transmission Lines factor.}$$

So, for example, a 30-meter by 30-meter grid cell (0.2224 acres) that is not currently sagebrush (thus, factor=0.75), but with biophysical settings that indicate potential for sagebrush (factor=1), and no anthropogenic disturbance (factor=1), but located four kilometers (km) from a single existing transmission line (factor=0.9) would be represented by the equation:

$$\text{Functionality} = 0.75 \times 1 \times 1 \times 0.9 = 0.675$$

And:

$$\text{Functional Acres} = 0.2224 \text{ acres} \times 0.675 = 0.1501 \text{ functional acres}$$

Additional detail on the functional acre calculation and a detailed description of the GIS analysis is presented in Appendix E.

## **D. Indirect Impact**

### ***Disturbance Bands***

This Framework has defined specific indirect impact “disturbance bands” for Sage-Grouse, while recognizing that indirect impacts are difficult to quantify and account for, there have been several recent publications that provide better information on quantifying various indirect impacts of transmission lines to Sage-Grouse. The Project will accrue indirect impacts to Sage-Grouse via the following main categories of indirect impact: avoidance of transmission line features, increased avian predator presence and predation, and decreased productivity and survival (i.e., decreased nest and female survival). Disturbance bands have been developed for the purposes of calculating compensatory mitigation requirements for these indirect impacts. The following provides supporting rationale for the three disturbance bands that have been identified for the Project:

#### *1. Avoidance Band: 0.4 mile (0-600 meters)*

Anthropogenic features are known to impact ecological processes for many different species. In a study by Gillan et al. (2013), Sage-Grouse spatial data was analyzed to determine the zone of influence or the distance at which Sage-Grouse may avoid transmission lines. Results indicated that Sage-Grouse were avoiding transmission lines by 0.4 mile (600 meters). Other authors have also suggested similar areas of avoidance (Braun 1998; Hanser et al. 2011). Additionally, models have been developed that demonstrate that transmission lines affect Sage-Grouse movement, gene flow, and lek activity to similar distances (WWHCWG 2010; Shirk et al. 2015). Avoidance leads to a substantial loss of habitat functionality and landscape permeability for migratory movement available to Sage-Grouse, assuming that most habitat within 0.4 mile (600 meters) of a tower will be unused by Sage-Grouse, no matter the degree

of habitat type/quality (BLM and USFWS 2015). Therefore, to account for this loss of habitat functionality and connectivity, a 0.4 mile (600 meters) disturbance band should be used to calculate required compensatory mitigation for these functions. This indirect impact would apply to all Sage-Grouse habitats.

2. *Increased Avian Predator Presence and Predation Band: 0.8 mile (>600-1,200 meters)*  
Corvids, particularly ravens, are the most common avian nest predators of Sage-Grouse range-wide (Lockyer et al. 2013) and within Washington State (Vander Haegen et al. 2002). In sagebrush habitats, which are typically devoid of many natural vertical structures like trees, ravens have been shown to select transmission lines as nesting substrates (Kristan and Boarman 2007; Howe et al. 2014). The introduction of anthropogenic structures into these habitats may unnaturally increase raven abundance (Boarman 1993) and also predation success on Sage-Grouse nests by providing taller hunting perches (Knight and Kawashima 1993).

Bui et al. (2010) found that the abundance of nesting ravens was more significantly related to Sage-Grouse nest depredation, suggesting that nesting territorial ravens were more harmful to Sage-Grouse than transient non-breeding ravens. Ravens are less mobile during the nesting period and opportunistically forage within 0.8 mile (1,200 meters) of a raven nest site and spend approximately 75% of their time foraging close to the nest (Boarman and Heinrich 1999; Sherman 1993). The nesting period for ravens coincides with the nesting and brood-rearing timing of Sage-Grouse. In addition, recent research conducted within a Sage-Grouse occupied sagebrush steppe landscape indicated that raven occurrence during the Sage-Grouse nesting period was highest within 2.2 km of transmission lines independent of raven breeding status (Coates et al. 2014). Additionally, research documents an increase of one raven per 10 km survey transects associated with Sage-Grouse nest sites resulted in a 7.4 percent increase in the odds of Sage-Grouse nest failure (Coates and Delehanty 2010). Because ravens are the primary avian nest predators of Sage-Grouse (territorial ravens in particular) and their abundance is greatest near transmissions lines, it can be assumed that Sage-Grouse nest depredation risk is high for Sage-Grouse nesting within 0.8 mile (1,200 meters) of the proposed Project (BLM and USFWS 2015). Therefore, to account for decreased nest success that may occur due to ravens, a 0.8 mile (1,200 meters) disturbance band should be used to calculate required compensatory mitigation. This indirect impact would apply to all Sage-Grouse habitats.

3. *Decreased Productivity and Survival Band: 3.1 mile (>1,200 – 5,000 meters)*  
Tall structures, such as transmission lines, are known to provide perches for avian predators higher than local vegetation and topography in certain locations (Ellis 1984; Braun 1998). It is hypothesized that avian predators of Sage-Grouse adults and nests may use transmission line towers to increase hunting efficiency, thereby reducing/influencing Sage-Grouse demographic vital rates including adult survival and nest success (Coates and Delehanty 2010; Wisdom et al. 2011; Gibson et al. 2013; Lockyer et al. 2013; Dinkins et al. 2014). A recent study in the sagebrush ecosystem of Wyoming indicated that nesting and brood-rearing Sage-Grouse avoided areas with increased densities of ravens (Dinkins et al. 2012). In addition, Dinkins et al. (2014) found that hen survival was negatively associated with powerline density. It is hypothesized that Sage-Grouse avoid utility lines due to an increase in perceived predation risk, which leads to Sage-Grouse lek abandonment and loss of functionality of habitats that otherwise have vegetative characteristics equal to highly suitable habitat (Hall and Haney 1997; Braun 1998). In Washington State, 95 percent of leks located within 4.7 miles (7.5 km) of 500 kV transmission lines are now vacant compared with a vacancy rate of 59 percent at greater distances (Schroeder 2010). Lek declines are often

driven by decreased recruitment of males (Braun 1986; Braun 1998; Holloran 2005). Recruitment may be affected by productivity of nesting females (Lyon and Anderson 2003; Holloran 2005), and female survival and nest success have an important influence on Sage-Grouse population growth (Taylor et al. 2012).

In 2003, the Falcon to Gondor 345 kV Transmission Line Project was constructed in central Nevada through Sage-Grouse habitat. Construction of the transmission line included a ten year study to assess the impacts of the transmission line on population demographics of nearby Sage-Grouse populations. After accounting for heterogeneity in demographic rates among individuals and habitat characteristics individuals were exposed to, results from the Falcon to Gondor Project did not demonstrate an effect of the transmission line on nest site selection or female nesting propensity, but did support a weak effect on male survival and substantial effects on nest and hen survival (Gibson et al. 2013). Results demonstrated that Sage-Grouse that nested closer to the line were more likely to exhibit decreased nest success and hen survival.

Results from the Falcon to Gondor Project line suggest that nest survival improves six percent and hen survival improves approximately three percent for each 3.1 mile (5.0 km) increment between the nest and the transmission line (Gibson et al. 2013). Additionally, productivity (nest, chick and fledgling survival) and adult hen survival have the most influence on population growth rates (Taylor et al. 2012; Guttery et al. 2013). Therefore, to account for decreased hen productivity and, thus, recruitment, a 3.1 mile (5.0 km) disturbance band should be used to calculate required compensatory mitigation. This indirect impact would apply to all Sage-Grouse habitats.

### ***Calculate and Adjust Habitat Services within Indirect Disturbance Bands***

Habitat services include the ecosystem features (physical site-specific characteristics of an ecosystem) and ecosystem functions (biophysical processes that occur within an ecosystem) that support wildlife populations. Habitat services are generally qualified using a metric that represents the functionality or quality of habitat (i.e., the ability of the habitat to provide wildlife services such as nest sites, forage, cover from predators, etc.). Depending upon the type of indirect Project impact, not all functions or habitat services would be reduced from the indirectly impacted habitat. As discussed above, the proposed Project would accrue indirect impacts to Sage-Grouse through the following main categories: avoidance of transmission lines, increased avian predator presence and predation, and decreased productivity and survival. The identified HSR adjustment factors for each of the indirect disturbance bands is intended to reflect the reduced, but not complete loss of habitat services in the area that would be indirectly impacted by the new transmission line.

The HSR adjustment factor is presented as a percentage that can be utilized to calculate required compensatory mitigation acreages for indirect impacts. To calculate and adjust for habitat services within indirect disturbance bands, the following steps will be taken: 1) the number of acres within each disturbance band will be calculated and 2) the calculated number of acres will then be multiplied by the HSR adjustment factor to obtain the change in HSR acreages. Indirect disturbance bands and associated HSR adjustment factors are presented in Table 3.

**TABLE 3 SUMMARY OF INDIRECT IMPACT DISTURBANCE BANDS AND PERCENT OF HABITAT SERVICES REDUCTION BY INDIRECT IMPACT**

INDIRECT IMPACT TYPE	DISTURBANCE BAND (METERS) <sup>1</sup>	HSR ADJUSTMENT FACTOR (%) <sup>2</sup>	HSR NEGOTIATION SPACE
Avoidance	0-600	75 <sup>3</sup>	Limited
Enhanced Avian Predation	>600-1,200	50 <sup>4</sup>	Moderate
Decreased Recruitment	>1,200-5,000	10 <sup>5</sup>	Moderate

<sup>1</sup>Disturbance band distance is a buffer from centerline that extends in both directions.

<sup>2</sup>HSR and contributing metrics of the Avoidance band include the significance level of habitat non-use. HSR and contributing metrics of the Increased Avian Predator Presence and Predation band include raven and raptor nest presence, raven and raptor nesting density, and length of breeding season. HSR and contributing metrics of the Decreased Productivity and Survival band include nest success, female survival, raven nesting density, and length of breeding season (BLM and USFWS 2015).

<sup>3</sup>Avoidance Band: The HSR is provided to adjust for the decreased probability of use within 600 meters and to account for the probability of raven occurrence which would depend on the time of the year (e.g., nesting ravens). Because behavioral avoidance of the transmission line affects lek attendance and persistence, nest site selection, and habitat use, a high HSR adjustment factor is recommended.

<sup>4</sup>Increased Avian Predator Presence and Predation Band: This HSR has been adjusted to account for the length of the Sage-Grouse nesting season and nest success, and raven densities. A moderate HSR adjustment factor is recommended due to intra-specific territorial behavior and Required Design Features (RDFs; e.g., perch/nest deterrents) that could limit the density of nesting ravens and raptors along the transmission line.

<sup>5</sup>Decreased Productivity and Survival Band: The HSR in this band accounts for enhanced avian predation and annual female survival rate. A low HSR adjustment factor is recommended as much of the habitat functionality would remain in this disturbance band to accommodate general adult foraging and non-breeding season habitat use, and intra-specific territorial behavior of ravens and RDFs that would limit the density of nesting ravens along the transmission line.

### ***Change in Connectivity***

JBLM YTC is surrounded on all sides by multiple large and small transmission lines. Four large transmission lines (greater than 115 kV) cross the northern portion of the YTC PAC; six large transmission lines are on the east side of the Columbia River and YTC PAC; and two large transmission lines cross the southern and western portions of the YTC PAC. In summary, movement of Sage-Grouse between populations and habitat is currently limited in all directions. Genetic analyses of Washington’s Sage-Grouse populations echo connectivity concerns, reflecting little gene flow between the YTC population and the other native populations (Oyler-McCance et al. 2005; Shirk et al. 2015).

In an effort to identify remaining connectivity corridors for many species within the Columbia Basin, the WWHCWG analyzed multiple factors of movement resistance across the landscape. For Sage-Grouse, resistance factors included infrastructure such as roads and transmission lines. Relevant to the proposed Project, WWHCWG assigned resistance factors to transmission lines greater than 230 kV for the following bands, with decreasing resistance farther from the centerline: 1) centerline; 2) centerline to 0.3 mile (500 meters); and 3) greater than 0.3 mile (500 meters) to 0.6 mile (1,000 meters). Shirk et al. (2015) used empirical data collected for Sage-Grouse in Washington State to evaluate the ability of species-specific models to predict movement. Shirk et al. (2015) found that the resistance of transmission lines was greater than the resistance factors assigned in the WWHWG analysis.

To account for impacts to Sage-Grouse landscape connectivity, compensatory mitigation will take into account current landscape resistance from existing transmission line infrastructure plus the increase in resistance from the proposed Project. To assess connectivity impacts due to the addition of this new 230 kV transmission line, debits incurred would be generated using methods and information from the Landscape Resistance model employed by the WWHCWG (2010) and using parameters from the Shirk et al. (2015; personal communication) model number 78. It appeared that the cell values (spatial resolution; each cell is equal to 0.22 acres) in the Shirk et al. (2015) model were based on number of transmission circuits rather than actual number of separate transmission

lines (i.e., double-circuit lines were treated as two separate lines even though the second circuit utilized the same structures as the first circuit). Number of structures and ROW width would have greater implications for Sage-Grouse than the number of circuits and conductors on each structure, so two separate transmission lines (whether they are single-circuit or double-circuit) should have a greater resistance value than a single transmission line (even if the single transmission line carried two circuits). To account for situations with double-circuit lines and/or multiple transmission lines on the landscape, the analysis methodology was modified as described below and using the resistance values presented in Table 4. For the purposes of the connectivity analysis, a transmission line is defined as a single line of structures and with all conductors sharing the same structures.

**TABLE 4 ANALYSIS DISTANCE, TRANSMISSION LINE TYPE AND NUMBER, RESISTANCE VALUES USED TO MODEL CHANGE IN HABITAT CONNECTIVITY FOR GREATER SAGE-GROUSE**

ANALYSIS DISTANCE	TRANSMISSION LINE TYPE	NUMBER OF TRANSMISSION LINES	ASSIGNED RESISTANCE VALUE
Centerline <sup>1</sup>	< 230 kV	1	7
		2	15
	≥ 230 kV	1	15
		2	19
0 to 500 meters	< 230 kV	1	3
		2	7
	≥ 230 kV	1	7
		2	9
500 to 1,000 meters	< 230 kV	1	0
		2	0
	≥ 230 kV	1	0
		2	3

<sup>1</sup>Centerline analysis – Cells touching the centerline of existing or proposed transmission line(s).

The connectivity analysis will be completed on three bands: 1) transmission centerline crossing a cell; 2) transmission centerline proximity from centerline to 500 meters; and 3) from 500 meters to 1,000 meters. Transmission line proximity for each cell will be determined by counting the transmission lines within 500 meters of the cell for the inner band width and by counting transmission lines further than 500 meters, but less than 1,000 meters from the cell for the outer band width. For the purposes of calculating required compensatory mitigation acreages, the resistance values will be considered as percentages of landscape resistance. For example:

- A resistance value of 0.0 would be equal to no landscape resistance, 100 percent landscape connectivity or 0.0 percent landscape connectivity services lost;
- A resistance value of ≥100 would be equal to a barrier on the landscape, 0 percent landscape connectivity or 100 percent landscape connectivity services lost.

The connectivity analysis will be run for each of the three bands to obtain the current resistance value for any existing transmission lines and to account for the addition of the proposed Project. The number of cells that changed resistance value with the proposed Project will be calculated (e.g., cells

that changed from a current resistance value of 2 to 3 would equal 1 resistance value change). Connectivity acreage debits will then be calculated for all resistance value changes and totaled to provide the acres of compensatory mitigation debits for indirect impacts to connectivity.

## **E. Mitigation Credit Adjustments**

Following the calculation of functional acre credits at proposed mitigation sites, the SAGE Project Evaluation Tool (Service Areas; Appropriateness; Guarantees; and Evaluation) will be used to determine final mitigation credits. The SAGE Project Evaluation Tool, developed by the Sage-Grouse Subgroup, has multiple functions: evaluating which mitigation actions will provide maximum mitigation credits, screening individual project proposals or categories of mitigation actions for consistency with the principles, standards and technical elements described in this Framework and determining mitigation credits from those actions (Table 5). The SAGE Project Evaluation Tool can be used iteratively during mitigation design and review phases, to inform and guide modification of proposed mitigation actions to maximize mitigation credits. Mitigation credits will be assigned to proposed mitigation actions, or categories of actions, based on each actions' consistency with this Framework's: 1) Principles and Technical Elements; 2) Service Areas (as identified and prioritized in section IV.B; see Figure 1 Project-Specific Service Areas); 3) Appropriateness (how effective, additional, and timely the mitigation action is); and 4) Guarantees (how durable the action will be). These measurable principles and technical elements will be used to complete an evaluation of the proposed mitigation action(s) by averaging the assigned values of each of the SAGE Project Evaluation Tool principles and technical elements and then applying the resulting summary credit adjustment factor to proposed mitigation action functional acreages to determine the total, adjusted mitigation credit value assigned to the mitigation project.

## **F. Metrics and Accounting**

An accounting system that tracks the Project's debits and mitigation credits is essential to the successful completion and implementation of the CMP. The accounting system for the proposed Project will foster transparency, accountability, credibility, and facilitate mitigation opportunities to be realized by Pacific Power and/or eligible/approved mitigation providers.

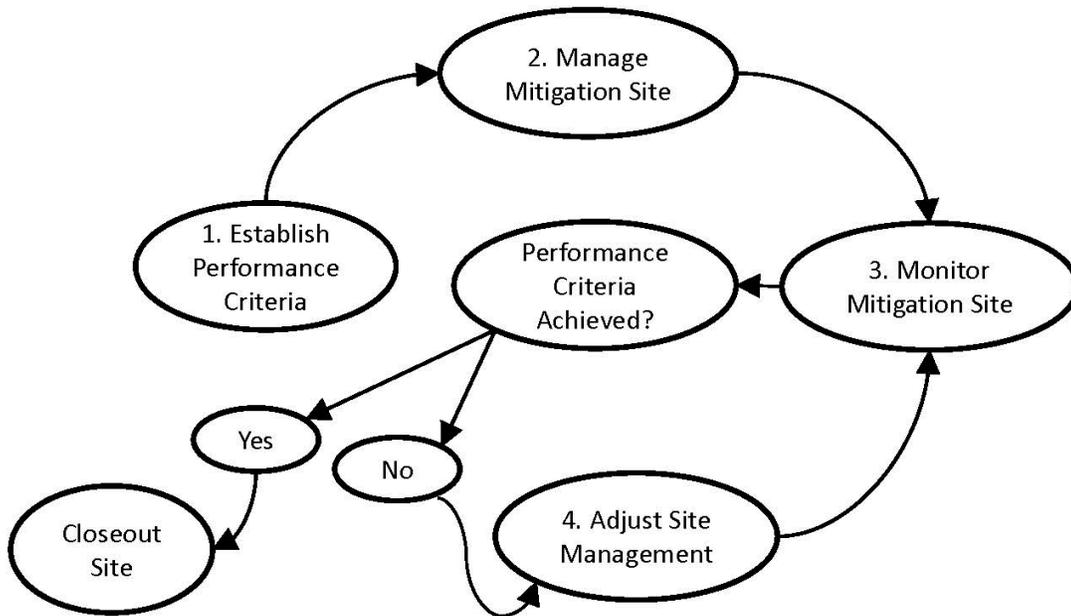
As described above, functional acres will constitute the common currency (i.e. the common metric) for the proposed Project. This currency provides a methodology for tracking debits and credits consistently across impact types and jurisdictional boundaries. Monitoring and adaptive management are important components of the CMP's accounting system to ensure success. The CMP will include a process for adaptive management that will address uncertainties, including new information and unforeseen or unregulated situations (e.g., weather, fire). Each mitigation action will identify discrete ecological and/or administrative performance standards to be met and will propose contingencies and consequences for not meeting those standards. The adaptive management process includes four steps:

1. **Performance standards** are developed to describe the desired condition.
2. **Management action** is carried out so the site meets the performance standards.
3. **The response of the resource** is monitored to determine if the performance standards have been met.
4. **Management is evaluated and adjusted** if the performance standards are not achieved (Washington State Department of Transportation [WSDOT] 2016).

Monitoring and responsive site management are both integral to an effective adaptive management strategy. Without valid monitoring data, management actions may or may not result in improved conditions or be in compliance with CMP objectives, regulatory permits and agency authorizations.

Timely site management decisions, based on valid monitoring data, result in increased efficiency and higher probability of success (WSDOT 2016). Ultimately, the metrics and accounting system used must clearly show a net conservation gain to the species and its habitat. The adaptive site management process is illustrated below in Figure 2 (The Adaptive Site Management Process).

**FIGURE 2 THE ADAPTIVE SITE MANAGEMENT PROCESS (ADAPTED FROM WSDOT 2016)**



**TABLE 5 SUMMARY OF THE PRINCIPLES AND TECHNICAL ELEMENTS OF THE SUMMARY OF THE TECHNICAL ELEMENTS OF THE SAGE PROJECT EVALUATION TOOL ANALYSIS TOOL**

SAGE PROJECT EVALUATION CATEGORY		REQUIRED <sup>1</sup>	SERVICE AREA <sup>2</sup>	APPROPRIATENESS <sup>2</sup>			GUARANTEES <sup>2</sup>	EVALUATION
Action Category	Action Subcategory	<p><b>Required Principles and Technical Elements:</b></p> <p>At a minimum, the following need to be addressed/considered (DOI 2015):</p> <ul style="list-style-type: none"> <li>• Type of resource(s) and/or its value(s), service(s), and function(s), and amount(s) of such resources, the method of compensation, and the manner in which a landscape scale approach has been considered;</li> <li>• Factors considered during the site selection process;</li> <li>• Site protection instruments to ensure the durability of the measure;</li> <li>• Baseline information and demonstrated additionality of measure;</li> <li>• The mitigation value of such resource including a rationale (e.g., an accounting system with metrics and methods) for such a determination;</li> <li>• A mitigation work plan including the geographic boundaries of the measure, construction methods, timing, responsible party/ies and other considerations;</li> <li>• A maintenance plan;</li> <li>• Performance standards to determine whether the measure has achieved its intended outcome;</li> <li>• Monitoring requirements;</li> <li>• Long-term management;</li> <li>• Adaptive management commitments;</li> <li>• Financial assurance provisions that are sufficient to ensure, with a high degree of confidence, that the measure will achieve and maintain its intended outcome, in accordance with the measure's performance standards; and</li> <li>• Potentially additional information as necessary to determine appropriateness, practicability, and equivalency of compensatory mitigation projects.</li> </ul>	<p><b>Conservation Priority:</b> Location is consistent with Project-specific service areas (see Figure 1 Project-Specific Service Areas Map): Service Area 1 = 1.0 Service Area 2 = 0.9 Service Area 3 = 0.8 Service Area 4 = 0.6 Service Area 5 = 0.5</p>	<p><b>Effectiveness:</b> Likelihood of success  Effectiveness is evaluated on a continuous scale from 1.0 to the base/lowest acceptable value of 0.6. Likelihood of success would be determined by consideration of the project location, scientifically proven techniques, etc.  High likelihood of success using proven techniques in the most appropriate location = 1.0. Lowest acceptable level where likelihood of success is greater than 50%, techniques are sound and location is adequate but moderate uncertainty of effectiveness remains = 0.6</p>	<p><b>Timeliness:</b><sup>3</sup> Time from impact until mitigation reaches full benefit  Front-loaded implementation before Project impacts = 1.0 Concurrent or brief delay in outcomes (1-3 years) = 0.8 Moderate delay in outcomes or deferred response time (3-10 years) = 0.6 Substantial delay in outcomes and/or lengthy response time (&gt;10 years) = 0.3</p>	<p><b>Durability:</b> Assurances that mitigation measures and sites are resilient to change agents and will achieve and maintain resource outcomes, will demonstrate administrative durability through actions that limit or exclude incompatible land use activities, and will exhibit financing sufficient to maintain, monitor, and adaptively manage compensatory mitigation projects.  Durability is evaluated on a continuous scale from 1.0 to the base/lowest acceptable value of 0.6.  Strong projected resource, administrative, and financial durability = 1.0 Lowest acceptable level of resource, administrative, and financial durability due to moderate amount of uncertainty and/or risk of achieving outcomes of mitigation measures at compensatory mitigation sites = 0.6</p>	<p><b>Summary Credit Adjustment Factor:</b> Mitigation project summary credit adjustment obtained by averaging the assigned values of each of the prior categories.</p>	<p><b>Adjusted Mitigation Credit Value:</b> The summary credit adjustment factor is multiplied by the proposed mitigation action's functional acreage to determine the total, adjusted mitigation credit value.</p>
Habitat acquisition/ easement and additional management								
Habitat enhancement								
Habitat restoration	<ul style="list-style-type: none"> <li>• Fire restoration</li> <li>• Invasive species control and management</li> <li>• Sagebrush overstory and understory restoration</li> <li>• Restoration on WDNR NAP lands near Selah Creek</li> <li>• Wild horse management</li> </ul>							

SAGE PROJECT EVALUATION CATEGORY		REQUIRED <sup>1</sup>	SERVICE AREA <sup>2</sup>	APPROPRIATENESS <sup>2</sup>			GUARANTEES <sup>2</sup>	EVALUATION
Action Category	Action Subcategory	<p><b>Required Principles and Technical Elements:</b></p> <p>At a minimum, the following need to be addressed/considered (DOI 2015):</p> <ul style="list-style-type: none"> <li>• Type of resource(s) and/or its value(s), service(s), and function(s), and amount(s) of such resources, the method of compensation, and the manner in which a landscape scale approach has been considered;</li> <li>• Factors considered during the site selection process;</li> <li>• Site protection instruments to ensure the durability of the measure;</li> <li>• Baseline information and demonstrated additionality of measure;</li> <li>• The mitigation value of such resource including a rationale (e.g., an accounting system with metrics and methods) for such a determination;</li> <li>• A mitigation work plan including the geographic boundaries of the measure, construction methods, timing, responsible party/ies and other considerations;</li> <li>• A maintenance plan;</li> <li>• Performance standards to determine whether the measure has achieved its intended outcome;</li> <li>• Monitoring requirements;</li> <li>• Long-term management;</li> <li>• Adaptive management commitments;</li> <li>• Financial assurance provisions that are sufficient to ensure, with a high degree of confidence, that the measure will achieve and maintain its intended outcome, in accordance with the measure's performance standards; and</li> <li>• Potentially additional information as necessary to determine appropriateness, practicability, and equivalency of compensatory mitigation projects.</li> </ul>	<p><b>Conservation Priority:</b> Location is consistent with Project-specific service areas (see Figure 1 Project-Specific Service Areas Map): Service Area 1 = 1.0 Service Area 2 = 0.9 Service Area 3 = 0.8 Service Area 4 = 0.6 Service Area 5 = 0.5</p>	<p><b>Effectiveness:</b> Likelihood of success</p> <p>Effectiveness is evaluated on a continuous scale from 1.0 to the base/lowest acceptable value of 0.6. Likelihood of success would be determined by consideration of the project location, scientifically proven techniques, etc.</p> <p>High likelihood of success using proven techniques in the most appropriate location = 1.0. Lowest acceptable level where likelihood of success is greater than 50%, techniques are sound and location is adequate but moderate uncertainty of effectiveness remains = 0.6</p>	<p><b>Timeliness:</b><sup>3</sup> Time from impact until mitigation reaches full benefit</p> <p>Front-loaded implementation before Project impacts = 1.0 Concurrent or brief delay in outcomes (1-3 years) = 0.8 Moderate delay in outcomes or deferred response time (3-10 years) = 0.6 Substantial delay in outcomes and/or lengthy response time (&gt;10 years) = 0.3</p>	<p><b>Durability:</b> Assurances that mitigation measures and sites are resilient to change agents and will achieve and maintain resource outcomes, will demonstrate administrative durability through actions that limit or exclude incompatible land use activities, and will exhibit financing sufficient to maintain, monitor, and adaptively manage compensatory mitigation projects.</p> <p>Durability is evaluated on a continuous scale from 1.0 to the base/lowest acceptable value of 0.6.</p> <p>Strong projected resource, administrative, and financial durability = 1.0 Lowest acceptable level of resource, administrative, and financial durability due to moderate amount of uncertainty and/or risk of achieving outcomes of mitigation measures at compensatory mitigation sites = 0.6</p>	<p><b>Summary Credit Adjustment Factor:</b> Mitigation project summary credit adjustment obtained by averaging the assigned values of each of the prior categories.</p>	<p><b>Adjusted Mitigation Credit Value:</b> The summary credit adjustment factor is multiplied by the proposed mitigation action's functional acreage to determine the total, adjusted mitigation credit value.</p>
Fire prevention	<ul style="list-style-type: none"> <li>• Create dip pond(s)</li> <li>• Provide firefighting resources</li> <li>• Create fire breaks</li> </ul>							
Population Enhancement and Restoration	<ul style="list-style-type: none"> <li>• Augmentation funding</li> <li>• Reintroduction funding</li> </ul>							
Research and Adaptive Management	<ul style="list-style-type: none"> <li>• BAC project study (predation, etc.)</li> <li>• Viability analysis study</li> <li>• Genetic analysis study</li> </ul>							

## **VI. IMPLEMENTATION, MANAGEMENT, AND MONITORING**

Preparation of the CMP by Pacific Power will involve discussions and collaboration with state, county, tribal and federal agencies. Pacific Power will convene an ad-hoc TWG comprised of state agencies (WDFW, Washington Department of Natural Resources [DNR], Washington Department of Ecology [WDOE], and WSDOT), counties and federal agencies with authorizations to grant (USFWS, BLM, JBLM YTC, Bureau of Reclamation, Bonneville Power Administration, and Federal Highway Administration), and interested tribes. The TWG would assist Pacific Power in the development of their CMP including an assessment to determine if the CMP meets the Principles and Technical Elements laid out in this Framework. Involvement of county, state and federal agencies with jurisdiction over the Project will ensure that the CMP is sufficient to meet their requirements and is consistent with applicable laws and government policies.

The CMP will include a schedule detailing the sequence for implementing the restoration of temporarily and permanently impacted areas caused by construction of the Project and the sequencing of all proposed compensatory mitigation actions including timeframes for securing compensatory mitigation lands and for implementing mitigation actions on those lands.

In the CMP, Pacific Power will establish the timeframes for which they will have each mitigation action attain its full mitigation credit (e.g., restoration of habitat values, land acquisition to preserve priority sage-grouse habitat currently not protected, etc.) as required to compensate for the Project's residual impacts. Specific criteria will need to be developed that describes and measures the success and/or failure of each the mitigation action. The desired ecological outcomes will be based on the results of the impact assessment and ecological evaluation, both referenced earlier in this document, with an overall goal of achieving a net conservation gain for the species and its habitat through implementation of the CMP to enhance and improve habitat.

The CMP will include an overall management plan for all the compensatory mitigation actions that details how mitigation actions and or initiatives (e.g., wild horse management, fire suppression support, etc.) will be managed and how enhancement actions will be implemented and monitored. Pacific Power, and/or other approved parties, will be responsible for monitoring and reporting to the authorizing agencies, USFWS, and WDFW on whether mitigation and the associated management actions are implemented as stated in the CMP ("implementation monitoring") and to immediately address any inconsistencies.

Pacific Power will also be responsible for effectiveness monitoring and reporting to the authorizing agencies, USFWS, and WDFW to identify mitigation actions that are not achieving the desired result and remedial actions (adaptive management process) will be developed and implemented (refer to Section V.F Metrics and Accounting).

The CMP will include methods to monitor and assess the attainment of targeted outcomes, over the life of Project's residual impacts. Pacific Power, or other identified responsible parties, will be responsible for reporting the monitoring findings and recommendations for a specified time period, as required by the state and federal permitting processes for the duration of the mitigation effort(s) as determined by evaluated success of the mitigation. The report will describe all mitigation and management actions carried out during the reporting year, and all remedial management work performed in response to monitoring actions. The report will include an evaluation of mitigation success in meeting targeted outcomes, and a description of the methods used to perform the evaluation.

Each county, state and federal agency with jurisdiction over the Project will carefully track the monitoring reports to determine if actions and outcomes are consistent with applicable law, the CMP, the FEIS, the

ROD(s), and their respective Project authorizations including ROWs and permits. The agencies will work cooperatively to identify and address inconsistencies. Each agency will reserve the ability to take all measures available under law and regulation to ensure compliance with the terms and conditions of its respective authorization. For example, in October 2015, the USFWS determined that listing Sage-Grouse as an endangered or threatened species under the Endangered Species Act is not warranted at this time; however, the USFWS will continue to work with federal and state agencies to conduct a Sage-Grouse status review in five years. This status review may inform adaptive management to ensure that conservation efforts continue to benefit Sage-Grouse into the future (USFWS 2015).

## **APPENDIX A    SAGE-GROUSE SUBGROUP FRAMEWORK CONTRIBUTORS**

Bureau of Land Management: Jason Sutter, J.A. Vacca, Robin Estes

Joint Base Lewis-McChord Yakima Training Center: Colin Leingang, Margaret Taaffe

U.S. Fish and Wildlife Service: Jessica Gonzales, Heather McPherron, Steve Lewis, Doug Young

Washington Department of Fish and Wildlife: Perry Harvester, Mark Teske, Mike Livingston, Justin Allegro

POWER Engineers (BLM's Third Party NEPA Contractor): Dave Dean, Cindy Lysne

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**APPENDIX B    POTENTIAL GREATER SAGE-GROUSE  
MITIGATION PROJECTS**

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PROJECT NAME	RDF, BMP, MITIGATION	SAGE PROJECT EVALUATION TOOL ACTION CATEGORY	IMPACT MITIGATED	ACRES/MILES MITIGATED	PROJECT LOCATION IN PROJECT-SPECIFIC SERVICE AREA	CURRENT PROJECT HABITAT	CURRENT OWNERSHIP	PROPOSED OWNERSHIP	PUBLIC & POLITICAL SUPPORT	READINESS (ENVIRONMENTAL REVIEW & APPROVAL, WILLING SELLER, ETC.)	POINT-OF-CONTACT	PROPOSED CREDITS
Allington -Lake Creek	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	6,000	Crab Creek PAC	TBD	Private	BLM	UNK	Authorized in BLM RMP & Willing Seller	Jason Lowe (BLM) & Mark Hatchel (BLM)	TBD
BLM Farm Land Restoration	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	4,000	Various BLM Lands in Sage-Grouse Area	TBD	BLM	BLM	UNK	Will need NEPA	Chris Sheridan (BLM) & Jason Lowe (BLM)	TBD
Burbank Creek	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	543	YTC PAC	TBD	Private	BLM	UNK	Authorized in BLM RMP & Willing Seller	BLM, BPA and Pacific Power	TBD
Cowiche Watershed	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	3,292 (?)	Oak Creek Wildlife Area	TBD	Private	WDFW	NGOs, Yakama Nation, Yakima County, BLM, USFWS	UNK	Mike Livingston (WDFW)	TBD
Eaton Ranch	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	A portion of the Ranch's 11,323 acres	YTC PAC	TBD	Private	BLM, Reclamation, WDFW, WDOE	UNK	UNK	Eaton Family in collaboration with WDFW, BLM, Reclamation, WDOE	TBD
Grand Coulee Ranch	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	16,372	Moses Coulee PAC	TBD	Private	WDFW	NGO's, Douglas County	Columbia-Grand Coulee Project 2012	Jim Brown (WDFW)	TBD
Selah Cliffs Natural Area Preserve	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	UNK	YTC PAC	TBD	Private	DNR	UNK	Natural Heritage Advisory Council Approved	Curt Pavola (DNR)	TBD
Selah Cliffs Natural Area Preserve	Mitigation	Habitat Restoration	Habitat loss and degradation	UNK	YTC PAC	TBD	DNR & WSDOT	N/A	N/A	Yes, pending funding	Curt Pavola (DNR)	TBD
Upper Crab Creek Powerline Modifications	Mitigation	Habitat Restoration	Habitat loss and degradation	UNK	Crab Creek PAC	TBD	Inland Power, BLM, WDFW	UNK	UNK	Inland Power Feasibility Study	Kerrin Doloughan (BLM)	TBD
Wild Horse Management	Mitigation	Habitat Enhancement	Habitat loss and degradation	UNK	Yakama Nation PAC	TBD	Yakama Nation	Yakama Nation	UNK	UNK	Tribal Representative	TBD
Wanapum Natural Area Preserve	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	2,237	Sage-Grouse Recovery Zone & Striped Whipsnake	TBD	Private & Reclamation	DNR	Arid Lands Initiative Partners	Natural Heritage Advisory Council Approved	Curt Pavola (DNR)	TBD
Fence removal	Mitigation	Habitat Enhancement	Connectivity	Remove 10-miles of fence on YTC w/in sage-steppe habitat	YTC PAC	TBD	Private	Private	UNK	Complete under current management	Colin Leingang (JBLM YTC)	TBD
Fence marking	Mitigation	Habitat Enhancement	Collision	Mark 25-miles of ranch fence within sage-steppe habitat	YTC PAC	TBD	Private	Private	UNK	Private land would not require NEPA analysis	BLM, Pacific Power and Eaton Family	TBD
Perching removal	Mitigation	Habitat Enhancement	Predation	Remove abandon poles on YTC	YTC PAC	TBD	U.S. Department of Defense (DOD)	DOD	UNK	Complete under current management	Colin Leingang (JBLM YTC)	TBD

PROJECT NAME	RDF, BMP, MITIGATION	SAGE PROJECT EVALUATION TOOL ACTION CATEGORY	IMPACT MITIGATED	ACRES/MILES MITIGATED	PROJECT LOCATION IN PROJECT-SPECIFIC SERVICE AREA	CURRENT PROJECT HABITAT	CURRENT OWNERSHIP	PROPOSED OWNERSHIP	PUBLIC & POLITICAL SUPPORT	READINESS (ENVIRONMENTAL REVIEW & APPROVAL, WILLING SELLER, ETC.)	POINT-OF-CONTACT	PROPOSED CREDITS
Perch deterrent installation	Mitigation	Habitat Enhancement	Predation	Install 20 miles (40 miles total) of perch deterrents on the proposed and existing V2P transmission lines in occupied Sage-Grouse habitat w/in the YTC PAC	YTC PAC	TBD	DOD, private, state, Federal	DOD, private, state, Federal	UNK	Complete under current management	BLM, Colin Leingang (JBLM YTC), John Aniello (Pacific Power) & Mike Livingston (WDFW)	TBD
Bury distribution lines	Mitigation	Habitat Enhancement	Connectivity	UNK	YTC PAC	TBD	DOD, private, state, Federal	DOD, private, state, Federal	UNK	NEPA required for federal lands	John Aniello (Pacific Power), BPA, Grant County Public Utility District	TBD
Grazing buy-out	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	Buy-out 300 AUMs for a period of 5 years.	YTC PAC	TBD	Private, federal	Private, federal	UNK	TBD	TBD	TBD
Grazing management for Sage-Grouse	Mitigation	Habitat acquisition/ easement and additional management	Habitat loss and degradation	Put 500 acres of sagebrush steppe into a rest/rotational grazing program.	YTC PAC	TBD	Private, federal	Private, federal	UNK	TBD	TBD	TBD
Post-wildfire restoration	Mitigation	Habitat Restoration	Habitat loss and degradation	Restore 2,000 acres of sagebrush steppe following wildland fire. Treat for invasive species, plant bare root sagebrush seedlings and sow native grasses and forbs.	YTC PAC	TBD	DOD, federal, state	DOD, federal, state	UNK	Complete under current management	TBD	TBD
Invasive species control-management	Mitigation	Habitat Restoration	Habitat loss and degradation	Treat 500 acres of areas bordering Sage-Grouse habitat or restoration areas for invasive species such as cheatgrass and knapweed.	YTC PAC	TBD	DOD, federal, state	DOD, federal, state	UNK	Complete under current management	TBD	TBD
Sage-steppe overstory restoration	Mitigation	Habitat Restoration	Habitat loss and degradation	Plant 100,000 bare root sagebrush seedlings	YTC PAC	TBD	DOD, federal, state	DOD, federal, state	UNK	Complete under current management	TBD	TBD

PROJECT NAME	RDF, BMP, MITIGATION	SAGE PROJECT EVALUATION TOOL ACTION CATEGORY	IMPACT MITIGATED	ACRES/MILES MITIGATED	PROJECT LOCATION IN PROJECT-SPECIFIC SERVICE AREA	CURRENT PROJECT HABITAT	CURRENT OWNERSHIP	PROPOSED OWNERSHIP	PUBLIC & POLITICAL SUPPORT	READINESS (ENVIRONMENTAL REVIEW & APPROVAL, WILLING SELLER, ETC.)	POINT-OF-CONTACT	PROPOSED CREDITS
Sage-steppe understory restoration	Mitigation	Habitat Restoration	Habitat loss and degradation	Restore 1,000 acres of sage-steppe, where sagebrush overstory exists by sowing pure live seed (PLS) per acre of native grass and forb seed.	YTC PAC	TBD	DOD, federal, state	DOD, federal, state	UNK	Complete under current management	TBD	TBD
Create fire bucket dip-ponds	Mitigation	Wildfire prevention	Habitat loss and degradation	Install 3 additional aerial fire bucket dip ponds within the JBLM YTC boundary.	YTC PAC	TBD	DOD	DOD	UNK	Complete under current management	TBD	TBD
Create fire breaks	Mitigation	Wildfire prevention	Habitat loss and degradation	Create 50 miles of additional fire breaks within JBLM YTC. Equates to approximately 300 acres.	YTC PAC	TBD	DOD	DOD	UNK	Complete under current management	TBD	TBD
Maintain fire breaks	Mitigation	Wildfire prevention	Habitat loss and degradation	Maintain 100 miles of JBLM YTC fire breaks. Equates to approximately 600 acres.	YTC PAC	TBD	DOD	DOD	UNK	Complete under current management	TBD	TBD
Fund firefighting staff/equipment	Mitigation	Wildfire prevention	Habitat loss and degradation	Preserve 1,000 acres of Sage-Grouse habitat within the JBLM YTC by funding additional firefighting staff and providing additional firefighting equipment.	YTC PAC	TBD	DOD	DOD	UNK	Complete under current management	TBD	TBD
Raven control	Mitigation	Habitat Enhancement	Predation	10-miles of existing and proposed V2P transmission line on YTC	YTC PAC	TBD	DOD	DOD	UNK	Could be part of V2P FEIS analysis	Colin Leingang (JBLM YTC) & Jessica Gonzales (USFWS)	TBD
Sage-Grouse augmentation	Mitigation	Population Enhancement/Restoration	Population decline	Provide 10-out of state birds (NV, ID, OR) for the next 10-ys	YTC PAC	TBD	DOD	DOD	UNK	Complete under current management	Colin Leingang (JBLM YTC), Jessica Gonzales (USFWS), & Mike Livingston (WDFW)	TBD

PROJECT NAME	RDF, BMP, MITIGATION	SAGE PROJECT EVALUATION TOOL ACTION CATEGORY	IMPACT MITIGATED	ACRES/MILES MITIGATED	PROJECT LOCATION IN PROJECT-SPECIFIC SERVICE AREA	CURRENT PROJECT HABITAT	CURRENT OWNERSHIP	PROPOSED OWNERSHIP	PUBLIC & POLITICAL SUPPORT	READINESS (ENVIRONMENTAL REVIEW & APPROVAL, WILLING SELLER, ETC.)	POINT-OF-CONTACT	PROPOSED CREDITS
Sage-Grouse Reintroduction	Mitigation	Population Enhancement/Restoration	Population decline	UNK	Yakama Nation PAC	TBD	Yakama Nation	Yakama Nation	UNK	Complete under current management	Colin Leingang (JBLM YTC), Jessica Gonzales (USFWS), Mike Livingston (WDFW), & Yakama Nation Point of Contact	TBD

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## **APPENDIX D GLOSSARY**

**Adaptive Management:** A system of management practices based on clearly identified outcomes and monitoring to determine whether management actions are meeting required outcomes; and, if not, facilitating management changes that will best ensure that outcomes are met or re-evaluated. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain.

**Additionality:** A compensatory mitigation measure that improves the baseline conditions of the impacted resource, and is demonstrably new and would not have occurred without the compensatory mitigation measure.

**Appropriate:** Necessary for and effective at achieving the desired outcome.

**Avoidance:** Avoiding the impact altogether by not taking a certain action or parts of an action (40 CFR 1508.20(a)).

**Baseline:** The pre-existing condition of a defined area of habitat that can be quantified by appropriate attribute(s) to determine level of function or value and re-measured at a later time to determine if the same area of habitat has increased, decreased, or maintained the same level of function or value.

**Best Management Practices (BMPs):** State-of-the-art, efficient, appropriate, and practicable mitigation measures for avoiding, minimizing, rectifying, and reducing or eliminating impacts over time.

**Commensurate:** A compensatory mitigation obligation that is reasonably related and proportional to the reasonably foreseeable residual effects from a land use activity that warrants compensation.

**Compensation:** Compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20(e)).

**Compensatory Mitigation Measure:** An action that results in the restoration, establishment, enhancement, and/or preservation of resources in order to offset a residual effect.

**Connectivity Habitat:** Habitat that provides areas important for movement between habitats and populations, including breeding areas and seasonally used areas and between existing populations.

**Credit:** A unit of measure representing the restoration, establishment, enhancement, and/or preservation of resources by a compensatory mitigation measure.

**Durability:** The maintenance of the effectiveness of a mitigation measure and/or a compensatory mitigation site, including resource, administrative, and financial considerations.

**Duration of the Impact:** The time it takes to restore the resources impacted (including direct and indirect effects) by a land use activity, even if this time period extends beyond the expiration of the land use activity. The duration of some impacts may be perpetuity.

**Effects:** The adverse direct, indirect, and cumulative impacts from a land use activity; effects and impacts as used in this policy are synonymous. Mitigation addresses the adverse direct and indirect impacts to resources from land use activities; cumulative impacts provide a broader context for understanding the magnitude of the direct and indirect impacts.

**Expansion Habitat:** Habitat that includes areas where expansion could occur through an improvement in habitat quality.

**Functional Acres:** The unit of value that expresses the quantity (acreage) and quality (or functionality) of the habitat. The functionality of a site represents its level of performance relative to optimal conditions and takes into account species-specific habitat features that are known to be meaningful to Sage-Grouse, including the quality and structure of vegetation on the site and the degree of human disturbance on and surrounding the site.

**Habitat Function:** The ability or value of a patch of land to meet the needs of Sage-Grouse.

**Impacts:** The adverse direct, indirect, and cumulative effects from a land use activity; effects and impacts as used in this policy are synonymous. Mitigation addresses the adverse direct and indirect impacts to resources from land use activities; cumulative impacts provide a broader context for understanding the magnitude of the direct and indirect impacts.

**In-kind Compensatory Mitigation:** The replacement or substitution of resources that are of the same type and kind as those impacted.

**Landscape:** A geographic area encompassing an interacting mosaic of ecosystems and human systems that is characterized by a set of common management concerns. The landscape is not defined by the size of the area, but rather by the interacting elements that are relevant and meaningful in a management context.

**Minimization:** Minimizing impacts by limiting the degree or magnitude of the action and its implementation (40 CFR 1508.20(b)).

**Mitigation:** Includes, avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and, compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

**Mitigation Bank:** An arrangement where actions to restore, establish, enhance, and/or preserve resources (i.e., accrual of credits) are conducted by a specific sponsor in a defined geographic area(s) for the purpose of eventually compensating for residual effects to resources from land use activities (i.e., accrual of debits). In general, a mitigation bank sells compensatory mitigation credits to authorized land users, whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor. Credits from mitigation banks are typically the timeliest of the compensatory mitigation mechanisms in that the mitigation measures have typically already been implemented before a transaction with an authorized land user commences.

**Mitigation Exchanges:** An arrangement, facilitated by a third-party sponsor, where actions to restore, establish, enhance, and/or preserve resources (i.e., accrual of credits) are conducted by willing and applicable landowners in a broad geographic area for the purpose of eventually compensating for residual effects to resources from land use activities (i.e., accrual of debits). In general, a mitigation exchange sponsor facilitates the sales of compensatory mitigation credits from landowners who accrued the credits to authorized land users, whose obligation to provide compensatory mitigation is then transferred to landowners who accrued the credits.

**Mitigation Fund (i.e., an in-lieu fee fund):** An arrangement, facilitated by a sponsor, where actions to restore, establish, enhance, and/or preserve resources (i.e., accrual of credits) are conducted by pooling and spending funds from a single or multiple authorized land users for the purpose of compensating for

residual effects to resources from land use activities (i.e., accrual of debits). In general, a mitigation fund accepts funds for compensatory mitigation from authorized land users, whose obligation to provide compensatory mitigation is then transferred to the mitigation fund sponsor.

**Mitigation hierarchy:** See Mitigation, the process and order of preference for the application of mitigation.

**Mitigation Ratio:** The relationship between compensatory offset for, and impacts to, individuals of species or habitat for species.

**Net Gain:** When mitigation results in an improvement above baseline conditions.

**Net Loss:** When the lack of mitigation results in a negative change to baseline conditions.

**No Net Loss:** When mitigation results in no negative change to baseline conditions (e.g., fully offset or balanced).

**Occasionally Occupied Habitat:** Habitat that includes habitat that may be occupied on a seasonal or irregular basis.

**Out-of-kind Compensatory Mitigation:** Replacement or substitution of resources that are of different type and kind as those impacted.

**Outcome:** A clearly-defined and measurable result.

**Preservation:** The removal of a threat to, or preventing the decline of, resources. Preservation may include the application of new protective designations on previously unprotected land or the relinquishment or restraint of a lawful use that adversely impacts resources.

**Rectification:** Rectifying the impact by repairing, rehabilitating, or restoring the affected environment (40 CFR 1508.20(c)).

**Reduction or Elimination over Time:** Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the land use activity (modified from 40 CFR 1508.20(d)).

**Regularly Occupied Habitat:** Habitat that includes intact sagebrush communities known to be occupied by resident breeding populations of Sage-Grouse and are considered to be of highest conservation value.

**Residual Effects:** Any adverse reasonably foreseeable effects that are expected to remain after consideration of the first four steps in the mitigation hierarchy; also referred to as unavoidable impacts. The implementation of mitigation measures (e.g., rectification) at some point in the distant future does not eliminate a residual effect that will exist until that mitigation measure's outcome is achieved.

**Responsible party:** The entity accountable for meeting mitigation obligations, including, but not limited to, ensuring the durability and effectiveness of mitigation measures and achieving mitigation measures' outcomes. The responsible party may be the authorized land user, the BLM, a third party, or a combination.

**Restoration:** The process of assisting the recovery of a resource(s) (including its values, services, and/or functions) that has been degraded, damaged, or destroyed to the condition that would have existed if the resource had not been degraded, damaged, or destroyed.

**Reversal:** The loss of durability or effectiveness of a mitigation measure and/or a compensatory mitigation site.

**Service Area:** The geographic area(s) within which impacts to sagebrush ecosystems will be mitigated (credits) to offset for the Project's residual impacts (debits) as designated in an agreement or program.

**Timeliness:** The lack of a time lag between the impact to the resources and the achievement of the outcomes of the associated mitigation measures.

**APPENDIX E    SUPPLEMENTAL FUNCTIONAL ACRE CALCULATION  
INFORMATION**

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## **Functional Acre Calculation**

Several states, including Wyoming, Colorado, Nevada, and Oregon are developing various versions of a habitat quantification tool (HQT) to quantify the functionality of sage-grouse habitat (Southern Rockies LCC 2015, Wyoming Conservation Exchange Advisory Group 2015). These HQT programs apply a functional acre approach at multiple scales. The functional acre approach provides a measure of habitat quantity (acres) and quality (or habitat functionality) by identifying suitable and potential habitat and accounting for anthropogenic disturbance at multiple scales important to Sage-Grouse. Habitat functionality refers to the quality of the habitat for meeting life history requirements (reproduction, recruitment, and survival) for Sage-Grouse and includes the direct and indirect effects of anthropogenic disturbances. To determine habitat quantity and quality for the proposed Project, a functional acre approach is being used to determine debits for project impacts, credits for compensatory mitigation actions, and provide for a common currency (acres).

In order to calculate acreages of impact (debit) and compensatory mitigation (credit) for Sage-Grouse, it is necessary to differentiate existing Sage-Grouse habitat, potential future habitat, and non-habitat. The overall Project area and service areas consist of: 1) patchworks of lands that currently provide Sage-Grouse habitat; 2) lands that are not currently sagebrush-dominated but that have the site potential to support Sage-Grouse habitat in the future; and 3) lands that are not likely to provide habitat in the foreseeable future either because they do not have the site potential to support sagebrush habitat, or because they are highly disturbed areas occupied by human infrastructure. Therefore, debits or credits accrued for these three habitat classes should be weighted differently. Simply put, an acre of pavement does not have the same habitat functionality to Sage-Grouse as an acre of sagebrush.

To quantify habitat function, mid-scale habitat suitability is assessed using second order (population scale) and third order (habitats within the population) habitat modifiers. Due to the extent of the Project and the potential mitigation service areas, fourth order habitat data (fine-scale vegetation structure and composition that provides for daily needs) is not readily available, would require a very large field effort to acquire, and would be challenging to apply consistently across the impact and mitigation service areas. While the habitat modifiers are represented by GIS layers with 30-meter by 30-meter grid cells, the functional acre approach is not intended to make decisions at the 30-meter scale, but rather to estimate overall functional acreage at the Project and mitigation site scale. The habitat modifiers include anthropogenic disturbance, current vegetation (sagebrush versus non-sagebrush vegetation), and site potential vegetation (sagebrush versus non-sagebrush). Each modifier adjusts the habitat function by a factor ranging from 0.0 (for non-habitat) to 1.0 (for optimal habitat). Table 1 presents the habitat functionality modifiers used to calculate functional acreage and these are discussed more below.

Areas that currently have sagebrush cover are considered fully functional Sage-Grouse habitat (100 percent; i.e., multiplied by a factor of 1.0), areas that have the potential to support a sagebrush vegetation type but are not currently sagebrush are given partial value (75 percent; i.e., multiplied by a factor of 0.75), and areas that do not have the potential to support sagebrush are considered non-habitat (multiplied by a factor of 0.0). With the exception of transmission lines, areas with anthropogenic disturbance are also considered non-habitat (multiplied by a factor of 0.0). In order to maintain consistency with the disturbance bands used to calculate and adjust for indirect impacts from transmission lines and the proposed Project (Habitat Services Reduction [HSR], see Section V.D - Indirect Impacts), the following habitat modifiers are used: 0-600 meters - multiplied by HSR factor of 0.25; 600-1200 meters multiplied by HSR factor of 0.5; and 1200-5000 meters multiplied by HSR factor of 0.9. Functional acreage is the product of spatial size (quantity) and the habitat functionality modifier factor determined by the values of each GIS layer for a given 30-meter by 30-meter grid cell.

**TABLE 1 HABITAT FUNCTIONALITY MODIFIERS USED TO CALCULATE FUNCTIONAL ACREAGE**

HABITAT MODIFIER	GIS LAYERS USED	CATEGORY	HABITAT FUNCTIONALITY MODIFIER FACTOR <sup>1</sup>
Existing Sagebrush	Existing Sagebrush <sup>2</sup>	Sagebrush steppe	1
		Not sagebrush steppe	0.75
Site Potential	Biophysical Settings <sup>2</sup>	Sagebrush steppe	1
		Not sagebrush steppe	0
Anthropogenic Disturbance	NOC <sup>3</sup> Disturbance (excluding transmission); Additional Site Specific Disturbance <sup>4</sup>	Disturbed	0
		Not Disturbed	1
	Electric Transmission Lines EV Energy Map <sup>5</sup> ; Transmission Lines	0-600 meters from transmission line	0.25
		600-1200 meters from transmission line	0.5
		1200-5000 meters from transmission line	0.9

<sup>1</sup> Factor by which the number of landscape acres is multiplied by to calculate habitat function. Functional acreage is the product of all applicable factors multiplied by the quantity (acres) for each 30-meter x 30-meter grid cell.

<sup>2</sup> Greater Sage-Grouse Disturbance and Monitoring Subteam, BLM and U.S. Forest Service (USFS)

<sup>3</sup> National Operations Center, BLM

<sup>4</sup> Heads up digitized

<sup>5</sup> Ventyx data service

For each grid cell:

$$Functional\ Acres = Acres \times Functionality$$

And

$$Functionality = Existing\ Sagebrush\ factor \times Biophysical\ Settings\ factor \times Anthropogenic\ Disturbance\ factor \times Transmission\ Lines\ factor.$$

So, for example, a 30-meter by 30-meter grid cell (0.2224 acres) that is not currently sagebrush (thus, factor=0.75), but with biophysical settings that indicate potential for sagebrush (factor=1), and no anthropogenic disturbance (factor=1), but located 4 kilometers from a single existing transmission line (factor=0.9) would be represented by the equation:

$$Functionality = 0.75 \times 1 \times 1 \times 0.9 = 0.675$$

And

$$Functional\ Acres = 0.2224\ acres \times 0.675 = 0.1501\ functional\ acres$$

### Existing Sagebrush Habitat Modifier

The existing sagebrush layer was developed by the BLM and U.S. Forest Service (USFS) Greater Sage-Grouse Disturbance and Monitoring Subteam for the Greater Sage-Grouse Monitoring Framework. It is a binary raster layer, with 30-meter pixels, representing 18 ecological systems which were determined to have the capability of supporting sagebrush vegetation while also providing suitable seasonal habitat for

Sage-Grouse. Sagebrush vegetation was defined as sagebrush species or subspecies that provide habitat for Sage-Grouse and are also included in the Sage-Grouse Habitat Assessment Framework (Stiver et al. 2015). The layer was derived from the U.S. Geological Survey (USGS) LANDFIRE Version 1.2 Existing Vegetation Type (EVT) thematic raster data product (LANDFIRE 2013). LANDFIRE maps EVTs used decision tree models, field reference data, Landsat imagery, digital elevation model (DEM) data, and biophysical gradient data. After recoding the original LANDFIRE EVT product to a preliminary existing sagebrush binary raster, additional habitat (i.e., sagebrush vegetation pixels) was subsequently removed to account for anthropogenic and ecological disturbances (e.g., agricultural expansion, urbanization, and wildfire). A thorough description of the Existing Sagebrush layer may be found in the Greater Sage-Grouse Monitoring Framework (BLM and USFS 2014). The BLM and USFS layer accounts for removal of sagebrush by fires through 2012. To update the layer to account for recent fires, additional sagebrush vegetation pixels were removed for recently burned areas based on 2013-2015 fire perimeter data obtained from JBLM YTC. Cells classified as having existing sagebrush were given a habitat modifier factor of 1.0, while cells classified as not currently in sagebrush were given a factor of 0.75. In other words, portions of the landscape that are not currently sagebrush, but have the potential to support sagebrush (i.e., are not further modified by additional modifiers) are considered to have 75% habitat functionality. This conservative approach retains a high value for lands that could potentially be rehabilitated to Sage-Grouse habitat in the future.

### **Site Potential Habitat Modifier**

The biophysical settings (site potential) layer was developed by the BLM and USFS Greater Sage-Grouse Disturbance and Monitoring Subteam for the Greater Sage-Grouse Monitoring Framework to provide an estimate of the amount of sagebrush that existed historically (i.e., prior to Euro-American settlement). It is a binary raster layer, with 30-meter pixels, representing 28 ecological systems which were determined to have the capability of supporting sagebrush vegetation while also providing suitable seasonal habitat for Sage-Grouse. Sagebrush vegetation was defined as sagebrush species or subspecies that provide habitat for Sage-Grouse and are also included in the Sage-Grouse Habitat Assessment Framework (Stiver et al. 2015). The resultant data layer was derived from the USGS LANDFIRE Version 1.2 Biophysical Settings (BpS) vegetation data product. BpS represents the natural plant communities that may have been dominant on the landscape prior to Euro-American settlement, and is determined by both the current biophysical environment and an approximation of the historical disturbance regime. A thorough description of the biophysical settings layer may be found in the Greater Sage-Grouse Monitoring Framework (BLM and USFS 2014). Cells classified as having the capability of supporting sagebrush were given a habitat modifier factor of 1.0, while cells classified as not having the capability of supporting sagebrush were given a factor of 0.0.

### **Anthropogenic Disturbance Habitat Modifier**

The anthropogenic disturbance is composed of three layers: National Operations Center (NOC) Disturbance layer (excluding transmission lines), Additional Site-specific Disturbance, and Transmission Lines. The NOC Disturbance layer is the result of efforts to spatially quantify and track a variety of disturbance categories throughout the West as part of the Greater Sage-Grouse Monitoring Framework. The original vector layer was developed by the Wildlife Habitat Spatial Analysis Lab, BLM NOC. The layer is composed of 25 specific anthropogenic disturbance types that each fall into one of six categories of disturbance: 1) mines and oil and gas wells; 2) energy generation facilities (e.g., wind, solar, coal, natural gas); 3) roads and rail lines; 4) communication towers and other vertical structures; 5) transmission lines; and 6) wildfire. For the purposes of the Project's functional acre calculation, wildfire and transmission lines were excluded from the analysis layer. Wildfire is accounted for in the Existing Sagebrush layer and transmission lines are accounted for in the Transmission Lines layer.

In order to identify additional anthropogenic disturbance within the YTC PAC, the Additional Site Specific Disturbance Layer was created using heads-up digitizing from ESRI Imagery Basemap at

1:7,500 scale. The resultant polygon vector layer is composed of four types of disturbance and/or non-habitat: agriculture, Yakima River riparian/floodplain, developed areas, and military installation infrastructure. While this layer does not currently cover areas outside of the YTC PAC, during further refinement of potential service areas the methodology will be extended to cover service areas in order to calculate functional acreage of credit areas.

The NOC Disturbance layer and Additional Site Specific Disturbance layer were merged and converted into a 30-meter pixel raster in order to perform the raster calculations for functional acreage. In the functional acreage calculation, disturbed areas were considered non-habitat with a habitat function value of 0.0 (multiplied by a factor of 0.0), while functionality of undisturbed areas was unmodified (multiplied by a factor of 1.0).

Electric Transmission Lines EV Energy Map, a vector layer acquired from Ventyx data service, was used to obtain centerlines for Transmission Lines. During examination of the Ventyx layer and the NOC disturbance layer, some fine-scale location inaccuracies were observed for existing transmission lines in the area of the proposed transmission line. To ensure accuracy, the existing transmission lines adjacent to and in close relation to the Project were corrected using heads up digitizing of ESRI Imagery Basemap at a scale greater or equal to 1:5,000, while the Ventyx locations were retained for all other transmission lines. Each existing transmission line was buffered, using the same indirect disturbance band widths used to quantify the HSR resulting from the proposed transmission line. The three disturbance band widths are: 1) the centerline to 600-meter avoidance band represented by a factor of 0.25 (corresponding to a HSR of 75%), 2) the 600-meter to 1,200-meter enhanced avian predation band represented by a factor of 0.5 (HSR of 50%), and 3) the 1,200-meter-5,000-meter decreased recruitment band represented by a factor of 0.9 (HSR of 10%). The final Transmission Line Layer is a 30-meter pixel raster layer. When a pixel is within overlapping disturbance bands of multiple existing transmission lines, the resulting modification of habitat functionality is the product of all existing transmission line factors. For example, a pixel that is located within the 600-1,200-meter band of two existing transmission lines and within the 1,200-5,000-meter band of a third existing transmission line would have a value of  $0.5 \times 0.5 \times 0.9 = 0.225$ .

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**APPENDIX B-7  
COMPLIANCE WITH APPLICABLE GREATER SAGE-GROUSE  
POLICIES, PLANS, AND PROCEDURES**

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December 15, 2015

## BUREAU OF LAND MANAGEMENT

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# **Vantage to Pomona Heights 230 kV Transmission Line Project**

*Compliance with Applicable Greater Sage-Grouse Policies, Plans, and  
Procedures*

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114809

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## **ACRONYMS AND ABBREVIATIONS**

APLIC	Avian Power Line Interaction Committee
Army	U.S. Department of the Army
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
CMP	Compensatory Mitigation Plan
COT	Conservation Objectives Team
COT Report	Greater Sage-Grouse Conservation Objectives: Final Report
DEIS	Draft Environmental Impact Statement
DPS	Distinct Population Segment
ESA	Endangered Species Act
Framework	Framework for the Development of a Greater Sage-Grouse Compensatory Mitigation Plan
I	Interstate
IM	Instruction Memorandum
JBLM YTC	Joint Base Lewis-McChord Yakima Training Center
kV	kilovolt
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NNR	New Northern Route
OHV	off-highway vehicle
PAC	Priority Area for Conservation
POD	Plan of Development
Project	Vantage to Pomona Heights 230 kV Transmission Line Project
Proponent	Pacific Power
RDF	Required Design Feature
Recovery Plan	Greater Sage-Grouse Recovery Plan
RMP	Resource Management Plan
ROW	Right-of-Way
SDEIS	Supplemental Draft Environmental Impact Statement
SGMU	Sage-Grouse Management Unit
USFWS	U.S. Fish and Wildlife Service
WAFWA	Western Association of Fish and Wildlife Agencies
WDFW	Washington Department of Fish and Wildlife
WECC	Western Electricity Coordinating Council
WO	Washington Office (Bureau of Land Management)
YTC	Yakima Training Center

## **I. INTRODUCTION**

Pacific Power (Proponent) proposes to construct, operate, and maintain the Vantage to Pomona Heights Project (Project), a new 230 kilovolt (kV) transmission line from Pacific Power's Pomona Heights Substation located just east of Selah, Washington in Yakima County to the Bonneville Power Administration (BPA) Vantage Substation located just east of the Wanapum Dam in Grant County, Washington. As part of the National Environmental Policy Act (NEPA) environmental review process, the existing affected environment and impact analysis for Greater Sage-Grouse (*Centrocercus urophasianus*; Sage-Grouse) has been analyzed in a Draft Environmental Impact Statement (DEIS), a Supplemental DEIS (SDEIS), a Sage-Grouse Analysis and Mitigation Report (SDEIS, Appendix B-5), and a Final Environmental Impact Statement (FEIS).

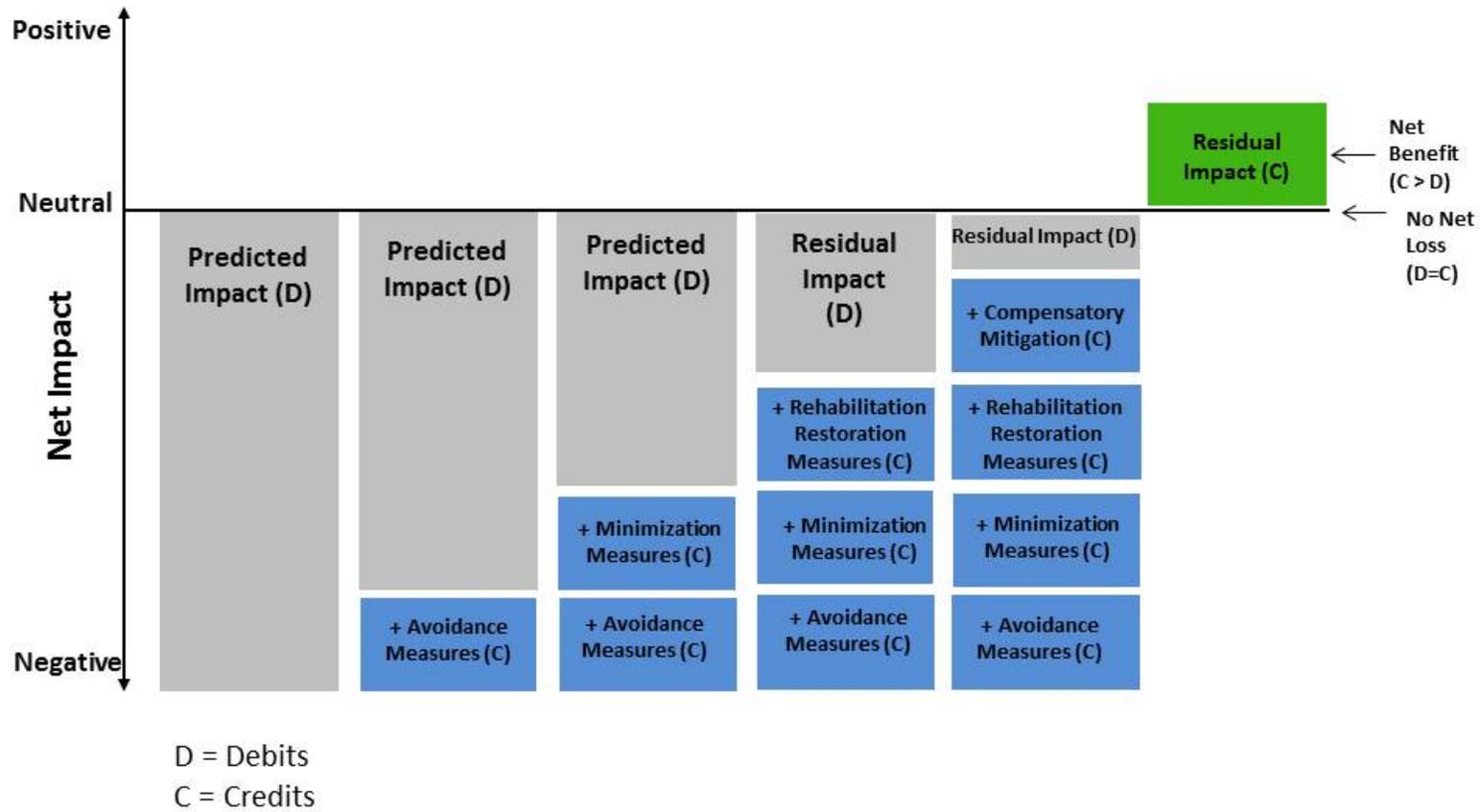
In addition, the Bureau of Land Management (BLM) and the Project's Sage-Grouse Subgroup have worked together to prepare a Project-Specific Framework for the Development of a Sage-Grouse Compensatory Mitigation Plan (Framework; FEIS, Appendix B-6). This Framework was developed to address the residual impacts (i.e., the unavoidable impacts) to Sage-Grouse which may result from the construction, maintenance, and operation of the proposed Project. The Framework is intended to facilitate the development of a Sage-Grouse Compensatory Mitigation Plan (CMP). With the development and implementation of the CMP, Pacific Power would be taking the necessary steps to compensate for residual Project impacts and to achieve net conservation gain for the species and its habitat. Mitigation will be required that provides a net conservation gain for the species and its habitat by avoiding, minimizing and compensating for unavoidable impacts from development. See Appendix A of the Framework for the list of Sage-Grouse Subgroup Framework contributors.

The BLM and Cooperating Agencies have collaborated to prepare the DEIS, SDEIS, and FEIS documents in accordance with current relevant law, regulation, policies, and plans including those guiding agency decisions that may have an impact on Sage-Grouse and its habitat. Project siting, project design, and conservation measures developed consider the full mitigation hierarchy to avoid and reduce impacts to Sage-Grouse and its habitat. The standard mitigation hierarchy is described below and illustrated in Figure 1. Project specific measures taken to avoid and reduce impacts to Sage-Grouse are described throughout the remainder of this document.

1. *Avoidance*: Measures taken to avoid impacts to Sage-Grouse or its habitat, including preventing impacts from the Project's outset. Such measures include careful spatial or temporal placement of infrastructure outside of high quality Sage-Grouse habitat.
2. *Minimization*: Measures taken to reduce the duration, timing, intensity and/or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) which cannot be completely avoided, to the greatest extent feasible. Such measures include co-locating lines with existing infrastructure and the analysis of an underground design option.
3. *Rehabilitation/Restoration/Rectification*: Measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimized.

Figure 1 Standard Mitigation Hierarchy

## Mitigation Hierarchy



4. *Compensatory Mitigation (also referred to as “offset”)*: Measures taken to offset residual impacts that warrant compensation. Residual impacts are those impacts that cannot be avoided, minimized, rectified, and/or reduced/eliminated over time. Compensatory mitigation can, for example, include the restoration of degraded habitats, improvement of marginal habitats, creation of new habitats, acquisition and protection of threatened habitats, or a combination thereof. Compensatory mitigation may include the following:
  - a. “in-kind” involving replacement or substitution of resources that result in similar habitat structure and function that benefit the same species as those being impacted;
  - b. “out-of-kind” involving replacement or substitution of resources that result in different habitat structure and function that may benefit the species other than those existing at the site prior to disturbance;
  - c. “in proximity” means habitat mitigation measures undertaken within the population or areas affected by a development action that is most likely to provide the greatest benefit; and
  - d. “off-site” involving mitigation actions outside the boundary of or area impacted by the Project.

This Compliance with Applicable Greater Sage-Grouse Policies, Plans and Procedures (Compliance Document) summarizes actions and planning undertaken by the BLM, Cooperating Agencies and the Project Proponent to prepare the DEIS, SDEIS, FEIS and the Framework to ensure that the Project is in compliance with applicable law, regulation, policies and plans related to Sage-Grouse. Additional resource protection guidance and recommendations have evolved over the course of the Environmental Impact Statement (EIS) documents and new information that has become available during the EIS process has been incorporated into the EIS analysis and mitigation development for Sage-Grouse. This document also summarizes how the EIS analysis has followed existing agency mitigation strategies, the mitigation hierarchy, and the COT Report to the extent possible. This Compliance Document also discloses where the proposed Project is not consistent with these existing mitigation documents.

## **II. APPLICABLE GREATER SAGE-GROUSE POLICIES AND PLANS**

### **Federal Regulations and Policies**

Sage-Grouse are listed as Threatened by the state of Washington and are a BLM Sensitive species (Schroeder et al. 2003; Stinson et al. 2004; BLM 2012). In 2001, U.S. Fish and Wildlife Service (USFWS) determined that the western subspecies of Sage-Grouse (*C. urophasianus ssp. phaios*) met the requirements of a distinct population segment (DPS); however, the USFWS recently reanalyzed this designation since the eastern and western subspecies are no longer considered separate taxa. Petitions for listing Sage-Grouse range-wide were filed in 2002, 2003, and 2005 during which the USFWS concluded that listing Sage-Grouse was not warranted (USFWS 2005). In 2008, a status review was initiated by the USFWS to address new information that had become available since 2005 (USFWS 2008). Based on this new information, USFWS determined in March 2010 that the range-wide listing of Sage-Grouse under the Endangered Species Act (ESA) was warranted, but the listing was precluded in order to complete higher priority listing actions. Range-wide Sage-Grouse was considered a Candidate species under ESA (USFWS 2010a and 2010b). In the 2010 *12-Month Findings for Petitions to List the Greater Sage-Grouse as Threatened or Endangered* (2010a and 2010b), USFWS identified the two primary threats to Sage-Grouse as habitat destruction/modification and inadequacy of existing regulatory mechanisms. Upon consideration of the conservation measures put in place by state and federal agencies and private stakeholders to protect Sage-Grouse, USFWS determined in 2015 that range-wide listing under the ESA

was not warranted for Sage-Grouse. Furthermore, USFWS determined that the Columbia Basin population did not constitute a DPS and did not warrant listing under the ESA (USFWS 2015).

### **Conservation Objectives Team Report**

In 2013, the Conservation Objectives Team (COT) comprised of state and USFWS representatives, published the Greater Sage-Grouse Conservation Objectives: Final Report (COT Report; USFWS 2013). The COT Report was a collaborative approach to develop range-wide conservation objectives for Sage-Grouse to inform the 2015 listing decision and the collective efforts of the many partners working to conserve the species. The main objective identified in the COT Report is to minimize habitat threats to the species in order to meet the objective of the 2006 Western Association of Fish and Wildlife Agencies' (WAFWA) Greater Sage-Grouse Comprehensive Conservation Strategy (Stiver et al. 2006) to reverse negative population trends and achieve a neutral or positive population trend. A key component of the COT Report is the identification of Priority Areas for Conservation (PACs), which are considered key habitats essential for Sage-Grouse conservation. The COT Report is a guidance document only. The COT Report's identification of conservation objectives does not create a legal obligation beyond the existing legal requirements for Sage-Grouse. The conservation framework within the COT Report consists of: 1) identifying Sage-Grouse population and habitat status and threats; 2) defining a broad conservation goal; 3) identifying PACs; and 4) developing specific conservation objectives and measures.

The COT Report identifies four PACs within the state of Washington, two of which have extant populations, Moses Coulee and Yakima Training Center (YTC), and two historic populations undergoing reintroduction efforts with translocated birds. In general, the YTC PAC boundaries extend south of Interstate (I) 90, west of the Columbia River, north of State Highway 24, and east of the Yakima River (see Figure 2 in Appendix B-5 Sage-Grouse Analysis and Mitigation Report). Described as key habitats necessary for Sage-Grouse habitat conservation, PACs were identified based on the best available information at the time the report was published. As Dr. Michael Schroeder (Washington Department of Fish and Wildlife [WDFW] Upland Bird Research Scientist and COT member who assisted with the identification of the PACs in Washington State) explained, because Sage-Grouse in Washington are in a recovery mode (versus maintenance), the Washington PAC boundaries were delineated differently than other states and focused on core use areas. Washington PACs encompass large areas that are not currently occupied by Sage-Grouse and/or that do not currently contain suitable habitat. These larger boundaries were intended to encompass areas where habitat or potential habitat exists for the purpose of furthering recovery and/or expansion of the current population (personal communication, May 2015).

As a result of the identification of the PAC boundaries on this coarse scale, there are areas within the Washington PACs that not only lack the vegetation components or conditions necessary to be considered suitable or potentially suitable Sage-Grouse habitat, they are effectively non-habitat due to anthropogenic disturbances. Anthropogenic disturbances in YTC PAC include: urban and residential development, agriculture, interstates, various types of infrastructure (e.g., roads, powerlines including distribution and transmission, communication towers), and military training facilities.

The COT Report contains the following guidance for conservation objectives and measures to reduce threats within Sage-Grouse habitat and which are applicable for the proposed Project:

- Objective: Maintain and restore healthy native sagebrush plant communities.
  - Measures – Fire:
    - Restrict and contain fire.
    - Design, implement, and monitor restoration activities for burned sagebrush habitat.
  - Measures – Invasive Species:
    - Reduce or eliminate disturbances that promote the spread of invasive species.

- Monitor and control invasive vegetation post-wildfire for at least three years.
- Require best management practices for construction projects in and adjacent to sagebrush habitats to prevent invasion.
- Restore altered ecosystems so that non-native invasive plants are reduced to levels that do not put the area at risk of conversion if a catastrophic event were to occur.
- Objective: Avoid development of infrastructure within PACs. Measures include:
  - Avoid infrastructure construction in Sage-Grouse habitat, both within and outside of PACs.
  - Power transmission corridors which cannot avoid PACs should be buried (if technically feasible) and disturbed habitat should be restored.
    - If avoidance is not possible, consolidate new structures with existing features and/or preclude development of new structures within locally important Sage-Grouse habitats.
      - Consolidation with existing features should not result in a cumulative corridor width of greater than 656 feet (200 meters).
      - Habitat function lost from placement of infrastructure should be replaced.
    - Infrastructure corridors should be designed and maintained to preclude introduction of invasive species.
    - Restrictions limiting use of roads should be enforced.
    - Remove transmission lines and roads that are duplicative or are not functional.
    - Transmission line towers should be constructed to severely reduce or eliminate nesting and perching by avian predators, most notably ravens, thereby reducing anthropogenic subsidies to those species.
    - Mitigate impacts to habitat.
    - Remove (or decommission) non-designated roads within sagebrush habitats.

According to the COT Report, the use of Joint Base Lewis-McChord (JBLM) YTC for military training activities and the risk of fire have reduced the overall suitability of the habitat supporting the JBLM YTC Sage-Grouse population. A substantial amount of the Sage-Grouse habitat in the area has been impacted directly and indirectly by military training activities and particularly due to wildfires both on and off of JBLM YTC. Despite efforts to manage wildfire risks, wildfires have continued to reduce the quality and quantity of habitat in the population. Other key factors impacting this population are two interstate highways (I-82 and I-90) which border the population on the north and west sides; existing power lines which border the population on the north, west, and south sides; the Columbia River Valley which reduces movement on the east side; and wind power development on the north side. The cumulative effect of these factors is that the JBLM YTC population is constricted with little opportunity for expansion (USFWS 2013).

### ***USFWS Greater Sage-Grouse Range-Wide Mitigation Framework***

In 2014, the USFWS published a Greater Sage-Grouse Range-Wide Mitigation Framework (USFWS 2014). The purpose of the Range-Wide Mitigation Framework is to communicate factors that USFWS is likely to consider when evaluating the effectiveness of mitigation practices and programs to reduce threats to Sage-Grouse. This Range-Wide Mitigation Framework is a guidance document only and will be modified as new information or mitigation policies are developed. The recommendations provided in the Range-Wide Mitigation Framework are consistent with the COT Report discussed above and were incorporated in the Project-Specific Mitigation Framework.

## **BLM Washington Office Instruction Memoranda**

BLM's Washington Office (WO) has issued two Instruction Memoranda (IMs) for Sage-Grouse: WO IM 2012-043, Greater Sage-Grouse Interim Management Policies and Procedures (BLM 2011a); and WO IM 2012-044, BLM National Greater Sage-Grouse Land Use Planning Strategy (BLM 2011b); however, Sage-Grouse in Washington are not covered by interim BLM policies and planning efforts that are applicable across the remainder of the species' range. The Columbia Basin DPS of Sage-Grouse was explicitly excluded from coverage under both memoranda and was to be addressed in other policies and planning efforts and were not covered by these memoranda. In addition, the WO IM 2012-044 provides direction to the BLM for the consideration of conservation measures identified in two documents: A Report on National Greater Sage-Grouse Conservation Measures (Sage-Grouse National Technical Team 2011) and the National Greater Sage-Grouse Planning Strategy (BLM 2011c). The National Greater Sage-Grouse Planning Strategy excludes the Washington State DPS, stating that they will be addressed through other policies and planning efforts (BLM 2011c).

## **State Regulations and Policies**

In 2004, WDFW published its Greater Sage-Grouse Recovery Plan (Recovery Plan) to summarize the current knowledge of Sage-Grouse in Washington and to outline strategies to increase population size and distribution (Stinson et al. 2004). BLM is revising its Resource Management Plan (RMP) for public lands in Washington to incorporate conservation measures provided by the WDFW Recovery Plan.

The Recovery Plan delineated distinctive regions in Washington, called Sage-Grouse management units (SGMUs), to focus recovery efforts in those areas most likely to contribute to reaching recovery objectives. Fourteen SGMUs were delineated based on current occupancy, land ownership, location, topography, and habitat quantity, condition and potential (Stinson et al. 2004). The five SGMUs that would be crossed by the Project alternatives include: Rattlesnake Hills, YTC, Umtanum Ridge, Saddle Mountains, and Hanford. The eight-mile-wide Project study area also encompasses land within the Potholes SGMU. The SGMUs are further designated as:

- *Regularly Occupied Habitat* includes intact sagebrush communities known to be occupied by resident breeding populations of Sage-Grouse and are considered to be of highest conservation value. SGMUs within the eight-mile-wide Project study area designated as Regularly Occupied Habitat are: YTC, Rattlesnake Hills and Umtanum Ridge.
- *Connectivity Habitat* includes movement corridors between seasonally used areas and between populations and includes areas important for providing habitat connections. There are no SGMUs within the eight-mile-wide Project study area designated as Connectivity Habitat. Colockum SGMU, designated as Connectivity Habitat, is located approximately five miles north of the New Northern Route (NNR) Alternative.
- *Occasionally Occupied Habitat* includes habitat that may be occupied on a seasonal or irregular basis, but is not regularly occupied by Sage-Grouse. Within the eight-mile-wide Project study area, Umtanum Ridge, Rattlesnake Hills and Saddle Mountains SGMUs are designated as Occasionally Occupied Habitat.
- *Expansion Habitat* includes areas where expansion could occur through an improvement in habitat quality. The Potholes and Hanford SGMUs are within the eight-mile-wide Project study area and have been designated as Expansion Habitat.

The Recovery Plan's goal is to establish a viable population of Sage-Grouse in a substantial portion of its historic range in Washington with specific recovery objectives focusing on the breeding season

population. The primary objective of the Recovery Plan is to down-list the species from State Threatened status by attaining a state breeding population averaging 3,200 birds in six or more SGMUs. The Recovery Plan states that recovering Sage-Grouse to a viable population will require an increase in population density, an expansion of occupied areas, and an improvement in habitat quality. Current and past management efforts focused on maintaining the existing populations and distributions of Sage-Grouse, while recovery efforts will focus on increasing the numbers and distribution of Sage-Grouse in Washington. Some of the designated SGMUs will require substantial restoration efforts to support breeding and wintering populations and may require coordinated efforts between public and private land managers to maintain and improve habitat (Stinson et al. 2004). Recovery Plan conservation strategies that are applicable to the proposed Project are discussed below.

- Protect Sage-Grouse populations:
  - Protect active Sage-Grouse leks from human disturbance. The Recovery Plan recommends minimizing disturbance from construction and development activities, particularly within 0.6 mile (1.0 kilometer) of breeding habitat during February - June.
  - Protect nesting and brood-rearing areas from disturbance. The Recovery Plan states that wherever possible, prevent disturbance in Sage-Grouse nesting and brood-rearing habitat between March 1 and June 15.
  - Reduce collision and predation hazards posed by poles, wires and fences. The Recovery Plan states: new power lines and utilities should use existing corridors or be located so as to minimize collision risk and damage to habitat; existing power lines should be buried or modified with perch guards to prevent use as a raptor perch site; and unneeded fences in Sage-Grouse use areas should be removed.
- Protect Sage-Grouse habitat on public lands:
  - Protect habitat from fire. The Recovery Plan states that fire management plans should be developed and implemented on public lands to prevent catastrophic destruction of Sage-Grouse habitat.
  - Protect important Sage-Grouse habitat on public lands from development and agricultural conversion.
  - Manage riparian habitats by promoting recovery of vegetation in riparian zones and avoiding road development and human disturbance in wet meadows.
  - Discourage expansion of road system on public lands in management units. The Recovery Plan states: new roads, trails or rights-of-way (ROWs) should be avoided; avoid improvements to existing, unused, and unpaved roads; promote closures of unnecessary roads or those that are negatively impacting habitat quality.
- Restore degraded habitat:
  - The Recovery Plan states that shrub-steppe restoration projects should use native seed sources, suppress cheatgrass (*Bromus tectorum*) and weeds, restore bunchgrass and native forb understory, reestablish sagebrush (*Artemisia tridentata*), and restore degraded wet meadows or vegetation at developed streams.

## **JBLM YTC Regulations and Policies**

The JBLM YTC has developed a Western Sage-Grouse Management Plan (Livingston 1998) that describes the knowledge of and threats facing Sage-Grouse on the JBLM YTC. It outlines protection measures and procedures to be followed to ensure that the YTC Sage-Grouse population persists into the future. Protection for Sage-Grouse and its habitat within the JBLM YTC as outlined in the Sage-Grouse Plan was expanded to an additional 33,000 acres in 2011 with the application of additional fire management and Sage-Grouse conservation related mitigation measures contained in the Record of Decision Fort Lewis Army Growth and Force Structure Realignment (U.S. Department of the Army 2011). JBLM YTC has designated two Sage-Grouse protection zones: primary and secondary. The

primary protection zone includes areas that are considered as essential Sage-Grouse habitat. Secondary protection zones provide indirect benefits to Sage-Grouse due to the application of fire management practices and habitat restoration efforts within these areas (JBLM YTC 2002). JBLM YTC Sage-Grouse management includes:

- Sage-Grouse protection during breeding:
  - Buffer leks by 0.6 mile. These areas are closed to all training activities and other land use practices between midnight and 9:00 a.m. from February 1-May 15; and
  - Sage-Grouse protection areas are off limits to all military training activities, except for the use of existing ranges, between February 1 and June 15.
- Sage-Grouse habitat protection:
  - Bivouacking and digging is not permitted within Sage-Grouse protection areas at any time. Cross country vehicle maneuver training in Sage-Grouse protection areas is closely monitored and is restricted to training exercises directly related to train-up activities associated with Combat Training Center deployments. Training areas are used on a rotational basis to promote habitat recovery following training events. Training events are not scheduled during the Sage-Grouse protection periods;
  - Fire is managed in accordance with JBLM YTC’s Wildland Fire Management Plan; and
  - Noxious weeds are managed in accordance with state and federal law; and the JBLM YTC Integrated Pest Management Plan (Nissen and Cochrane 2005).
- Habitat restoration in disturbed areas:
  - Conduct assessment of current and potential habitat availability, rank habitat according to species need, identify and prioritize potential restoration sites, and monitor restored sites.
- Monitoring population trends:
  - JBLM YTC began formal monitoring and research of lek counts in 1989. Sage-Grouse lek surveys are conducted on an annual basis to monitor leks.

### **III. COORDINATION AND ACTIONS TAKEN TO COMPLY WITH APPLICABLE PLANS, POLICIES AND THE STANDARD MITIGATION HIERARCHY**

Planning and actions taken to avoid, minimize and restore/rehabilitate direct and indirect impacts from the proposed Project have followed the standard mitigation hierarchy (steps 1 through 3). These measures are summarized in Table 1 and described in detail in the remainder of this section. Compensatory mitigation for residual impacts (step 4 of the mitigation hierarchy) is outlined in the Framework and will be described in the CMP.

**TABLE 1 SUMMARY OF PROJECT ACTIONS TAKEN FOR SAGE-GROUSE BY THE STANDARD MITIGATION HIERARCHY**

PLANNING AND ACTIONS	STANDARD MITIGATION HIERARCHY				EXAMPLES
	Avoidance	Minimization	Rehabilitation / Restoration / Rectification	Compensatory Mitigation <sup>1</sup>	
Project Planning and Design	X	X	X		Routing considerations presented in the DEIS and SDEIS, such as avoiding Sage-Grouse habitat and leks where possible; maximizing the use of existing utility corridors and roads; and closely paralleling existing transmission lines within these corridors.

PLANNING AND ACTIONS	STANDARD MITIGATION HIERARCHY				EXAMPLES
	Avoidance	Minimization	Rehabilitation / Restoration / Rectification	Compensatory Mitigation <sup>1</sup>	
Required Design Features	X	X	X		Routing considerations; avoiding and/or restricting disturbance in important or sensitive habitat; reclaiming and revegetating disturbed areas; timing restrictions; controlling road access to limit new or improved accessibility; closing and reclaiming roads not required for operation and maintenance; Implementation of the Noxious Weed Management Plan; implementation of the Reclamation and Revegetation Plan; installation of perch deterrents (see Table 2 for complete list of Required Design Features [RDFs]).
Project Design Options	X	X	X		Developing and analyzing discrete segments for undergrounding. Underground Design Options are included in the SDEIS for Route Segments NNR-4 and NNR-6.
Mitigation Framework and CMP			X	X	Developing a Mitigation Framework to provide guidance for Pacific Power on the selection of mitigation actions and service areas and to provide direction on how the CMP will be assessed for mitigation adequacy.

<sup>1</sup> Compensatory Mitigation Measures are discussed in the Mitigation Framework and CMP.

## Project Design

Project design has involved careful routing and siting of the proposed Project to avoid, reduce and minimize impacts to resources (e.g., residential areas, agriculture, military training, viewsheds, cultural resources, etc.). Project design to avoid, reduce and minimize impacts to Sage-Grouse included: avoiding Sage-Grouse habitat and leks where possible; maximizing the use of existing utility corridors and roads; and closely paralleling existing transmission lines within these corridors. Complete avoidance of Sage-Grouse impacts and impacts to the YTC PAC from the proposed Project is not feasible and practical based on the location of the existing substations (located within and directly outside of the YTC PAC) and the objectives of the applicant. Development of an Alternative that entirely avoids the YTC PAC would be out of the scope of this Project and would not address the Proponent’s Purpose and Need for the Project.

## Project Alternatives Analyzed in the DEIS and SDEIS

Alternatives developed during scoping and presented in the DEIS and SDEIS were designed to address issues raised by the public and agencies. Alternatives were developed to minimize impacts to human and natural resources including Sage-Grouse. Project Alternatives that were carried forward and analyzed in the DEIS, SDEIS, and FEIS which were designed to avoid, reduce and minimize impacts to Sage-Grouse are discussed briefly below and presented in more detail in Chapter 2 of the FEIS.

## **DEIS Alternatives**

The DEIS for the Project, published in January 2013, analyzed eight action alternatives (Alternatives A-H), with Alternative D being identified as the Agency Preferred Alternative. All of the alternatives placed the proposed Project within 3 miles of active and inactive leks. However, impacts to Sage-Grouse were reduced through: the siting of Alternatives A-H to utilize existing roads and a JBLM YTC firebreak; implementing Required Design Features (RDFs); and Alternatives that included Route Segment 2c and 3c that placed the Project further south of active and inactive leks and at a further distance from Sage-Grouse core use areas.

## **NNR Alternative**

As a result of the comments received at the meetings and submitted in writing during the DEIS comment period, the BLM, Pacific Power, and JBLM YTC met and identified a new route that is located largely on JBLM YTC land. This new route is similar to a northern JBLM YTC route that was considered and eliminated from consideration because of the Western Electricity Coordinating Council (WECC) line separation requirements in place at the time the alternative was being considered. Previously, the separation distance required the placement of the line in areas that would create conflicts with JBLM YTC's aerial operations and training. These separation requirements were revised by the electrical regulating authorities, WECC and North American Electric Reliability Corporation (NERC), and now would allow a much closer distance between existing lines and the proposed Project which would minimize impacts to JBLM YTC training operations and allow the NNR Alternative to be reconsidered. Routing and siting the NNR Alternative maximized the use of existing utility corridors and closely parallels the existing transmission line within those corridors, typically staying within 200 feet of its centerline. The use of existing transmission line corridors minimizes impacts through the use of already established ROWs, road networks, etc. The location of the NNR Alternative was developed with input from USFWS and WDFW on July 17, 2013 and was sited to avoid JBLM YTC identified Sage-Grouse Primary Protection Areas, to utilize areas with existing roads and disturbance, and was located adjacent (generally within 200 feet) to the existing Pacific Power 230 kV Transmission Line. Siting the transmission line to avoid JBLM YTC Primary Protection Areas, which encompass Sage-Grouse lekking and nesting locations, reduced impacts to essential Sage-Grouse habitat. Although the NNR Alternative is within the YTC PAC for the majority of its length, siting the alternative outside of core use areas, implementing RDFs, developing the Mitigation Framework and associated Project CMP avoids, minimizes, and reduces impacts to Sage-Grouse and compensates for residual impacts which may result from the construction, maintenance, and operation of the proposed Project.

In addition, two segments with an Underground Design Option were developed and analyzed in the SDEIS and carried into the FEIS. Both the Underground and Overhead Design Options were analyzed for all resources. The analysis presented allows decision makers to consider all resources analyzed and select the Design Option that best minimizes impacts.

## **Project Alternatives Considered and Eliminated**

Project alternatives that were considered and eliminated for the proposed Project are discussed below. These are discussed in more detail in Chapter 2 of the DEIS, SDEIS and FEIS, but are included here to provide an overview of all of the alternatives that have been considered for the proposed Project and the rationale for not carrying them forward for analysis.

### **Double Circuit Existing Pomona-Wanapum 230 kV Transmission Line**

This option was considered to determine whether it would be feasible to replace the existing Pomona-Wanapum single circuit 230 kV Transmission Line with a new double circuit transmission line on a single set of structures in the existing ROW, thereby constructing the needed line without having to

increase the ROW size and creating new impacts to the surrounding environment. This alternative was determined to be infeasible and was eliminated from further consideration because it would violate mandatory NERC and WECC standards of reliability and approved criteria for line separation.

### ***New Vantage-Midway 230 kV Transmission Line***

PacifiCorp (Pacific Power) participated in a regional transmission system planning study to address reliability issues within the Mid-Columbia transmission system. The study concluded that even with a new Vantage-Midway 230 kV Transmission Line the existing Wanapum-Pomona 230 kV Transmission Line would still overload for N-1 Union Gap-Midway and N-2 Midway Bus 3 contingencies in the 2012 case. The study determined that building a new Vantage-Pomona 230 kV Transmission Line provided the most benefit to the system and outperformed building a new Vantage-Midway 230 kV Transmission Line or tying the Wanapum-Walla Walla, Midway-Potholes-Coulee, and Midway-Rocky Ford-Coulee 230 kV Transmission Lines together at their crossing about 12.6 miles east of Wanapum Substation along the Walla Walla Transmission Line to create a new 230 kV path between Wanapum/Vantage and Midway. Additionally, the study concluded that a new Vantage-Pomona 230 kV Transmission Line would still be required even if a new Vantage-Midway 230 kV Transmission Line was constructed.

### ***Alternative Route along Highway 243-Grant County***

This alternative route segment generally followed State Highway 243 in Grant County, past the Desert Aire community, crossing the Saddle Mountains to a point just south of Beverly where it then paralleled the existing Vantage-Midway 230 kV Transmission Line into the Vantage Substation for a total route segment distance of 12.5 miles. The concept with this alternative route segment was to utilize the highway for construction and maintenance access, with the placement of single steel or wood poles just outside of the edge of the highway ROW.

The Washington State Department of Transportation (WSDOT), Aviation Division expressed concern about the impact this alternative route segment would have on the long term viability of the Desert Aire Airport and its ability to function as an essential public facility. WSDOT conducted an airspace assessment of the route segment and concluded that based on the estimated pole height of 75 to 85 feet and an average span length of 600 feet, the route segment would encroach on the Desert Aire Airport airspace. Potential airspace conflicts included penetrating the approach surface of Runway 28 by 35 feet and being located in the Runway Protection Zone. These potential conflicts would represent significant threats to aircraft operations and safety at the airport. WSDOT recommended that this alternative route segment be eliminated from further consideration due to the significant threats to aircraft operations and safety at the Desert Aire Airport.

### ***Alternative Routes East of Mattawa-Grant County***

Portions of alternative routes located just east of Mattawa were eliminated from further consideration due to potential impacts to existing agricultural uses and operations. The potential impacts considered included loss of farmable land, orchards and vineyards, impacts to farming operations, including the relocation of wheel line irrigation systems and center pivot irrigation systems and safety hazards to aerial spraying operations and the use of helicopters to dry cherry orchards in the spring.

### ***Alternative Routes Columbia River Crossing below Priest Rapids Dam***

Portions of the southern alternative route segments, that proceeded down Umtanum Ridge before crossing the Columbia River below the Priest Rapids Dam were eliminated from further consideration due to extremely rugged terrain (e.g., slopes greater than 45 percent and vertical cliff faces) and associated constructability issues.

### **Alternative Route Following the Midway-Moxee 115 kV**

Route Segment 2c follows a portion of the existing BPA Midway-Moxee 115 kV/Union Gap-Midway 230 kV Transmission Line for about 8.6 miles from the intersection of these two lines southeast of Moxee. The potential for routing in the area extending along the section of the Midway-Moxee 115 kV Transmission Line west of its divergence from the Union Gap-Midway 230 kV Transmission Line and north/east of Moxee was also considered. This alternative was eliminated from further consideration primarily due to the extensive amount of agricultural and residential development. Irrigated agriculture and circle pivot irrigation structures, as well as occupied structures, are directly adjacent to the existing ROW along a significant portion of the existing Midway-Moxee Transmission Line in this area with some structures encroaching into the ROW. The density of the development, the potential need for occupied residential acquisition/demolition, conflicts with agricultural uses, and the additional length of the transmission line were reasons this route was eliminated from further consideration.

### **Development of Required Design Features**

To ensure the Project's conformance with both federal and state regulatory requirements for Sage-Grouse, the design of the Project and the development of RDFs followed the standard hierarchy for mitigation and included avoidance, minimization and rehabilitation/restoration measures. RDFs are environmental protection measures that have been incorporated into Project design to avoid or minimize environmental impacts of the proposed Project. Pacific Power has committed to implementing these RDFs during construction, operation and maintenance of the proposed Project. The RDFs will be reviewed, revised, and developed further, as appropriate, to reduce impacts to Sage-Grouse and will be included in the Plan of Development (POD) for this Project. The POD will be reviewed and approved by the federal land management agencies. If the Project is authorized, the POD will be used by the agencies in crafting the ROW and other Project-related authorizations as appropriate.

RDFs that are applicable to Sage-Grouse are presented in Table 2 and summarized by potential impact below. Consideration of the anticipated effectiveness of these RDFs was incorporated into the DEIS, SDEIS and FEIS impact assessments and will be taken into account during the identification and development of compensatory mitigation. The complete list of RDFs for all resources is presented in Chapter 2 of the FEIS.

### **Habitat Loss and Degradation**

Specific RDFs anticipated to be effective at minimizing direct habitat loss include: minimizing construction sites within native plant communities; maintaining intact vegetation wherever possible; utilizing overland travel wherever feasible; and reseeded disturbed areas using an appropriate land management agency or landowner approved mixture for revegetation, which will be detailed in the revegetation plan included in the POD.

RDFs would be implemented to reduce the potential spread of noxious weeds and invasive species from Project activities and include the following: reseeded disturbed areas with certified weed-free materials (e.g., seed, borrow material, straw waddles and bale barriers); washing all equipment before entering the Project area and when leaving areas where noxious weeds are present; closing or rehabilitating new or improved access roads that are not required for maintenance; and complying with all federal, state and county noxious weed control regulations and guidelines. In addition, a Noxious Weed and Invasive Plant Management Plan would be developed in consultation with land management agencies and local weed control districts and would be incorporated into the final POD. The Noxious Weed and Invasive Plant Management Plan would emphasize control of cheatgrass during follow-up visits to prevent, to the extent practical, the establishment of cheatgrass before, during, and after establishment of reclaimed vegetation.

To minimize the potential for wildland fire and the resulting loss of Sage-Grouse habitat, the following RDFs would be implemented: all applicable fire laws and regulations would be observed during construction and operation and construction personnel would be advised of their responsibilities under these laws and regulations, including taking practical measures to report and suppress fires; the development and implementation of a Noxious Weed and Invasive Plant Management Plan with an emphasis on cheatgrass control; closing or rehabilitating new or improved access roads that are not required for maintenance; and developing and implementing a Fire Protection and Control Plan. The Fire Protection and Control Plan would be incorporated into the POD and will include measures to be implemented during construction and maintenance, such as: restricting smoking to designated areas; restricting equipment parking to sites cleared of all flammable material; equipping vehicles with appropriate fire suppression equipment; and training Pacific Power and its contractors on fire safety, minimizing fire hazards, and to safely suppress a fire until firefighters can respond. Applicable fire management measures from JBLM YTC Wildland Fire Management Plan will be incorporated into the Fire Protection and Control Plan.

### ***Predation***

To minimize the potential for increased predation rates the following RDFs will be implemented: routing and siting the proposed transmission line would maximize the use of existing utility corridors and closely parallel the existing transmission line within these corridors, typically staying within 200 feet (primarily for the NNR Alternative); whenever possible, locations of the new structures will match the spans of adjacent transmission lines; to avoid providing food subsidies to ravens or other predators, food waste will be kept in covered receptacles and removed daily; and perch deterrents will be used within four miles of active leks (see FEIS and Mitigation Framework for definition of active leks) and designated Sage-Grouse protection areas on JBLM YTC.

### ***Behavioral Avoidance of Infrastructure***

To minimize the potential for behavioral avoidance, the following RDFs will be implemented: the transmission line will closely parallel the existing Pacific Power 230 kV Transmission Line, with typical transmission line separations of 200 to 300 feet (NNR Alternative only); whenever possible, locations of the new structures will match the spans of the existing line; to avoid providing food subsidies to ravens or other predators, food waste will be kept in covered receptacles and removed daily; and perch deterrents will be used within four miles of active leks and designated Sage-Grouse protection areas on JBLM YTC.

The RDFs would likely minimize the beneficial effect to avian predators which would reduce Sage-Grouse avoidance due to predators. These RDFs may also minimize the visual impact of the structures on Sage-Grouse which would reduce an avoidance effect of the structures.

### ***Disturbance and Displacement from Temporary Human Presence***

The RDFs include avoiding construction and/or maintenance activities within four miles of active leks from February 1 to June 15 to protect lekking, nesting, and early brood-rearing sites and avoiding construction and/or maintenance activities within Sage-Grouse winter habitat from December 1 through February 1 if winter conditions are exceptionally severe, i.e., snow cover is much higher than normal (e.g., above sagebrush height) or temperatures are much lower than normal. Winter construction and/or maintenance activities within Sage-Grouse winter habitat will be coordinated with JBLM YTC. Seasonal restrictions will protect grouse during vulnerable breeding and winter periods. To further minimize disturbance to Sage-Grouse, additional RDFs include: restricting construction activity to predetermined spatial limits, including restrictions on use outside of the ROW; conducting pre-construction clearance surveys for Sage-Grouse in overland access areas; closing and/or rehabilitating new or improved access

that is not required for maintenance; and imposing 25 mile per hour (mph) speed limits on access roads and 15 mph speed limits for overland travel.

### ***Habitat Connectivity and Linkage***

To minimize the potential for predation and behavioral avoidance and thus the impedance to movement and connectivity, the following RDF would be implemented: the line will closely parallel an existing 230 kV transmission line, with transmission centerline separation typically staying within 200 to 300 feet (NNR Alternative only); whenever possible, locations of the new structures will match the spans of adjacent transmission lines; and perch deterrents will be used within four miles of active leks and designated Sage-Grouse protection areas on JBLM YTC.

Perch deterrents will be installed on new transmission line structures within four miles of active leks and designated Sage-Grouse protection areas on JBLM YTC. The RDFs would likely minimize the benefits to avian predators, which would reduce Sage-Grouse avoidance due to predators. These RDFs may also minimize the visual impact of the structures on Sage-Grouse which would reduce an avoidance effect of the structures.

### ***Collisions***

The implementation of RDFs is anticipated to be effective at reducing the potential for injury or mortality to Sage-Grouse from collisions with the transmission line conductor and structures, fences, and vehicles (Avian Power Line Interaction Committee [APLIC] 2012). Applicable RDFs include: installing bird flight diverters in locations with known avian collision mortality; installing markers on any new fences constructed or repaired in Sage-Grouse habitat; moving vehicles and equipment at slow speeds; and restricting construction vehicle movement to pre-designated locations. In addition, direct mortality from vehicles would be reduced by avoiding construction or maintenance activities within four miles of active leks from February 1 to June 15.

### ***Design Options***

Due to comments received on the DEIS from wildlife management agencies (USFWS and WDFW) regarding potential impacts to Sage-Grouse, Overhead and Underground Design Options were developed and analyzed in the SDEIS for all resources. Underground Design Options are included in the SDEIS for Route Segments NNR-4 and NNR-6. The Underground Design Option, including components, construction technology and techniques, is discussed in detail in Chapter 2 of the SDEIS and FEIS. A comparison of impacts for the Design Options and Manastash Ridge (MR) Subroute are discussed for Route Segments NNR-4, NNR-6, and MR-1 in the SDEIS and SDEIS.

**TABLE 2 REQUIRED DESIGN FEATURES APPLICABLE FOR SAGE-GROUSE**

REQUIRED DESIGN FEATURE	DESCRIPTION
<b>GENERAL</b>	
GEN-1	All construction vehicle movement outside the ROW will be restricted to pre-designated access, contractor-acquired access, or public roads, unless approved by the authorized land management agency and/or landowner.
GEN-2	The spatial limits of construction activities will be predetermined, with activity restricted to those limits. Land management agencies and landowners will approve all construction spatial limits in coordination with the construction contractor. No paint or permanent discoloring agents will be applied to rocks, vegetation, fences, structures, etc., to indicate survey or construction activity limits. Work areas will be identified and sensitive areas will be flagged as described in the POD to alert construction personnel that those areas are to be avoided.
GEN-3	In construction areas where re-contouring is not required, vegetation will be left in place wherever possible and original contour will be maintained to avoid excessive root damage and allow for re-sprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.
GEN-4	To minimize ground disturbance, the alignment of any new access roads or cross country route will follow the landform contours where practicable, provided that such alignment does not cause additional impacts to resource values. Any new access road or cross country route will be approved by the appropriate land manager and/or landowner prior to use.
GEN-5	<p>In construction areas (e.g., marshalling yards, structure site work areas, spur roads from existing access roads) where ground disturbance is significant or where re-contouring is required, surface reclamation will occur as required by the landowner or land management agency. The method of reclamation will normally consist of, but is not limited to, returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control, placing water bars in the road, and filling ditches.</p> <p>All areas on BLM, JBLM YTC, and Reclamation lands that are disturbed as a part of the construction and/or maintenance of the proposed power line will be drill seeded where practicable with a seed mixture appropriate for those areas, unless an alternative method (e.g., broadcast seeding) is required due to slope or terrain. The BLM, JBLM YTC, and Reclamation will prescribe seed mixtures to fit each range site on their respective ownerships. Drill seeding will be done in late October or November to maximize the chance of success. The Agencies may recommend broadcast seeding as an alternative method in some cases. In these cases, seed will be applied at 1.5 to 2.0 times the drill seeding rate when broadcasted and the seed will be promptly covered by methods such as harrowing, raking, or rolling with a culti-packer.</p> <p>A Reclamation, Revegetation, and Monitoring Framework Plan identifying the reclamation stipulations will be developed and incorporated in the final POD, which will be approved by the BLM, JBLM YTC, and Reclamation prior to issuance of their respective authorizations.</p>
GEN-6	A POD including specific plans to address resource specific mitigation requirements will be prepared in consultation with the agencies prior to construction being authorized. These plans will detail additional measures required to minimize potential proposed Project impacts on cultural and natural resources and human health and safety. Plans typically include reclamation and re-vegetation of the ROW, resource protection, noxious weed control, dust control, hazardous spill prevention, fire protection and control, and storm water pollution prevention.
GEN-7	The POD will outline any required monitoring guidelines for the construction, operation, and maintenance of the line in order to avoid inadvertent impacts to resources. The authorizing land management agencies will appoint an authorized inspector to oversee construction activities, inspect construction, and determine if environmental protection is being accomplished in accordance with terms of applicable documents including the ROW and the approved POD. Pacific Power will conduct a training program to inform construction crews of all ROW, permit, and other requirements and restrictions relevant to proposed Project construction.

REQUIRED DESIGN FEATURE	DESCRIPTION
GEN-8	Prior to construction, all supervisory construction personnel will be instructed on the protection of cultural, paleontological and ecological resources, as outlined in the POD, PA, and CMP. To assist in this effort, the construction contract will address: (a) federal and state laws regarding antiquities, fossils, mineral materials, plants, and wildlife including collection and removal; (b) the importance of these resources and the purpose and necessity of protecting them.
GEN-9	All waste products and food garbage from construction sites will be deposited in covered waste receptacles, and removed daily. Garbage will be transported to an approved or designated suitable disposal facility.
GEN-10	Within the limits of standard design and in conformance with engineering and Pacific Power requirements, structures will be placed as to avoid sensitive features, including but not limited to, wetlands, riparian areas, water courses, sensitive habitats and species, and cultural resources.
GEN-11	Construction holes left open overnight will be covered to prevent livestock or wildlife from falling in.
<b>BIOLOGICAL RESOURCES</b>	
BIO-1	Prior to construction, all supervisory construction personnel will be instructed on the protection of ecological resources. To assist in this effort, the construction contract will address: (a) federal and state laws regarding plants and wildlife; (b) the importance of these resources and the purpose and necessity of protecting them; and (c) methods for protecting sensitive resources.
BIO-2	Reasonable and prudent measures and terms and conditions identified during the consultation period under Section 7 of the Endangered Species Act (1973) as amended will be adhered to as specified by the USFWS. Conservation measures identified by USFWS during consultation will be applied on a discretionary basis. If conferencing occurs on species proposed for listing under ESA, recommendations for reducing adverse effects provided by USFWS in a conference report will be considered.
BIO-3	Special status species or other species of particular concern will be considered in accordance with management policies set forth by appropriate land management agencies (e.g., the BLM, the JBLM YTC, and the Bureau of Reclamation). This would entail conducting surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities (e.g., access and spur roads, staging areas, etc.) as agreed upon by the agencies. In cases where such species are identified, appropriate action will be taken to avoid adverse impacts on the species and their habitats. This may include altering the placement of roads or structures, where practical, as approved by the agencies.
BIO-5	To eliminate the spread of noxious weeds and invasive species from Project activities, a Noxious Weed and Invasive Plant Management Plan will be developed and incorporated into the final POD. The plan will be developed in consultation with the Agencies and local weed control districts and will describe: the pre-construction inventory; prevention measures and treatment methods before and during construction; and monitoring and treatment measures that would be implemented following construction. Out of elevated concern for Sage-Grouse, fire prevention, and sagebrush preservation, the Noxious Weed and Invasive Plant Management Plan would emphasize control of cheatgrass during follow-up visits to prevent, to the extent practical, the establishment of cheatgrass before, during, and after establishment of reclaimed vegetation.
BIO-6	Ground disturbance will be limited to that necessary to safely and efficiently install the proposed facilities and will be described in detail in the POD.
BIO-7	Pacific Power will prepare a Reclamation, Re-vegetation, and Monitoring Framework Plan in consultation with the agencies. The plan will specify disturbance types and appropriate re-vegetation techniques to be applied to proposed Project work areas and access roads. Techniques will be approved by the appropriate land management agency and would include reseeding with certified weed-free native or other acceptable species. The plan will include operation and maintenance procedures approved by the appropriate land management agency for use of access roads and temporary work areas.

REQUIRED DESIGN FEATURE	DESCRIPTION
BIO-8	<p>Wildlife and plant protection plans will be developed identifying specific measures to protect biological resources. Required protection measures could include timing restrictions, ROW clearance surveys prior to construction and the use of biological monitors to protect biological resources during construction. In situations where impacts to sensitive plants cannot be avoided by construction activities, the transplanting of plants will be considered by the appropriate land management agency. The criteria for transplanting will be included in the POD for the Project. The criteria will be formulated in coordination with the BLM and state agencies, and in compliance with federal and state law, regulation, and policy regarding sensitive species.</p> <p>If any new populations of plant species of concern are discovered on federal or state lands during Project surveys or construction, these findings will be reported within 48 hours to the appropriate land management agency. Any newly discovered populations will be protected the same as currently known populations.</p> <p>If any new populations of federal or state listed wildlife species are discovered during Project surveys or construction, these findings will be reported within 48 hours to the appropriate federal and/or state land management agency. Any newly discovered populations will be protected the same as currently known populations.</p>
BIO-9	Use an agency approved mixture of native and non-native species or seed for revegetation in areas where non-native species are already well established (i.e., disturbed grassland). Where possible, a mix of native species, especially native bunchgrasses and forbs, will be utilized for revegetation. Revegetation materials will meet the requirements of federal, state and county noxious weed control regulations and guidelines.
BIO-10	Comply with all federal, state and county noxious weed control regulations and guidelines.
BIO-11	Wash all equipment before entering the Project area and when leaving areas where noxious weeds are present.
BIO-12	Minimize the blading of native plant communities during construction, operation and maintenance consistent with safe construction practices.
BIO-13	<p>Restrict construction and maintenance activities (including helicopter construction and blasting) during sensitive periods (described below). Restricting these activities would eliminate the potential disturbance of wildlife during these critical periods of their life cycles, as identified in the Plant and Wildlife Species Protection Measures Appendix of the POD and the Sage-grouse Habitat Mitigation Framework Plan.</p> <ul style="list-style-type: none"> <li>• Greater Sage-Grouse: <ul style="list-style-type: none"> <li>▪ Avoid construction or maintenance activities within four miles of active leks from February 1 to June 15 to protect lekking, nesting, and early brood-rearing (Stinson et al. 2004; Cadwell et al. 1994).</li> <li>▪ Avoid construction or maintenance activities within Sage-Grouse winter habitat from December 1 through February 1 if winter conditions are exceptionally severe. Severe winter conditions would consist of snow cover much higher than normal (e.g., above sagebrush height) or temperatures much lower than normal. Winter construction or maintenance activities within Sage-Grouse winter habitat will be coordinated with JBLM YTC (Public Works Department).</li> </ul> </li> </ul>
BIO-14	New or improved access (e.g., blading, widening existing access) that is not required for Project maintenance or by the land management agencies will be closed or rehabilitated following construction. Closing access roads would protect the resources in that area from further disturbance by limiting new or improved accessibility by off-highway vehicle (OHVs) and other motorized vehicles.
BIO-15	If sensitive wildlife species are discovered during construction, operation, and maintenance activities within the ROW or designated and approved work areas, a protective buffer zone will be established and the appropriate federal or state agency will be contacted immediately.
BIO-16	Speed limits for travel on newly constructed roads will be posted at 25 mph in order to reduce the potential for wildlife collision. Overland travel areas will have speed limits of 15 mph.

REQUIRED DESIGN FEATURE	DESCRIPTION
BIO-17	The Project will be designed to conform to raptor-safe design standards, including Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee [APLIC] 2006), Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012) and PacifiCorp's Bird Management Program Guidelines (PacifiCorp 2006).
BIO-18	Any temporary fences constructed in Sage-Grouse habitat, as part of the proposed Project, will be fitted with markers to reduce the potential for Sage-Grouse collision. Any existing fences that are repaired during construction would also be fitted with markers.
BIO-19	Bird flight diverters will be installed in locations with known avian mortality through collision with transmission line infrastructure.
BIO-20	Routing and siting the proposed transmission line would maximize the use of existing utility corridors and closely parallel the existing transmission line within those corridors, typically staying within 200 feet of its centerline. The use of existing transmission line corridors will minimize impacts through the use of already established ROWs, road networks, etc.
BIO-21	Whenever possible, locations of the new structures will match the spans of adjacent transmission lines.
BIO-22	Perch deterrents will be installed on new transmission structures within four miles of an active lek and designated Sage-Grouse protection areas on JBLM YTC.
BIO-23	No pets will be allowed on the Project site during construction, operation and/or maintenance.
BIO-24	No persistent surface water sources or other potential mosquito breeding habitat will be created.
<b>WILDLAND FIRE</b>	
WF-1	Pacific Power, and its contractors as appropriate, will initiate discussions with local fire districts, regional fire prevention staff, and JBLM YTC fire personnel prior to construction to provide transmission line safety training, including safety procedures for conducting fire suppression activities near a power line.
WF-2	The construction contractor will fuel all highway-authorized vehicles off-site to minimize the risk of fire. Fueling of construction equipment that is transported to the site via truck and is not highway authorized will be done in accordance with regulated construction practices, and federal, state and local laws. Helicopters will be fueled and housed at local airfields or at staging areas.
WF-3	Contractors will be required to carry fire suppression tools and equipment including (but not limited to) shovels, buckets, and fire extinguishers on all construction, operation and maintenance vehicles.
WF-4	<p>A Fire Protection and Control Plan will be developed and incorporated into the POD. The Fire Protection and Control Plan will include measures to be implemented during construction and maintenance, such as: restricting smoking to designated areas; restricting equipment parking to sites cleared of all flammable material; equipping vehicles with appropriate fire suppression tools and equipment; and training Pacific Power and/or its contractors on fire safety, minimizing fire hazards, to safely suppress a fire until firefighters can respond.</p> <p>Pacific Power and/or its contractors will notify the federal, state and local agencies of any fires, and comply with all rules and regulations administered by the federal, state and local land management agencies concerning the use, prevention, and suppression of fires, including any fire prevention orders that may be in effect at the time of the permitted activity. Pacific Power and/or its contractors will be held liable for the cost of fire suppression, stabilization, and rehabilitation when they are responsible for the cause of the fire event. In the event of a fire, personal safety will be the first priority of Pacific Power and/or its contractors.</p>
<b>LAND USE AND RECREATION</b>	
LU-7	To limit new or improved accessibility into the area by OHVs and other non-authorized motorized vehicles, road access will be controlled in accordance with the management directives of the land management agencies and landowners.

## **Additional Analysis for Greater Sage-Grouse**

A Sage-Grouse analysis area was defined in the DEIS, SDEIS and FEIS to provide information on the existing conditions (e.g., current habitat, existing infrastructure and disturbance, Sage-Grouse leks, Sage-Grouse population range) and to provide context for the impact analysis. The impact analysis for Sage-Grouse focused on impacts that could occur as a result of the construction, operation and maintenance of the proposed Project. Based on DEIS comments received from USFWS and WDFW, the analysis area was expanded from the two-mile-wide corridor used in the DEIS to an eight-mile-wide corridor in the SDEIS and FEIS and a Sage-Grouse Analysis and Mitigation Report was prepared to expand the impact analysis in the SDEIS. These impacts analyzed included: habitat loss, degradation, and fragmentation; increased predation; behavioral avoidance; disturbance and displacement; impairment of habitat connectivity; and collision. The results of the impact analysis are presented in the DEIS, SDEIS, FEIS and the Sage-Grouse Technical Report (FEIS, Appendix B-5).

## **Framework for Development of a Greater Sage-Grouse Compensatory Mitigation Plan and Project-Specific Compensatory Mitigation Plan**

The Framework was developed to address the residual impacts to Sage-Grouse which may result from the construction, operation, and maintenance of the proposed Project. The Framework is intended to facilitate the development of a CMP. With the development and implementation of the CMP, Pacific Power would be taking the necessary steps to compensate for residual Project impacts and achieve a net conservation gain to the species and its habitat by avoiding, minimizing and compensating for unavoidable Project impacts.

The overall objectives of the Framework are to:

1. Create a common understanding of the expectations that the Authorizing Agencies have for Pacific Power on the principles, standards, methods, time frames and other considerations that will guide the development of the CMP; and
2. Provide a methodology for assessing the adequacy of Pacific Power's CMP.

The BLM, other Authorizing Agencies, and Pacific Power will utilize the Framework in developing a Project-specific CMP proposal. The CMP will identify compensatory mitigation projects intended to offset Project impacts across all affected land ownerships and jurisdictions. Subject to each federal, state, and local agency's determination that the CMP is sufficient and that its implementation is consistent with applicable laws and government policies, each agency may utilize the CMP in its environmental review documents and project authorizations (e.g., for BLM, CMP implementation will be made a condition of ROW grants and permits issued to Pacific Power).

## **IV. CONSISTENCY WITH APPLICABLE SAGE-GROUSE POLICIES, PLANS AND PROCEDURES**

A regulatory overview for Sage-Grouse was provided above in Section II. Table 3 summarizes each regulatory policy and guideline, identified conservation measures, and the proposed Project's consistency with these regulatory requirements and guidelines.

**TABLE 3 SUMMARY OF THE PROPOSED PROJECT’S CONSISTENCY WITH SAGE-GROUSE REGULATORY POLICIES AND GUIDELINES**

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED PROJECT’S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
USFWS COT Report – Guidance document	Maintain and restore healthy native sagebrush plant communities.	<p>Fire:</p> <ul style="list-style-type: none"> <li>• Restrict and contain fire.</li> <li>• Design, implement, and monitor restoration activities for burned sagebrush habitat.</li> </ul> <p>Invasive Species:</p> <ul style="list-style-type: none"> <li>• Reduce or eliminate disturbances that promote the spread of invasive species.</li> <li>• Monitor and control invasive vegetation post-wildfire for at least three years.</li> <li>• Require best management practices for construction projects in and adjacent to sagebrush habitats to prevent invasion.</li> <li>• Restore altered ecosystems so that non-native invasive plants are reduced to levels that do not put the area at risk of conversion if a catastrophic event were to occur.</li> </ul>	<ul style="list-style-type: none"> <li>• RDF Gen-6, RDF WF-1-4: Fire prevention training, fire suppression equipment, and developing a Fire Protection and Control Plan.</li> <li>• Project Description, FEIS Section 2.2.3.13 Fire Prevention and Suppression.</li> <li>• RDF Bio-5: Noxious Weed and Invasive Plant Management Plan.</li> <li>• RDF Bio-6: Limiting ground disturbance.</li> <li>• RDF Bio-7: Reclamation, Revegetation and Monitoring Framework Plan.</li> <li>• RDF Bio-9: Revegetating following construction.</li> <li>• RDF Bio-11: Washing all equipment to prevent noxious weed introduction.</li> <li>• RDF Bio-12: Minimizing blading of native plant communities during construction.</li> </ul>
USFWS COT Report – Guidance document	Avoid development of infrastructure within PACs.	<ul style="list-style-type: none"> <li>• Avoid infrastructure construction in Sage-Grouse habitat, both within and outside of PACs.</li> <li>• Power transmission corridors which cannot avoid PACs should be buried (if technically feasible) and disturbed habitat should be restored. <ul style="list-style-type: none"> <li>○ If avoidance is not possible, consolidate new structures with existing features and/or preclude development of new structures within locally important Sage-Grouse habitats. <ul style="list-style-type: none"> <li>▪ Consolidation with existing features should not result in a cumulative corridor width of greater than 600 feet (ft)</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The COT Report (USFWS 2013) identified four PACs in Washington State (Management Zone VI). Described as key habitats necessary for Sage-Grouse habitat conservation, PACs were identified based on the best available information at the time the report was published. As Dr. Michael Schroeder (WDFW Upland Bird Research Scientist who helped identify the PACs in Washington State) explained, because Sage-Grouse in Washington are in a recovery mode (versus maintenance), the Washington PAC boundaries were delineated differently than other states and focused on core use areas. Washington PACs actually encompass large areas not currently occupied by Sage-Grouse or do not currently contain suitable habitat. These larger boundaries were intended to encompass areas where habitat or potential habitat exists for the purpose of furthering recovery and/or expansion of the current population (personal</li> </ul>

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED PROJECT'S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
		<p>(200 meters [m]).</p> <ul style="list-style-type: none"> <li>▪ Habitat function lost from placement of infrastructure should be replaced.</li> <li>○ Infrastructure corridors should be designed and maintained to preclude introduction of invasive species.</li> <li>○ Restrictions limiting use of roads should be enforced.</li> <li>○ Remove transmission lines and roads that are duplicative or are not functional.</li> <li>○ Transmission line towers should be constructed to severely reduce or eliminate nesting and perching by avian predators, most notably ravens, thereby reducing anthropogenic subsidies to those species.</li> <li>○ Mitigate impacts to habitat.</li> <li>○ Remove (or decommission) non-designated roads within sagebrush habitats.</li> </ul>	<p>communication, May 2015).</p> <ul style="list-style-type: none"> <li>• As a result of the identification of the PAC boundaries on this large scale, there are areas within the Washington PACs that not only lack the vegetation components or conditions necessary to be considered suitable or potentially suitable Sage-Grouse habitat, they are effectively non-habitat due to anthropogenic disturbances.</li> <li>• Although the NNR Alternative, sited after the release of the COT Report (February 2013), does not avoid development within the PAC, the NNR Alternative was sited to avoid JBLM YTC identified Sage-Grouse Primary Protection Areas, which are indicative of Sage-Grouse use areas and habitat. Complete avoidance of Sage-Grouse impacts and impacts to the YTC PAC from the proposed Project is not feasible and practical based on the location of the existing substations (located within and directly outside of the YTC PAC) and the objectives of the applicant. Development of an alternative that entirely avoids the YTC PAC would be out of the scope of this Project and would not address the Proponent's Purpose and Need for the Project.</li> <li>• Two segments with an Underground Design Option were considered and analyzed in the SDEIS and FEIS to reduce impacts to Sage-Grouse.</li> <li>• RDF Bio-21: Locations of new structures will match the spans of adjacent transmission lines.</li> <li>• RDF Bio-20: The line will closely parallel an existing transmission line, with transmission centerline separations typically staying within 200-300 ft. With the NNR Alternative/Overhead Design Option's consolidation with existing structures, the cumulative corridor is not anticipated to be greater than 600 ft (200 m).</li> <li>• RDF Bio-5: Noxious Weed and Invasive Plant Management Plan.</li> <li>• RDF Bio-14: Close and rehabilitate all new access roads not needed for maintenance.</li> </ul>

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED PROJECT'S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
Washington Sage-Grouse Recovery Plan	Recovery Goal – 3,200 birds in six SGMUs	<ul style="list-style-type: none"> <li>• Maintain existing population and distribution.</li> <li>• Improve habitat quality.</li> </ul>	<ul style="list-style-type: none"> <li>• RDF Bio-22: Perch deterrents will be installed on new transmission structures within 4 miles of an active lek.</li> <li>• Residual impacts to Sage-Grouse and its habitat will be compensated for through the development of the CMP.</li> <li>• With the development and implementation of the CMP, Pacific Power will be taking the necessary steps to compensate for residual Project impacts and to achieve net conservation gain for the species and its habitat. Mitigation will be required that provides a net conservation gain to the species and its habitat by avoiding, minimizing and compensating for unavoidable impacts from development. Compensatory mitigation will be designed to enhance and improve habitat (BLM no date).</li> </ul>
Washington Sage-Grouse Recovery Plan	Protect Sage-Grouse populations	<ul style="list-style-type: none"> <li>• Protect active Sage-Grouse leks from human disturbance. Recommends minimizing disturbance from construction and development activities, particularly within 0.6 mile (1.0 kilometer) of breeding habitat during February - June.</li> <li>• Protect nesting and brood rearing areas from disturbance. Wherever possible, prevent disturbance in Sage-Grouse nesting and brood rearing habitat between March 1 and June 15.</li> <li>• Reduce collision and predation hazards posed by poles, wires and fences. New power lines and utilities should use existing corridors or be located so as to minimize collision risk and damage to habitat; existing power lines should be buried or modified with perch guards to prevent use as a raptor perch site; and unneeded fences in Sage-Grouse use areas should be removed.</li> </ul>	<ul style="list-style-type: none"> <li>• There are no known active leks within 0.6 mile of any of the Action Alternatives.</li> <li>• RDF Bio-13: Construction and maintenance activities will be avoided within 4 miles of active leks from Feb to June 15 to protect lekking, nesting and early brood-rearing sites.</li> <li>• RDF Bio-18: Marking new fences to reduce collision risk; and</li> <li>• RDF Bio-22: Perch deterrents will be installed on new transmission structures within 4 miles of an active lek.</li> </ul>

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED PROJECT'S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
Washington Sage-Grouse Recovery Plan	Protect Sage-Grouse habitat on public lands	<ul style="list-style-type: none"> <li>• Protect habitat from fire. Fire management plans should be developed and implemented on public lands to prevent catastrophic destruction of Sage-Grouse habitat.</li> <li>• Protect important Sage-Grouse habitat on public lands from development and agricultural conversion. Work with public agencies to minimize conversion of native shrub-steppe habitat; provide information to regulatory agencies about the potential for Sage-Grouse habitat loss from wind turbines and utility towers (may prevent Sage-Grouse from nesting or brood-rearing within 1 mile of wind turbines); provide technical advice to regulatory agencies to minimize the negative effects of energy and mining exploration, development, and construction activity in important Sage-Grouse habitats (Permanent developments should be no closer than 3 kilometers from leks).</li> <li>• Manage riparian habitats by promoting recovery of vegetation in riparian zones and avoiding road development and human disturbance in wet meadows.</li> <li>• Discourage expansion of road system on public lands in management units. New roads, trails or right-of-ways should be avoided; avoid improvements to existing, unused, and unpaved roads; promote closures of unnecessary roads or those that are negatively impacting habitat quality.</li> </ul>	<p>Fire:</p> <ul style="list-style-type: none"> <li>• RDF Gen-6, RDF WF-1-4: Fire prevention training, fire suppression equipment, and developing a Fire Protection and Control Plan.</li> <li>• Project Description, SDEIS Section 2.2.3.13 Fire Prevention and Suppression.</li> </ul> <p>Protect Sage-Grouse habitat on public land:</p> <ul style="list-style-type: none"> <li>• RDF Bio-5: Noxious Weed and Invasive Plant Management Plan.</li> <li>• RDF Bio-6: Limiting ground disturbance.</li> <li>• RDF Bio-7: Reclamation, Revegetation and Monitoring Framework Plan.</li> <li>• RDF Bio-9: Revegetating following construction.</li> <li>• RDF Bio-11: Washing all equipment to prevent noxious weed introduction.</li> <li>• RDF Bio-12: Minimizing blading of native plant communities during construction.</li> </ul> <p>Manage riparian habitats (see protecting habitat RDFs above and road RDFs below):</p> <ul style="list-style-type: none"> <li>• RDF GEN-10 Avoid sensitive features, including but not limited to, wetlands, riparian areas, water courses, sensitive habitats and species, and cultural resources.</li> </ul> <p>Discourage expansion of road system on public lands:</p> <ul style="list-style-type: none"> <li>• RDF Bio-14: Close and rehabilitate all new access roads not needed for maintenance;</li> <li>• RDF Bio-12: Minimizing blading of native plant communities during construction.</li> <li>• RDF LU-7: Road access will be controlled in accordance with the management directives of the Agencies and landowners.</li> </ul>

REGULATORY POLICY OR GUIDANCE DOCUMENT	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION STRATEGIES OR OBJECTIVES	REGULATORY GUIDANCE DOCUMENT OR POLICY IDENTIFIED CONSERVATION MEASURES	PROPOSED PROJECT'S CONSISTENCY WITH REGULATORY POLICY OR GUIDANCE
Washington Sage-Grouse Recovery Plan	Restore degraded habitat	<ul style="list-style-type: none"> <li>Shrub-steppe restoration projects should use native seed sources, suppress cheatgrass and weeds, restore bunchgrass and native forb understory, reestablish sagebrush, and restore degraded wet meadows or vegetation at developed streams.</li> </ul>	<ul style="list-style-type: none"> <li>RDF Bio-9: Use an Agency approved mixture of native and non-native species or seed for revegetation in areas where non-native species are already well established (i.e., disturbed grassland). Where possible, a mix of native species, especially native bunchgrasses and forbs, will be utilized for revegetation.</li> <li>RDF Bio-5: Noxious Weed and Invasive Plant Management Plan;</li> <li>RDF Bio-6: Limiting ground disturbance;</li> <li>RDF Bio-7: Reclamation, Revegetation and Monitoring Framework Plan.</li> <li>RDF Bio-9: Revegetating following construction.</li> </ul>
JBLM YTC Sage-Grouse Management Plan	Protect Sage-Grouse during breeding	<ul style="list-style-type: none"> <li>Buffer leks by 0.6 mile. These areas are closed to all training activities and other land use practices between midnight and 9:00 a.m. from February 1-May 15; and</li> <li>Sage-grouse protection areas are off limits to all military training activities between February 1 and June 15, except for the use of existing ranges.</li> </ul>	<ul style="list-style-type: none"> <li>RDF Bio-13: Construction and maintenance activities will be avoided within 4 miles of active leks from Feb to June 15 to protect lekking, nesting and early brood-rearing sites.</li> <li>The NNR Alternative was sited to avoid JBLM YTC identified Sage-Grouse Primary Protection Areas.</li> </ul>

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**APPENDIX B-8  
MIGRATORY BIRD CONSERVATION PLAN**

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September 26, 2016

## BUREAU OF LAND MANAGEMENT

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### **Vantage to Pomona Heights 230 kV Transmission Line Project**

*Migratory Bird Conservation Plan*

*PROJECT NUMBER:*  
114809

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*Migratory Bird Conservation Plan*

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**ACRONYMS AND ABBREVIATIONS**

ACRONYM / ABBREVIATION	DEFINITION
APLIC	Avian Power Line Interaction Committee
BLM	U.S. Bureau of Land Management
BPA	Bonneville Power Administration
CEC	California Energy Commission
DES	Duke Engineering Service
DOD	U.S. Department of Defense
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
I	Interstate
JBLM YTC	Joint Base Lewis-McChord Yakima Training Center
kV	kilovolt
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
mph	Miles per hour
NESC	National Electrical Safety Code
NNR	New Northern Route
OHV	off-highway vehicle
PHS	Priority Habitat and Species
Plan	Migratory Bird Conservation Plan
POD	Plan of Development
POWER	POWER Engineers, Inc.
Project	Vantage to Pomona Heights 230 kV Transmission Line Project
RDF	Required Design Feature
Reclamation	U.S. Bureau of Reclamation
RMP	Resource Management Plan
ROW	Right-of-Way
Sage-Grouse	Greater Sage-Grouse
sq. ft.	square foot
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation

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## **1.0 INTRODUCTION**

The purpose of this Migratory Bird Conservation Plan (Plan) is to demonstrate the proposed Vantage to Pomona Heights 230 kilovolt (kV) Transmission Line Project's (Project's) measures to avoid, minimize, and mitigate for impacts to birds and to comply with the Migratory Bird Treaty Act (MBTA) and other federal bird protection regulations during the construction, maintenance, and operation of the Project.

Pacific Power's Corporate Bird Management Program Guidelines include protocols for documenting the incidence of mortalities from collision with Pacific Power's lines and problem nests, contacting the appropriate resource agency and additional actions to be taken to reduce mortalities such as installing bird flight diverters or marking static wires in sensitive areas when warranted (PacifiCorp 2006).

Avoidance, minimization, and mitigation measures that will protect birds and bird habitat are included in the U.S. Bureau of Land Management's (BLM's) Final Environmental Impact Statement (FEIS) for the proposed Project and are presented in Chapter 2 - *Proposed Action and Alternatives*, Appendix B-5 - *Greater Sage-Grouse Analysis and Mitigation Report*, and Appendix B-6 - *Framework for Development of a Sage-Grouse Compensatory Mitigation Plan*. Although Greater Sage-Grouse (*Centrocercus urophasianus*; Sage-Grouse) are not protected under the MBTA and not the focus of this Plan, avoidance, minimization, and mitigation measures intended to compensate for impacts to Sage-Grouse will benefit migratory birds, particularly those that inhabit sagebrush-steppe and grassland habitat.

This Plan addresses impacts, avoidance, minimization, and mitigation measures associated with the FEIS Agency Preferred Alternative, the New Northern Route (NNR) Alternative - Overhead Design Option (NNR-o). The Project study area, as addressed in this Plan, includes a one-mile buffer of the FEIS Agency Preferred Alternative. If a different alternative is ultimately selected, this Plan will be modified accordingly and the modified version will be published with the Plan of Development (POD).

### **1.1 Project Description**

Pacific Power proposes to construct, operate, and maintain a new transmission line (Project) from its existing Pomona Heights Substation east of Selah in Yakima County, Washington to the existing Bonneville Power Administration (BPA) Vantage Substation east of the Wanapum Dam in Grant County, Washington. The FEIS Agency Preferred Alternative, the NNR Alternative - Overhead Design Option (NNR-o), would be 40.5 miles long (Figure 1 and see FEIS - Chapter 2).

As proposed by Pacific Power, most of the proposed transmission line would be constructed on H-frame wood pole structures between 65 and 90 feet tall, typically, and spaced approximately 650 to 1,000 feet apart depending on terrain (see Chapter 2 Figure 2-3). The H-frame structures may be up to 100 feet tall in limited areas (such as on ridges at canyon or deep valley crossings), but would typically be used in open flat to gently rolling terrain. In developed or agricultural areas, single wood or steel monopole structures would be used. The single pole structures would be between 70 and 110 feet tall and spaced approximately 400 to 700 feet apart. For the Columbia River crossing, steel lattice structures approximately 200 feet tall would be used to safely span the approximate 2,800-foot-long crossing. Table 1 summarizes the design characteristics and Figures 2 and 3 illustrate the structure types. Final design characteristics would be determined in the detailed design phase of the proposed Project.

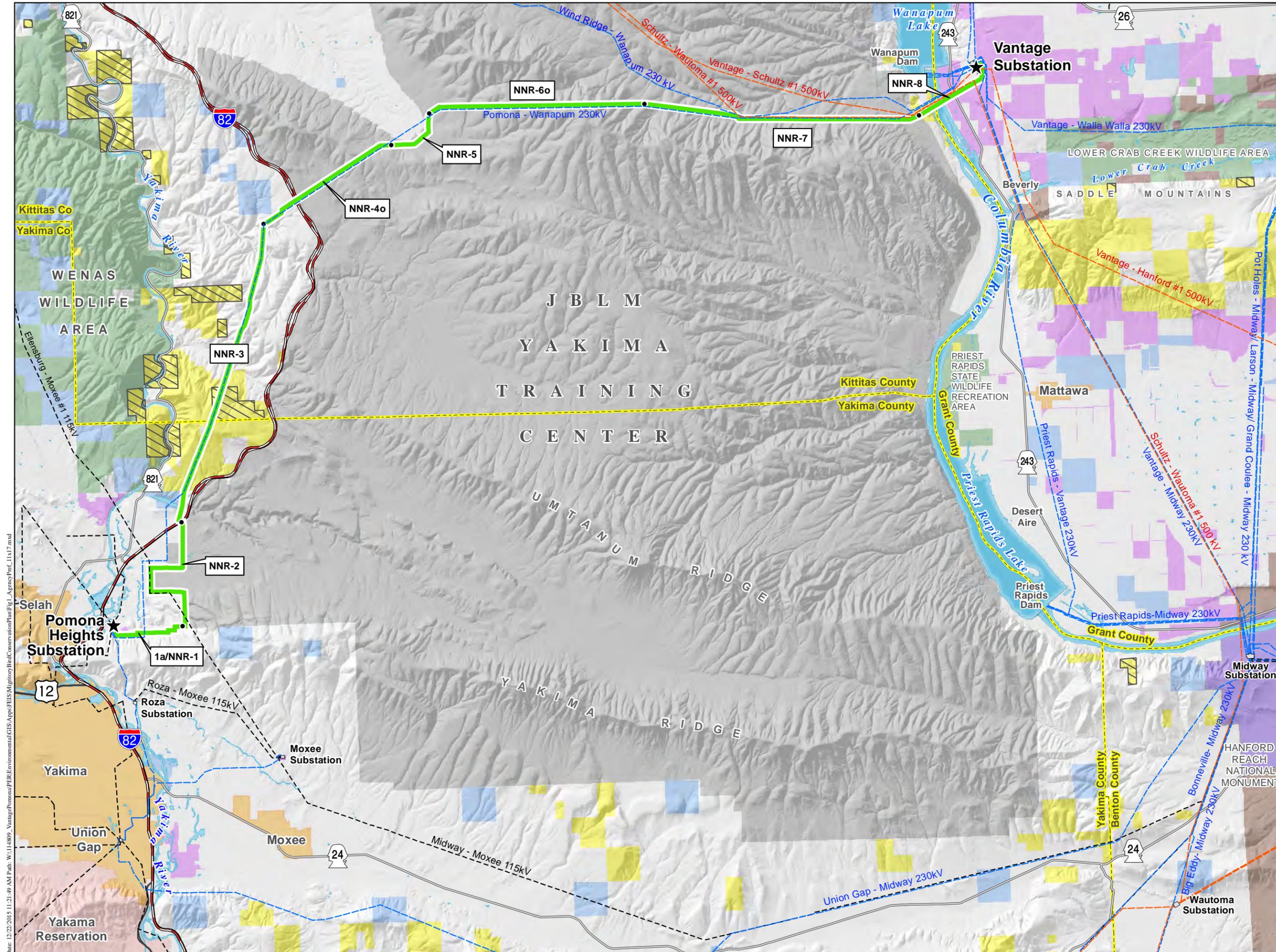
The proposed transmission line would be designed for one 230 kV three phase (three conductors) circuit and one shield wire. To protect conductors from lightning strikes the shield wire would be installed near the top of each pole and would have a diameter of 0.360 inch. The conductors would be 1.354 inches in diameter. Conductor phase to phase and phase to ground clearance parameters are determined in

accordance with the National Electrical Safety Code (NESC) and Pacific Power design standards. Minimum conductor height above the ground or vegetation would be 28 to 35 feet.

**TABLE 1 DESIGN CHARACTERISTICS OF THE PROPOSED VANTAGE TO POMONA HEIGHTS 230 KV TRANSMISSION LINE PROJECT - FEIS AGENCY PREFERRED ALTERNATIVE**

FEATURE	DESIGN CHARACTERISTICS
Line Length	40.5 miles – NNR Alternative – Overhead Design Option (Agency Preferred Alternative)
Type of Structure	H-frame wood poles-open terrain Single wood or steel poles in agricultural, developed and constrained areas
Structure Height	H-frame structures - 65 to 90 feet Single poles - 70 to 110 feet
Average Span Length	H-frame structures - 650 to 1,000 feet Single poles - 400 to 700 feet
Number of Structures per Mile	H-frame structures - 6 to 8 Singles poles - 7 to 13
ROW Width	H-frame structures - 125 to 150 feet Single poles - 75 to 100 feet Dead-end and angle structures-Additional ROW required for guys and anchors (area determined by structure height and angle)
Land Disturbed (approximate): <u>Temporary</u>	
Structure Work Areas (H-frame Structures)	150 x 125 feet (18,750 sq. ft.)
(Single Poles)	150 x 80 feet (12,000 sq. ft.)
Turn-Around Areas	60 x 60 feet (3,600 sq. ft.)
Pulling and Tensioning Sites	125 x 400 feet (50,000 sq. ft.); Sites every 11,000 feet (2 miles) or less
Construction Yard/Staging Areas (existing disturbed areas)	5 acres; 3 yards required
<u>Permanent</u>	
Structure Base	
H-frame	20 inch diameter each pole = 40 inches
Single Pole	24 inches diameter
Steel Lattice	4 footings, 60 x 60 feet (3,600 sq. ft.)
Work Pads	30 x 40 feet (1,200 sq. ft.)
Access Roads	Minimum 14 feet wide up to 24 feet wide by length, depending upon terrain
Access Roads	Minimum 14 feet wide up to 24 feet wide by length, depending on terrain - approximately 1.1 to 2.5 miles (depending on slope) of new road per mile of transmission line where new road would be required. Existing roads would be used whenever possible.
Voltage	230,000 volts alternating current
Circuit Configuration	Single-circuit with 3 phases per structure
Conductor Size	1,272 kilo-circular mils (1.354-inch diameter) aluminum conductor steel reinforced
Ground Clearance of Conductor	28 feet minimum - up to 35 feet (typical) minimum of 34 feet clearance for Interstate 82 (I-82) crossings
Structure/Pole foundations	Poles generally would be placed in augured holes and tamped. Foundations may be required in rough terrain, uplift areas or large angles. Single-circuit steel lattice structures for Columbia River crossing would require steel reinforced concrete drilled piers.

**Figure 1**  
**Agency Preferred Alternative**

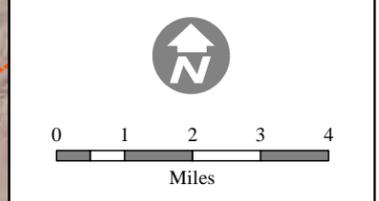


**Legend**

- Project Features**
- Agency Preferred Alternative
  - ★ Project Substation
- Existing Utility Features**
- - - 500 kV Transmission Line
  - - - 230 kV Transmission Line
  - - - 115 kV Transmission Line
  - Substation
- Jurisdiction**
- Private Individual or Company
  - Bureau of Indian Affairs
  - Bureau of Land Management
  - Bureau of Reclamation
  - Washington Department of Fish and Wildlife
  - State of Washington
  - JBLM Yakima Training Center
  - U.S. Fish and Wildlife Service
  - Department of Energy
- Transportation**
- Interstate Highway
  - US Highway
  - State Highway
- Special Management Areas**
- BLM Area of Critical Environmental Concern (ACEC)
- Boundaries**
- County
  - City Limits



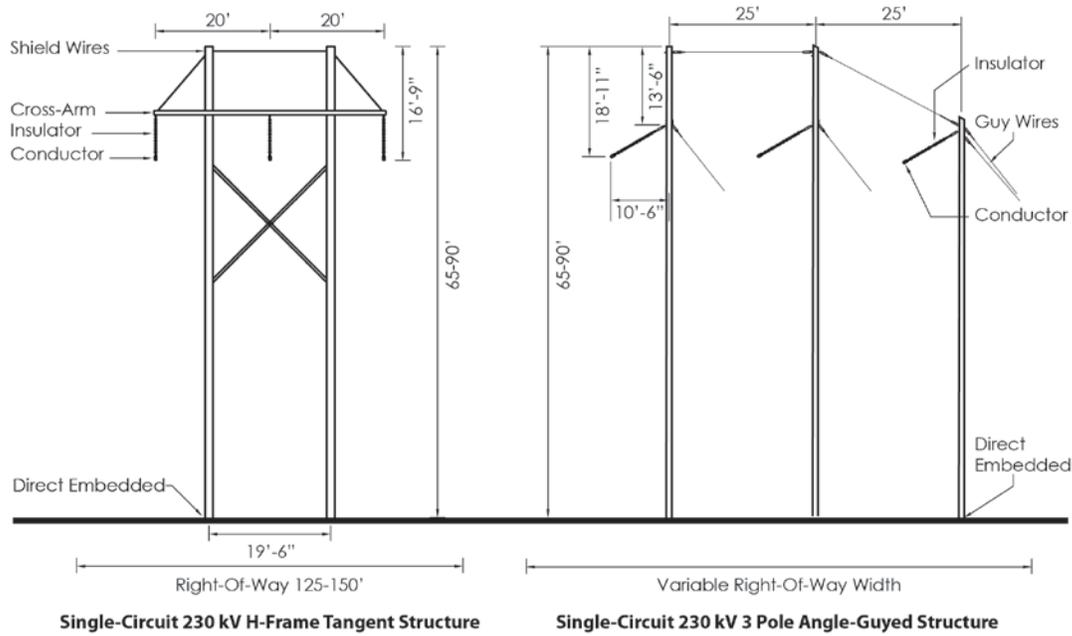
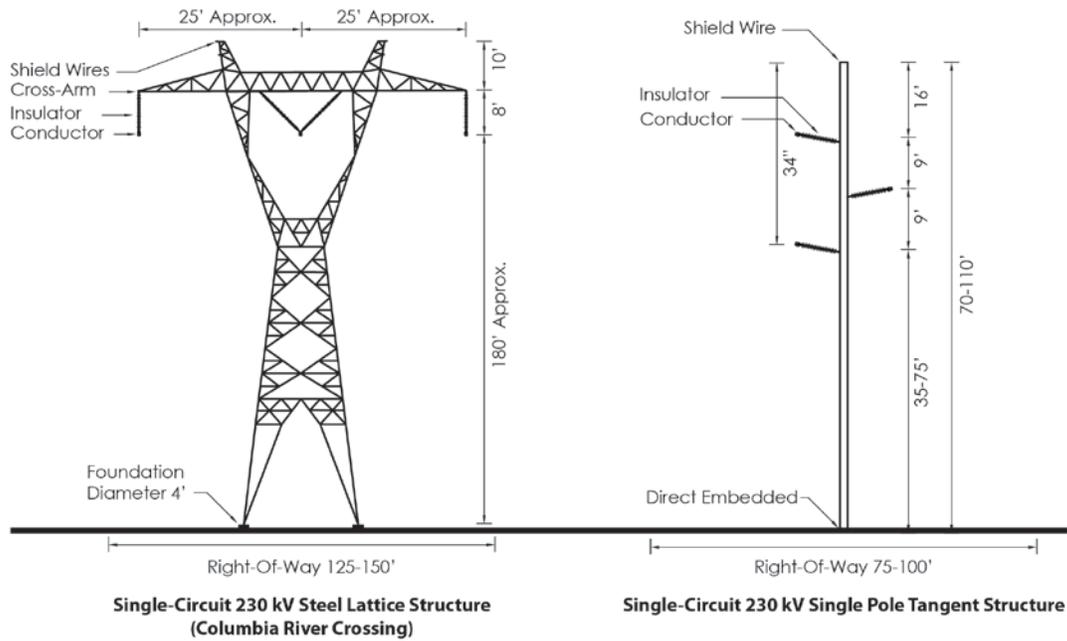
Data are projected in UTM Zone 10N, NAD83



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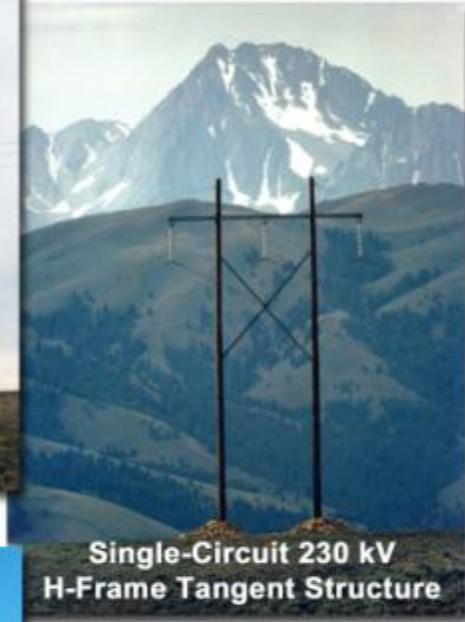
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FIGURE 2 TYPICAL 230 KV STRUCTURE TYPES



IMAGES NOT TO SCALE

**FIGURE 3    PHOTOGRAPHS OF TYPICAL 230 KV STRUCTURE TYPES**



Construction of the proposed transmission line would require vehicle, truck, and crane access to each new structure site for construction crews, materials, and equipment. Access along the proposed transmission line right-of-way (ROW) corridor would include existing roads in their current condition, existing roads that would be improved as part of this proposed Project, overland access where possible, and new access roads where necessary. The proposed Project would use existing roads and trails or overland access wherever feasible to minimize the construction of new access roads. The roadway (cuts and fills) would remain for transmission line maintenance, but vegetation would be restored in accordance with agency requirements. Specific plans for the construction, rehabilitation, and/or maintenance of roads, including the general locations of access roads, would be documented in the POD. These plans would incorporate relevant requirements and stipulations from the agencies and landowners.

During construction of the proposed transmission line, there would be temporary work areas at each structure site to facilitate the safe operation of equipment and construction operations. There would also be temporary work areas at pulling and tensioning sites, material staging sites, and turn-around areas.

The proposed Project would also require upgrades at the Pomona Heights and Vantage substations that would include expansion of the substation yards.

Specific structure locations, work areas, and set-up sites will be identified in the POD as final design is completed. See the FEIS for more details regarding the proposed Project components.

The Project study area lies within the Columbia Plateau Ecoregion. The Columbia Plateau is an arid sagebrush (*Artemisia* spp.) steppe and grassland that is surrounded by ecoregions that are typically moister, forested, and mountainous (U.S. Environmental Protection Agency [USEPA] 2010). Before the arrival of Euro-American settlers in the early 1800s, approximately 15 million acres of shrub-steppe habitat existed in eastern Washington (Daubenmire 1970; Stinson et al. 2004). Currently, it is estimated that about 50 percent, approximately 7.4 million acres, remains in Washington. The majority of the shrub-steppe vegetation was lost to agricultural cropland; however, roads, residential and commercial development, and inundation by reservoirs have also contributed to the reduction in shrub-steppe habitat (Stinson et al. 2004).

Over half of the Project study area is within the Joint Base Lewis-McChord Yakima Training Center (JBLM YTC), which lies within the largest remaining contiguous block of relatively intact shrub-steppe in the state of Washington (JBLM YTC 2002). Elevations along the proposed Project route segments range from approximately 500 to 3,350 feet above mean sea level. The most frequently occurring habitat types in the Project study area include sagebrush/perennial grassland (41,629.2 acres; 62.8 percent), annual grassland (14,490.4 acres; 21.8 percent), and agricultural/pasture (4,730.9 acres; 7.1 percent; FEIS Table 3.3-2). The Project study area sagebrush-steppe habitat is mostly intact, but some fragmentation has occurred from the invasion of non-native plants, roads, residential development, livestock grazing, agricultural land use, and altered fire-regimes. Sagebrush/perennial grassland occurs throughout the entire Project study area. Annual grassland occurs in large patches along the western half of the FEIS Agency Preferred Alternative (Route Segments 1a/NNR-1, NNR-2, NNR-3, NNR-4o, NNR-5, NNR-6o, NNR-7, and NNR-8). Agricultural areas predominately occur along Badger Pocket (Route Segment NNR-5) and near the Pomona Heights Substation (Route Segments 1a/NNR-1 and NNR-2). Perennial grassland occurs in small patches throughout. Very few wetlands and riparian areas occur within the Project study area. The majority of riparian areas within the Project study area are seasonally moist uplands. These drier riparian areas are typically vegetated with upland shrubs, including sagebrush. The vegetative communities associated with the Project study area support a diversity of wildlife, including approximately 174 species of birds (JBLM YTC 2002). For more information on vegetation types within the Project study area, which provide habitat for birds, see Section 3.2 - *Vegetation* and Section 3.3.2 - *Wildlife-Current Conditions and Trends* of the FEIS.

### 1.1.1 FEIS Agency Preferred Alternative Route Segments

#### 1.1.1.1 Route Segment 1a/NNR-1

Route Segment 1a/NNR-1 is 2.4 miles long and follows Sage Trail Road for the majority of its length, following an existing distribution line and traversing through a rural residential area. This route segment is comprised primarily of disturbed shrub-steppe dominated by annual grasses such as cheatgrass (*Bromus tectorum*; 3,292 acres, 68 percent) and shrub-steppe that has been converted to agriculture (541 acres, 11 percent). Approximately 7.4 percent (324 acres) of Route Segment 1a/NNR-1 consists of big sagebrush (*Artemisia tridentata*) with an understory of native perennial bunchgrasses. Suitable habitat for shrub-steppe and grassland species is limited. Route Segment 1a/NNR-1 crosses a concrete-lined irrigation canal operated by Roza Irrigation District and several intermittent or ephemeral drainages with no riparian habitat present. Open water is also present within the Yakima River (0.8 miles to the west) and associated waters of the Selah Gravel Pit Wetlands (0.5 miles to the northwest), for a total of 460 acres of open water (9.5 percent). Riparian habitat (12 acres) is present along the Yakima River, west of the route segment.

Specific important bird resources located within one mile of the route segment include the Selah Gravel Pit Wetlands and areas along the Yakima River. Bald eagles (*Haliaeetus leucocephalus*) are known to nest near the Selah Gravel Pit Wetlands, located along the Yakima River and west of Route Segment 1a/NNR-1. The Selah Gravel Pit Wetlands are also used by waterfowl.

#### 1.1.1.2 Route Segment NNR-2

Route Segment NNR-2 is 5.1 miles long and parallels an existing JBLM YTC fire break road, existing roads, and an existing transmission line (BPA Ellensburg-Moxee No. 1 115 kV). The majority of Route Segment NNR-2 is comprised of annual grasses (3,559 acres, 48 percent), sagebrush/perennial grassland (1,781 acres, 24 percent), and agriculture (1,639, 22 percent). Approximately 20 acres of rabbitbrush (*Ericameria nauseosus* and *Chrysothamnus viridens*)/annual grassland is present along the JBLM YTC firebreak. The shrublands provide suitable habitat for shrub-steppe and grassland species. Route Segment NNR-2 crosses an irrigation canal operated by Roza Irrigation District on JBLM YTC and several unnamed intermittent or ephemeral drainages. This route segment also crosses one wetland which is bisected by JBLM YTC's 7<sup>th</sup> Avenue road. This wetland is highly disturbed but does contain some forested riparian habitat.

Specific important bird resources located within one mile of the route segment include the Selah Creek Cliffs and the Yakima River. The Selah Creek cliffs contain a high concentration of raptors, including golden eagle (*Aquila chrysaetos*) and prairie falcon (*Falco mexicanus*). A burrowing owl (*Athene cunicularia*) nest, active in the 1990s, occurs approximately 0.7 mile east of Route Segment NNR-2 and near the JBLM YTC cantonment area.

#### 1.1.1.3 Route Segment NNR-3

Route Segment NNR-3 is 9.3 miles long and more or less parallels Interstate (I)-82. The interstate is within two miles of the route segment for its entire length and separates the segment from the core areas of the YTC Sage-Grouse population. Route Segment NNR-3 crosses Washington Department of Transportation (WSDOT), BLM and private land—some of which is targeted for mitigation as part of U.S. Bureau of Reclamation's (Reclamation's) Yakima Basin Integrated Water Resource Management Plan and proposed Wymer Dam and Reservoir project. The Selah Cliffs Natural Area Preserve, which provides opportunities for wildflower and wildlife watching, and scenic viewing, is located west of Route Segment NNR-3 along Selah Creek. Vegetation for Route Segment NNR-3 consists primarily of annual grasses (6,104 acres, 44 percent) and sagebrush with a perennial grass understory (6,985 acres, 50 percent). Sagebrush shrublands provide suitable habitat for shrub-steppe and grassland species.

Basalt cliffs are present where Route Segment NNR-3 crosses both Selah and Lmuma creeks. These basalt cliffs contain a high concentration of raptors, including golden eagle, ferruginous hawk (*Buteo regalis*) and prairie falcon. This route segment parallels an excavated pond associated with the Selah Creek Rest Area but contains no wetland vegetation. Route Segment NNR-3 also crosses several un-named intermittent or ephemeral drainages and three streams categorized as perennial: Burbank Creek, Lmuma Creek, and Selah Creek. Riparian habitat is present along Burbank and Lmuma Creeks. The majority of Selah Creek contains perennial flow for much of the season (JBLM YTC 2002); however, the reach of Selah Creek within the Project study area appears to be intermittent and contains little to no riparian habitat.

#### **1.1.1.4 Route Segment NNR-4o**

Route Segment NNR-4o is 4.5 miles long, crosses I-82, and passes through a JBLM YTC bivouac area with a very high density of dirt and gravel roads. This route segment also parallels the existing Pacific Power Pomona-Wanapum 230 kV transmission. The majority (69 percent) of this route segment is comprised of sagebrush/perennial grassland (5,342 acres). These sagebrush shrublands provide suitable habitat for shrub-steppe and grassland species. Approximately 17 percent of Route Segment NNR-4o consists of annual grassland (1,317 acres). Route Segment NNR-4o crosses several un-named intermittent or ephemeral drainages with little to no riparian habitat present.

Specific important bird resources located within one mile of the route segment include basalt cliffs along Lmuma Creek. Golden eagle, ferruginous hawk, and prairie falcon are known to utilize the basalt cliffs in this area. A burrowing owl nest has been documented within one mile of this route segment.

#### **1.1.1.5 Route Segment NNR-5**

Route Segment NNR-5 is located at the southern end of Badger Pocket, primarily within the JBLM YTC boundary. This short route segment (1.8 miles) deviates slightly from the existing Pacific Power 230 kV transmission line to avoid private agricultural lands in the Badger Pocket area, but remains within 0.5 mile of the existing Pacific Power's Pomona-Wanapum 230 kV transmission line for the entire route segment. Vegetation along this route segment is predominately sagebrush/perennial grassland (2,850 acres, 67 percent), agriculture (833 acres, 20 percent), and forbs (475 acres, 11 percent).

The shrublands provide suitable habitat for shrub-steppe and grassland species. Route Segment NNR-5 crosses several intermittent or ephemeral drainages, including Badger Creek, with no riparian habitat present. A burrowing owl nest has been documented within one mile of this route segment.

#### **1.1.1.6 Route Segment NNR-6o**

Route Segment NNR-6o is 6.4 miles long and closely parallels Pacific Power's existing 230 kV transmission line, staying within approximately 200 feet for the entire route segment. This route segment consists primarily of sagebrush/perennial grassland cover type (7,966 acres, 78 percent).

Shrublands along the route segment provide suitable habitat for shrub-steppe and grassland species. Route Segment NNR-6o crosses several un-named intermittent or ephemeral drainages. A section of this route segment parallels Foster Creek and is within 0.4 mile at its closest location. Route Segment NNR-6o also parallels Johnson Creek. At its nearest point, Johnson Creek lies approximately one mile north of Route Segment NNR-6o. Both Foster and Johnson creeks are perennial streams and contain forested riparian habitat (20.4 acres).

A burrowing owl nest has been documented within one mile of this route segment. Loggerhead shrikes (*Lanius ludovicianus*) are known to utilize McDonald Springs, located south and outside of the Project study area.

### **1.1.1.7 Route Segment NNR-7**

Route Segment NNR-7 is 8.2 miles long and closely parallels Pacific Power's existing 230 kV transmission line, staying within approximately 200 feet for the entire route segment. Three additional transmission lines are located within one mile of this proposed route segment, including one 230 kV transmission line and two 500 kV transmission lines. The majority (95 percent) of the route segment consists of the sagebrush/perennial grassland cover type (11,931 acres).

Shrublands along the route segment provide suitable habitat for shrub-steppe and grassland species. Route Segment NNR-7 crosses several un-named intermittent or ephemeral drainages. Route Segment NNR-7 also parallels Johnson Creek. At its nearest point, Johnson Creek lies approximately 0.5 mile south of Route Segment NNR-7. Johnson Creek is perennial and contains forested riparian habitat (4.7 acres).

Within one mile of Route Segment NNR-7, common loon (*Gavia immer*) and other waterfowl are known to utilize pools present along the Columbia River. Raptors, including prairie falcon are known to utilize the cliffs above the Columbia River.

### **1.1.1.8 Route Segment NNR-8**

Route Segment NNR-8 starts on BLM-administered land and crosses the Columbia River onto Reclamation land, Grant County Public Utility District land, and crosses over State Route 243 and a WSDOT ROW. This short route segment (2.7 miles) crosses the Columbia River and is comprised primarily of sagebrush/perennial grassland (4,451 acres, 84 percent). Shrublands along the route segment provide suitable habitat for shrub-steppe and grassland species. Some riparian habitat is present along the margins of the Columbia River.

Common loon, waterfowl, and other aquatic birds are known to occur in the pools present along the Columbia River. Canada geese (*Branta canadensis*) nest on islands within Priest Rapids Reservoir and American white pelicans (*Pelecanus erythrorhynchos*) have been documented on the islands, as well, though not nesting. Wanapum pool is a waterfowl concentration area.

## **1.1.2 Construction, Operation, and Maintenance**

The pre-construction engineering survey would involve verifying and staking the centerline of the approved final transmission line route segments; ROW corridor boundaries; access roads; spur roads to structure sites; structure locations; and temporary work areas. Required cultural and biological resource surveys may begin once certain survey information is available and land rights are obtained. Depending on the final route (or route segments) approved for the proposed Project, the centerline may be adjusted to accommodate detailed engineering requirements.

Prior to construction, all biologically sensitive areas would be marked on drawings and in the field to ensure protection and avoidance of these areas. A preconstruction walk through with the construction contractor would be conducted to identify avoidance areas in the field. After construction is complete in an area or when it has been determined there is no longer a threat to important biological resources, the stakes would promptly be removed to protect the sites' location and significance from gaining unwanted attention and/or damage.

Transmission line ROW corridor access would be provided through a combination of existing and new access roads, overland access, and/or improvement to existing roads. Erosion control structures such as waterbars, diversion channels, terraces, and slope roughening may be constructed if determined to be necessary to divert water and reduce soil erosion along the ROW corridor or other areas disturbed by construction where slopes exceed 30 percent. Selection of appropriate erosion control materials would be based on soil properties, steepness of slope and anticipated surface flow or runoff, and would be detailed in the Project-specific Stormwater Pollution Prevention Plan. Existing vegetation would be preserved to

the maximum extent practicable during all phases of construction. Vegetation clearing would be kept to a minimum and occur only where construction plans call for it.

Pole excavations would require access by the necessary equipment, including power auger or drill, crane, backhoe, material trucks, and (where foundations are necessary) concrete trucks. Poles and associated hardware would be delivered to each pole work area by truck. After assembly, the structure would be hoisted into place by a crane or line truck. Conductors and shield wires would be placed on the transmission line structures by a process called stringing. Pulling the lines is accomplished by attaching them to a specialized wire stringing vehicle or helicopter. Following the initial stringing operation, pulling and tensioning the line would be required to achieve the correct sagging or tension of the transmission lines between support structures. Pulling and tensioning sites for construction of the proposed Project would be required approximately every two miles along the ROW corridor. Equipment at sites required for pulling and tensioning activities would include tractors and trailers with spooled reels that hold the conductors and trucks with the tensioning equipment. To the extent practicable, pulling and tensioning sites would be located within the ROW corridor. The maximum total personnel for all construction tasks is 45 people, actual personnel at the site at any one time would be less.

Ground access is required to each transmission structure site for construction and for operation and maintenance activities. Helicopters may be used to support these activities. Proposed Project construction activities potentially facilitated by helicopters may include delivery of construction laborers, equipment, and materials to structure sites; structure placement; hardware installation; and wire stringing operations.

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and construction debris would be removed from the sites and disposed of in an approved manner. Oil, fuels, and chemicals would not be dumped on site. Oils, fuels, and chemicals would be properly characterized per federal and state regulations and then transported to an approved site for disposal. No open burning of construction trash would occur. Construction practices would comply with all applicable federal, state, and local laws and regulations concerning the use, storage, transportation, and disposal of hazardous materials.

All forms of refuse and waste produced along the ROW corridor during construction would be collected and disposed of in a designated landfill or appropriate waste disposal site. Refuse and waste includes any discarded material, garbage, packing material, containers, waste petroleum products, broken equipment, used parts, or excess construction materials.

The construction contractor would restore all lands disturbed during construction that are not required for permanent access. Every effort would be made to restore the disturbed areas to original contours and conditions and to restore natural drainage within the ROW corridor. Sites would also be prepared for revegetation, including distribution of stockpiled soils and, where necessary, ripping or surface scarification. All disturbed areas would be re-seeded using a seed mixture as specified by the appropriate land management agency and best management practices.

All applicable fire laws and regulations would be observed during the construction period. All construction personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires. A Fire Protection and Control Plan would be developed.

Operation and maintenance activities would include semi-annual aerial inspections of the new transmission line by helicopter, and annual detailed ground inspections using 4-wheel-drive trucks or off-highway vehicles (OHVs). Other activities would include climbing inspections, structure and wire maintenance, insulator washing in selected areas as needed, and access road repairs. Necessary work

areas around all structures would be kept clear of vegetation and the height of vegetation within the ROW corridor would be limited. When necessary, maintenance and repair of the new transmission line may require the use of additional equipment including four-wheel drive trucks, material (flatbed) trucks, bucket trucks (low reach), boom trucks (high reach), or man lifts. It is expected that this equipment would be required infrequently. ROW corridor repairs include grading or repair of existing maintenance access roads and work areas and spot repair of sites subject to flooding or scouring. Required equipment may include a grader, backhoe, four-wheel drive pickup truck, and a cat-loader or bulldozer.

### **1.1.3 Vegetation Management**

Work areas adjacent to new electrical transmission structures and along the ROW corridor must be maintained for vehicle and equipment access necessary for operations, maintenance, and repair including for live-line maintenance activities. Shrubs and other obstructions would be regularly removed near structures to facilitate inspection and maintenance of equipment and to ensure system reliability. At a minimum, trees and brush would be cleared within a 25-foot radius of the base or foundation of all electrical transmission structures and to accommodate equipment pads to conduct live-line maintenance operations.

Vegetation within the linear area along the ROW corridor under the conductors and extending 10 feet outside the outermost conductor would be maintained to consist of grasses and low growing shrubs or short trees less than five feet tall at maturity. Every effort would be made to ensure that mature sagebrush is maintained intact as it typically does not exceed five feet in height. An area extending from 10 feet outside the outermost conductor to the edge of the ROW corridor would be maintained to consist of vegetation as similar as practicable to the pre-existing vegetation and surrounding matrix, potentially including tall shrubs or short trees up to 25 feet high at maturity.

When conductor ground clearance is greater than 50 feet, for example a canyon or ravine crossing with high ground clearance at mid-span, trees and shrubs would be left in place as long as the conductor clearance to the vegetation tops is 50 feet or more.

In construction areas where ground disturbance is significant or where re-contouring is required, surface reclamation will occur as required by the landowner or land management agency. The method of reclamation will normally consist of, but is not limited to, returning disturbed areas back to their natural contour, reseeded, installing cross drains for erosion control, placing water bars in the road, and filling ditches.

All areas on the BLM, JBLM YTC, and Reclamation lands that are disturbed as a part of the construction and/or maintenance of the proposed transmission line will be drill seeded where practicable with a seed mixture appropriate for those areas, unless an alternative method (e.g., broadcast seeding) is required due to slope or terrain. The BLM, JBLM YTC, and Reclamation will prescribe seed mixtures to fit each range site on their respective ownerships. Drill seeding will be done in late October or November to maximize the chance of success. The agencies may recommend broadcast seeding as an alternative method in some cases. In these cases, seed will be applied at 1.5 to 2.0 times the drill seeding rate when broadcasted and the seed will be promptly covered by methods such as harrowing, raking, or rolling with a culti-packer.

A Reclamation, Revegetation, and Monitoring Plan identifying the reclamation stipulations will be developed and incorporated in the final POD. Revegetation monitoring for a designated time period will occur as required by the appropriate land manager and/or landowner. The Reclamation, Revegetation, and Monitoring Plan will be approved by the BLM, JBLM YTC, and Reclamation prior to issuance of their respective authorizations.

Noxious weed control will be described in detail in the POD's Noxious Weed and Invasive Plant Management Plan. This plan will be consistent with the Spokane District Resource Management Plan (RMP) and 1992 RMP amendment (BLM 1985, 1992) or the updated RMP, if it is final prior to the POD; JBLM YTC Noxious Weed Control Plan (JBLM YTC 2002); Executive Order 13112 (Invasive Species); the Federal Noxious Weed Act; and Washington State Noxious Weed Laws. The plan will describe the pre-construction inventory; prevention measures and treatment methods before and during construction; and monitoring and treatment measures that would be implemented following construction. If revegetation cannot be done immediately following construction, the appropriate interim noxious weed control measures discussed in the Noxious Weed and Invasive Plant Management Plan will be implemented until revegetation can occur.

#### **1.1.4 Disturbance Footprint**

The ROW width necessary/required for the H-frame structure type would range between 125 to 150 feet. The ROW width for the single pole structure would range between 75 to 100 feet. Dead-end or angle structures would require additional ROW width to accommodate guy wires and anchors.

In areas that overland travel is not possible and where no roads are present, permanent new roads would be graded to a total width of between 14 and 24 feet (including both the travel surface and shoulders) depending on location and terrain.

Work areas would require a temporary disturbance area of 150 feet by 125 feet (18,750 square feet [sq. ft.]; 0.43 acre) for H-frame structures, 150 feet by 80 feet (12,000 sq. ft.; 0.28 acre) for single pole structures, 200 feet by 250 feet (50,000 sq. ft.; 1.14 acre) for steel lattice structures.

Pulling and tension sites for stringing the conductor would require a temporary disturbance area of 125 feet by 400 feet (50,000 sq. ft.; 1.15 acres). Sites for pulling and tensioning would be located approximately every 11,000 feet (about 2.1 miles) or less.

Turn-around areas may be required in certain areas where construction travel would be restricted by rock outcrops, washes, ravines, or sensitive areas. Turn-around areas would typically require a temporary disturbance area of 60 feet by 60 feet (3,600 sq. ft.; 0.08 acre).

Several material staging areas, roughly five acres each, would be required for material and equipment storage and for staging construction activities. For this FEIS, it is assumed that sites for material staging areas would be located on existing disturbed areas in areas approved by the landowner or agency. However, material staging areas would be determined during detail design and may include undisturbed areas, but preference would be given to currently disturbed sites.

The anticipated overall (short- and long-term) vegetation disturbance attributed to the FEIS Agency Preferred Alternative would be 204 acres. For more details regarding the calculation of disturbance and the disturbance footprint, see Chapter 4 of the FEIS.

## **2.0 REGULATORY FRAMEWORK**

This section provides a brief overview of federal and state regulations applicable to migratory birds in the FEIS Agency Preferred Alternative Project study area that have been considered in the development of this Migratory Bird Conservation Plan.

## **2.1 Federal Endangered Species Act**

The Federal Endangered Species Act (ESA) is administered by the U.S. Fish and Wildlife Service (USFWS). The purpose of the ESA is to “provide a means whereby ecosystems upon which endangered and threatened species depend may be conserved, and to provide a program for the conservation of these species.” Section 9 of the ESA prohibits purposeful or incidental “take” of listed species, including killing or harming a listed species or its habitat. Any activity that is expected to result in incidental take of a threatened or endangered species requires a USFWS permit issued under sections 7 or 10 of the ESA. Federal agencies must consult with USFWS under Section 7 of the ESA on actions they authorize, fund, or carry out to insure the actions are not likely to jeopardize the continued existence of the listed species or result in the destruction or adverse modification of designated critical habitat. Two listed species have potential to occur in the Project study area, according to the USFWS Information for Planning and Conservation website: yellow-billed cuckoo (*Coccyzus americanus*) and marbled murrelet (*Brachyramphus marmoratus*). Both species are very unlikely to occur in the Project study area, as explained below in section 3.0 - Special Status Migratory Birds.

Yellow-billed cuckoo and marbled murrelet will be addressed in a biological assessment for this proposed Project, if it is determined to be necessary through consultation with USFWS.

## **2.2 Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act of 1940 provides for the protection of bald and golden eagles by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, and export or import of any bald or golden eagle, alive or dead, including any part, nest, or egg unless allowed by permit (16 United States Code §668 (a); 50 Code of Federal Regulations Part 22.3; USFWS 2011). Both species are present in the Project study area.

## **2.3 Migratory Bird Treaty Act**

The MBTA was enacted in 1918 in order to put an end to the commercial trade of migratory birds and their feathers. The Act implements treaties and conventions between the U.S., Canada, Mexico, Japan, and the former Soviet Union for the protection of migratory birds. This Act decrees that all “migratory” birds and their parts (including eggs, nests, and feathers) are fully protected. Under this Act, it is unlawful to pursue, hunt, take, capture, kill, possess, offer to or sell, barter, purchase, deliver, transport, or receive any “migratory” birds (including parts, nests, eggs or other product, manufactured or not; USFWS 2011). In practice, virtually all native bird species in the U.S. are protected under MBTA, with the exception of upland game birds (order Galliformes: e.g., grouse and quail); most bird species with non-migratory life-histories are protected under the Act as well (USFWS 2013). A complete list of protected species is available at <http://www.fws.gov/migratorybirds/regulationspolicies/mbta/mbtandx.html>. While the USFWS is the lead federal agency charged with protecting “migratory” birds within the U.S., under Executive Order 13186 all other federal agencies are charged with conserving and protecting “migratory” birds and the habitats on which they depend.

## **2.4 Executive Order 13186**

Executive Order 13186 (January 10, 2001; Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies to take certain actions to further implement the MBTA. These actions include 1) avoiding and minimizing adverse impacts on migratory bird resources, 2) restoring and enhancing the habitat of migratory birds, 3) ensuring that environmental analyses evaluate the effects of federally approved actions on migratory birds, with an emphasis on species of concern, 4) minimizing the intentional take of species of concern, 5) identifying where incidental take attributed to federally

approved actions is having or likely to have a measurable, negative impact on migratory bird populations, with an emphasis on species of concern and priority habitats, 6) conducting inventory and monitoring of bird populations and habitat to the extent feasible in order to facilitate decisions about the need and effectiveness of conservation efforts, and 7) developing and implementing a Memorandum of Understanding (MOU) with the USFWS promoting the conservation of migratory bird populations.

## **2.5 USFWS and BLM 2010 Memorandum of Understanding**

As directed by Executive Order 13186, BLM and USFWS established a MOU in 2010 that describes a collaborative approach to conserving bird populations (BLM and USFWS 2010). The MOU directs BLM to evaluate the effects of its actions on migratory birds through the National Environmental Policy Act process, and identify where take may have a measurable, negative effect on migratory bird populations, focusing on species of concern, priority habitats, and key risk factors. Where take is expected, BLM shall coordinate with USFWS and develop conservation measures to minimize, reduce, or avoid incidental take, and monitor the effectiveness of these conservation measures.

## **2.6 USFWS and Department of Defense 2006 MOU**

As directed by Executive Order 13186, U.S. Department of Defense (DOD) and USFWS established a MOU in 2006 that describes a collaborative approach to conserving bird populations (DOD and USFWS 2006). The MOU outlines a collaborative approach to promote the conservation of migratory bird populations that may be affected by DOD natural resource management activities, installation support functions, industrial activities, construction of facilities, and hazardous waste cleanup.

## **2.7 Washington State Species of Concern**

Under Washington State Statute, Washington Administrative Code (WAC) 232-12-297, state listing determinations are made according to consistent criteria described in the statute. State status of wildlife species is determined using considerations such as abundance, occurrence patterns, vulnerability, threats, existing protection, and taxonomic distinctness. State status definitions as defined in the State statute WAC 232-12-297 include, but are not limited to:

State Endangered Species is defined in WAC 232-12-297, Section 2.4, to include "any wildlife species native to the state of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state."

State Threatened Species is defined in WAC 232-12-297, Section 2.5, to include "any wildlife species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats."

State Sensitive Species is defined in WAC 232-12-297, Section 2.6, to include "any wildlife species native to the state of Washington that is vulnerable or declining and is likely to become endangered or threatened throughout a significant portion of its range within the state without cooperative management or removal of threats."

State Candidate Species is defined in Washington Department of Fish and Wildlife (WDFW) Policy M-6001 to include fish and wildlife species that WDFW will review for possible listing as State Endangered, Threatened, or Sensitive. A species will be considered for designation as a State Candidate if sufficient evidence suggests that its status may meet the listing criteria defined for State Endangered, Threatened, or Sensitive.

Species are recommended by the WDFW to the Fish and Wildlife Commission, which makes the listing determinations. WDFW maintains a list of state species of concern, as well as the location data for species of concern occurrences (WDFW 2015).

### **3.0 SPECIAL STATUS MIGRATORY BIRDS**

For the purposes of this Migratory Bird Conservation Plan, special status migratory bird species include the following: those species listed under the ESA as endangered, threatened, proposed, or candidate species; BLM sensitive species; USFWS species of concern; and Washington State listed threatened, endangered, candidate, or sensitive species (WDFW 2015, BLM 2015, USFWS 2015). As shown in Table 2 and described in the sections below, 30 avian special status species protected under the MBTA have potential to occur in the FEIS Agency Preferred Alternative Project study area. In addition to the 30 species discussed here, four special status upland game bird species are present or likely to occur within the Project study area: chukar (*Alectoris chukar*), Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*), ring-necked pheasant (*Phasianus colchicus*), and Sage-Grouse. None of the special status upland game-bird species associated with the proposed Project are federally protected, though all are Washington State protected game species. The non-migratory upland game bird species are not the focus of this Migratory Bird Conservation Plan. Table 2 shows each special status migratory bird species with potential to occur within one mile of the FEIS Agency Preferred Alternative, its status, likelihood of occurrence within the Project study area (one mile buffer of the FEIS Agency Preferred Alternative), route segments with potential for species occurrence, and vegetation cover types within the Project study area that may provide habitat for each species. Likelihood of occurrence is based on species range and habitat presence, as well as specific occurrence records near the Project study area. Digital element occurrence records for Priority Habitats and Species (PHSs) documented within one mile of the FEIS Agency Preferred Alternative, were obtained from WDFW in June 2014 (WDFW 2014).

#### **3.1 Raptors**

Breeding bald eagles require large trees near open water with a relatively low level of human activity. In general, bald eagles nest near coastlines, rivers, large lakes or streams that support an adequate food supply (USFWS 2007). In the winter, the Columbia River's reservoirs and major tributaries become important bald eagle habitat. Bald eagles have been documented wintering and foraging along the Columbia River including along the Priest Rapids and Wanapum Reservoirs and the Hanford Reach (JBLM YTC 2002; Federal Energy Regulatory Commission 2006). Approximately 10 to 15 bald eagles winter along the Priest Rapids Reservoir. Two bald eagle nests have been documented within the Project study area along the Columbia River and one near the Yakima River.

Burrowing owls are found in open, shrub-steppe or grassland habitats that have burrowing mammals, especially ground squirrels present (Paige and Ritter 1999). Nesting burrowing owls have been documented in the Project study area (Duke Engineering and Services [DES] 2000).

Flammulated owls (*Otus flammeolus*) breed in montane open coniferous forest. Limited information exists on migration habitat but during spring migration they likely utilize lower elevation riparian areas (BirdWeb 2015, Linkhart and McCallum 2013). Marginal migration habitat occurs in wooded riparian areas in the Project study area.

Short-eared owls (*Asio flammeus*) are widespread but uncommon in eastern Washington. They inhabit a variety of open terrain, including shrub-steppe, grasslands, agricultural areas, marshes, wet meadows, and shorelines. Potential habitat occurs throughout the Project study area, and they are likely to occur in small numbers (BirdWeb 2015).

TABLE 2 SPECIES OF CONCERN AND STATE LISTED SPECIES THAT OCCUR OR POTENTIALLY OCCUR WITHIN THE PROJECT STUDY AREA OF THE FEIS AGENCY PREFERRED ALTERNATIVE

SPECIES	STATUS <sup>1</sup>	OCCURRENCE <sup>2</sup>	NNR ALTERNATIVE ROUTE SEGMENTS <sup>3</sup>	SHRUB STEPPE COVER TYPES <sup>4</sup>				GRASSLAND AND FORB COVER TYPES			CLIFF COVER TYPE	RIPARIAN, WETLAND, AND AQUATIC COVER TYPES				DISTURBED COVER TYPES			
				Bitterbrush/Perennial Grassland	Rabbitbrush/Annual Grassland	Sagebrush/Annual Grassland	Sagebrush/Perennial Grassland	Annual Grassland	Forb	Perennial Grassland	Rock/Basalt Cliffs	Intermittent Stream/Dry Gully	Open Water/Canal	Riparian/Wetland	Tree	Agriculture	Developed/Disturbed/Firebreak	Noxious Weeds	
<b>Raptors</b>																			
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	BCC, SOC, BLM-S, WS	Present	1a/NNR-1, NNR-2, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	S	S	S	M	-	-	
Burrowing owl ( <i>Athene cunicularia</i> )	SOC, BLM-S, WC	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	S	S	S	S	S	S	S	-	M	-	-	-	S	S	-	
Ferruginous hawk ( <i>Buteo regalis</i> )	BCC, SOC, BLM-S, WT	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	S	S	S	S	S	S	S	-	S	-	S	S	S	-	-	
Flammulated owl ( <i>Otus flammeolus</i> )	BCC	Possible	1a/NNR-1, NR-2, NNR-3, NNR-4, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	-	M	M	-	-	-	
Golden eagle ( <i>Aquila chrysaetos</i> )	WC	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	S	S	S	S	S	S	S	S	S	-	S	S	S	-	-	
Gyrfalcon ( <i>Falco rusticolus</i> )	BLM-S	Possible	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	S	S	S	S	S	S	S	-	-	-	-	-	S	-	-	
Peregrine falcon ( <i>Falco peregrinus</i> )	BCC, SOC, BLM-S, WS	Present	NNR-7, NNR-8	-	-	-	-	-	-	-	S	-	S	S	-	-	-	-	
Short-eared Owl ( <i>Asio flammeus</i> )	BCC, BLM-S	Possible	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	S	M	M	S	M	M	S	-	-	-	-	-	-	-	-	
Swainson's hawk ( <i>Buteo swainsoni</i> )	BCC	Likely	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	S	S	S	S	S	S	S	-	S	-	S	S	S	S	-	
<b>Shorebirds, Wading Birds, And Other Aquatic Birds</b>																			
American white pelican ( <i>Pelecanus erythrorhynchos</i> )	BLM-S, WE	Present	1a/NNR-1, NNR-3, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	S	S	-	-	-	-	
Black-crowned night-heron ( <i>Nycticorax nycticorax</i> )	WR	Likely	NR-7, NNR-8	-	-	-	-	-	-	-	-	-	S	S	-	-	-	-	
Clark's grebe ( <i>Aechmophorus clarkii</i> )	BLM-S, WC	Likely	NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	S	-	-	-	-	-	
Common loon ( <i>Gavia immer</i> )	BLM-S	Present	NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	S	-	-	-	-	-	
Eared grebe ( <i>Podiceps nigricollis</i> )	BCC, BLM-S	Likely	1a/NNR-1, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	S	-	-	-	-	-	
Great blue heron ( <i>Ardea herodias</i> )	WR	Likely	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	S	S	-	M	-	-	
Long-billed curlew ( <i>Numenius americanus</i> )	BCC, BLM-S	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	S	S	S	S	S	S	S	-	M	-	-	-	S	-	-	

SPECIES	STATUS <sup>1</sup>	OCCURRENCE <sup>2</sup>	NNR ALTERNATIVE ROUTE SEGMENTS <sup>3</sup>	SHRUB STEPPE COVER TYPES <sup>4</sup>				GRASSLAND AND FORB COVER TYPES			CLIFF COVER TYPE	RIPARIAN, WETLAND, AND AQUATIC COVER TYPES				DISTURBED COVER TYPES		
				Bitterbrush/Perennial Grassland	Rabbitbrush/Annual Grassland	Sagebrush/Annual Grassland	Sagebrush/Perennial Grassland	Annual Grassland	Forb	Perennial Grassland	Rock/Basalt Cliffs	Intermittent Stream/Dry Gully	Open Water/Canal	Riparian/Wetland	Tree	Agriculture	Developed/Disturbed/Firebreak	Noxious Weeds
Upland Sandpiper ( <i>Bartramia longicauda</i> )	WE,	Very Unlikely		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sandhill crane ( <i>Grus canadensis</i> )	BLM-S, WE	Possible	1a/NNR-1, NNR-2, NNR-4, NNR-5, NNR-6	-	-	-	-	-	-	-	-	-	-	S	-	S	-	-
Tundra swan ( <i>Cygnus columbianus</i> )	WR	Likely	1a/NNR-1, NNR-2, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	S	S	-	S	-	-
Western grebe ( <i>Aechmophorus occidentalis</i> )	WC	Likely	NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	S	-	-	-	-	-
<b>Songbirds and Other Upland Bird Species</b>																		
Black swift ( <i>Cypseloides niger</i> )	SOC	Possible	1a/NNR-1, NR-2, NNR-3, NNR-4	-	-	-	-	-	-	-	-	-	-	-	M	M	-	-
Black-throated sparrow ( <i>Amphispiza bilineata</i> )	BLM-S	Likely	NNR-7, NNR-8	S	S	S	S	-	-	-	-	-	-	-	-	-	-	-
Bobolink ( <i>Dolichonyx oryzivorus</i> )	BLM-S	Possible	1a/NNR-1, NNR-2, NNR-4, NNR-5, NNR-6	-	-	-	-	-	-	-	-	-	-	-	-	S	-	-
Brewer's sparrow ( <i>Spizella breweri</i> )	BCC	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	M	M	S	S	-	-	-	-	M	-	-	-	-	-	-
Calliope hummingbird ( <i>Stellula calliope</i> )	BCC	Likely	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	M	-	-	M	-	M	-	-	M	-	S	-	-	S	-
Cassin's finch ( <i>Carpodacus cassinii</i> )	BCC	Possible	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	M	M	M	M	-	-	-	-	M	-	M	M	-	M	-
Cedar waxwing ( <i>Bombycilla cedrorum</i> )	BLM-S	Likely	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	-	S	S	M	S	-
Fox sparrow ( <i>Passerella iliaca</i> )	BCC	Possible	1a/NNR-1, NR-2, NNR-3, NNR-4, NNR-7, NNR-8	-	-	-	-	-	-	-	-	M	-	S	-	-	-	-
Gray flycatcher ( <i>Empidonax wrightii</i> )	BLM-S	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	M	-	M	M	-	-	-	-	M	-	-	-	-	-	-
Lewis' woodpecker ( <i>Melanerpes lewis</i> )	WC	Possible	1a/NNR-1, NNR-2, NNR-3, NNR-6, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	-	M	M	-	-	-
Lesser goldfinch ( <i>Carduelis psaltria</i> )	BLM-S	Very Unlikely		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	BCC, SOC, WC	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8,	M	-	M	M	-	-	-	-	S	-	S	S	S	-	-
Oregon vesper sparrow ( <i>Poocetes gramineus affinis</i> )	BLM-S	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	M	M	M	M	-	-	-	-	S	-	S	S	S	S	-

SPECIES	STATUS <sup>1</sup>	OCCURRENCE <sup>2</sup>	NNR ALTERNATIVE ROUTE SEGMENTS <sup>3</sup>	SHRUB STEPPE COVER TYPES <sup>4</sup>				GRASSLAND AND FORB COVER TYPES			CLIFF COVER TYPE	RIPARIAN, WETLAND, AND AQUATIC COVER TYPES				DISTURBED COVER TYPES		
				Bitterbrush/Perennial Grassland	Rabbitbrush/Annual Grassland	Sagebrush/Annual Grassland	Sagebrush/Perennial Grassland	Annual Grassland	Forb	Perennial Grassland	Rock/Basalt Cliffs	Intermittent Stream/Dry Gully	Open Water/Canal	Riparian/Wetland	Tree	Agriculture	Developed/Disturbed/Firebreak	Noxious Weeds
Rufous hummingbird ( <i>Selasphorus rufus</i> )	BCC	Likely	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	M	-	-	M	-	M	-	-	M	-	S	-	-	S	-
Sage sparrow ( <i>Amphispiza belli</i> )	WC	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	M	-	M	S	-	-	-	-	M	-	-	-	-	-	-
Sage thrasher ( <i>Oreoscoptes montanus</i> )	BCC, WC	Present	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	S	M	M	S	-	-	-	-	S	-	-	-	-	-	-
Vaux's swift ( <i>Chaetura vauxi</i> )	WC	Likely	1a/NNR-1, NNR-2, NNR-3, NNR-4, NNR-5, NNR-6, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	M	M	M	-	-	-
Willow flycatcher ( <i>Empidonax traillii</i> )	BCC	Possible	1a/NNR-1, NR-2, NNR-3, NNR-4, NNR-7, NNR-8	-	-	-	-	-	-	-	-	-	-	S	-	-	-	-
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	C, WC	Very Unlikely	1a/NNR-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sources: WDFW 2015, BLM 2015, USFWS 2015

<sup>1</sup> Status: E – Federal Endangered; T – Federal Threatened; C – Federal Candidate; BCC – USFWS Birds of Conservation Concern; SOC – Federal Species of Concern; BLM-S – BLM Washington Sensitive; BLM-C – BLM Washington Candidate; WE – Washington State Endangered; WT – Washington State Threatened; WC – Washington State Candidate, WS – Washington State Sensitive; and WR – Washington State Rare; CH – designated critical habitat.

<sup>2</sup> Occurrence: Present – species documented within the Project study area; Likely - species likely to occur based on presence of suitable habitat and local species abundance and nearby occurrences; Possible – species may occur based on presence of marginal or suitable habitat and/or occurrences within 25 to 50 miles, depending on species mobility; Very Unlikely – species is very unlikely to occur due to lack of habitat and/or Project study area is well outside of species known range (at least 25 to 50 miles, depending on species mobility).

<sup>3</sup> Route Segments: Route segments of the FEIS Agency Preferred Alternative with potential for species occurrence are listed.

<sup>4</sup> Cover Types: S – cover type provides suitable habitat for this species; M – cover type provides marginal habitat for this species.

<sup>5</sup> Species protected under Bald and Golden Eagle Protection Act

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The ferruginous hawk is found in flat or rolling sagebrush-steppe and other arid shrublands (Paige and Ritter 1999). The Project study area is within the core breeding habitat zone for ferruginous hawks (Larsen et al. 2004). Four nests have been documented within the Project study area, all from 15 to 18 years ago.

Swainson's hawks (*Buteo swainsoni*) hunt in sagebrush steppe, grassland, and agricultural areas; and nest in trees or large shrubs that are isolated or in small groves, often along streams; or in isolated introduced trees surrounded by open habitat. They are able to nest in much smaller trees and shrubs than other raptors such as red-tailed hawks, but do not nest on cliffs, or on the ground, and only rarely nest on anthropogenic structures such as power lines (BirdWeb 2015, Bechard et al. 2010). Suitable habitat is present throughout the Project study area, and the species is likely present, though doesn't appear to be common, based on lack of observations by POWER Engineers, Inc (POWER) biologists during field surveys.

In Washington, golden eagles nest throughout much of the state and observations of golden eagles along the upper Columbia River suggest that they may remain within nesting territories throughout the winter (Larsen et al. 2004). Golden eagles are commonly associated with open areas, such as shrub-steppe, grasslands, open ponderosa pine (*Pinus ponderosa*) forests and large clearcuts. They typically nest on cliff ledges and large trees (DeLong 2004). Nesting golden eagles have been documented in the Project study area.

In Washington, peregrine falcons (*Falco peregrinus*) typically nest in the San Juan Islands and the Puget Sound; however, nests have been found in the dry arid climate of eastern Washington where peregrines nest on cliffs at prominent points overlooking major lakes or rivers (Hayes and Buchanan 2001). In the Project study area, several peregrine falcon nests have been documented on cliffs along the west side of the Columbia River.

Gyrfalcons (*Falco rusticolus*) breed in arctic tundra. Within Washington, they winter in open habitats in very low numbers. While gyrfalcons are rare within Washington, they winter in small numbers every year; Audubon Society Christmas Bird Counts documented them in Washington every year from 1990 to 2011 (Audubon Society 2014). The Project study area is considered to be within gyrfalcon winter range by the Seattle Audubon Society (BirdWeb 2013).

### **3.2 Shorebirds, Wading Birds, and Other Aquatic Birds**

American white pelicans nest on isolated islands on lakes and rivers, and forage in shallow lakes and rivers. Non-breeding pelicans occur within the Project study area on the Columbia and Yakima Rivers (BirdWeb2013). Biologists from POWER observed them during Project-specific surveys within the Project study area on the Columbia River.

Great blue herons (*Ardea herodias*) use a wide variety of wet habitats, including lakes, streams, canals, and moist meadows. They nest colonially, usually in mature riparian forests. Within the Project study area, suitable habitat exists along rivers, streams, and irrigated agricultural areas near canals. Black-crowned night herons (*Nycticorax nycticorax*) breed in wetlands along the Columbia River. In the Project vicinity, they have been documented in several locations on Priest Rapids Reservoir (BirdWeb 2013). Both species nest colonially on Goose Island above Priest Rapids Dam (WDFW 2015).

During the breeding season, Clark's grebe (*Aechmophorus clarkii*) and western grebe (*Aechmophorus occidentalis*) nest in freshwater wetlands with a mix of open water and emergent vegetation (BirdWeb 2008); non-breeding birds frequent large lakes, rivers, and reservoirs. Clark's grebe and the western grebe are both known to occur within the Columbia National Wildlife Refuge and likely occur within the

Project study area on the Columbia River. Clark's grebe is also known to occur in the Saddle Mountain Wildlife Refuge. Both refuges are outside the Project study area. In eastern Washington, eared grebes (*Podiceps nigricollis*) breed in large freshwater lakes and reservoirs with open water and emergent vegetation (BirdWeb 2008) and likely occur within the Project study area on the Columbia River and in backwater areas along the Yakima River.

Migrant common loons winter along Washington's coast, the Columbia and Snake Rivers, and on lakes in northeastern Washington (Larsen et al. 2004). Within the Project study area, they have been documented in the Columbia River and Wanapum pool and Priest Rapid Reservoir are regular concentration areas (WDFW 2015).

Dry grasslands and shrub-steppe, generally near water, are the traditional breeding habitats of long-billed curlews (*Numenius americanus*). They will also nest in grain fields and pastures. The Project study area is within the breeding range of the long-billed curlew (BirdWeb 2008; Paige and Ritter 1999). Breeding and large concentrations have been documented on the JBLM YTC and within the Project study area (WDFW 2015).

Upland sandpipers (*Bartramia longicauda*) occur in native grasslands and are often found nesting at airports and airfields. The Project study area is outside the known distribution of upland sandpipers, however rare migrants may occur within the Project study area (BirdWeb 2008).

Sandhill cranes (*Grus canadensis*) inhabit wet meadows, moist grasslands, and wetlands, and often feed in grain fields and pastures. During migration and in winter, they live in more open mesic prairie, agricultural fields, and river valleys (BirdWeb 2008; Larsen et al. 2004). The Project study area is within the migration range of sandhill cranes, but is not within a known migratory stopover or nesting area (Larsen et al. 2004).

Tundra swans (*Cygnus columbianus*) occur in Washington during winter and migration, where they feed in open, moist and mesic habitats, including agricultural fields with stubble and in wetlands with emergent vegetation. The Project study area is within the non-breeding and migration range of tundra swans and they have been observed near the Columbia and Yakima rivers in the general vicinity of the Project (DES 2000; BirdWeb 2008).

### **3.4 Songbirds and Other Upland Birds**

The Project study area lies within the critical breeding habitat of the black swift (*Cypseloides niger*); however, nesting habitat for the black swift is highly specialized in forested areas near rivers. Nests are often located behind waterfalls or on damp cliffs (BirdWeb 2008). Suitable nesting habitat is unlikely to occur within the Project study area; however, the Project study area is on the eastern edge of their foraging, summer non-breeding range (Opperman et al. 2006).

The black-throated sparrow (*Amphispiza bilineata*) occurs in desert scrub, saltbush (*Atriplex* sp.), greasewood (*Sarcobatus* sp.), sagebrush, antelope bitterbrush (*Purshia tridentata*) and rabbitbrush shrublands (Paige and Ritter 1999). In Washington, they often favor degraded and dry, rocky areas along Columbia River (BirdWeb 2008; Opperman et al. 2006). The Project study area is within the black-throated sparrow's core breeding habitat zone and suitable habitat is present within the Project study area.

Bobolinks (*Dolichonyx oryzivorus*) are generally found in tall-grass prairies, hay fields, and similar open areas (BirdWeb 2008). The Project study area is not within the bobolinks breeding habitat zone. Limited suitable habitat exists in developed agricultural land within the Project study area.

Calliope hummingbirds (*Stellula calliope*) breed in montane areas. Within Washington they typically breed in ponderosa pine forest. They use desert riparian areas and urban/suburban areas with hummingbird feeders during spring migration and occasionally during fall migration, though during fall they more often use alpine and subalpine habitat (Birdweb 2015, Calder and Calder 1994). Breeding habitat is not present in the Project study area, but migration habitat is present, and the species likely occurs during spring migration.

Rufous hummingbirds (*Selasphorus rufus*) breed in a variety of forested and meadow habitats, but within eastern Washington are restricted to high elevations and other sites where rainfall is greater (BirdWeb 2015). In migration they occur in a broader range of habitats including lower drier areas, especially riparian areas or urban/suburban areas with hummingbird feeders (BirdWeb 2015, eBird 2015, Healy and Calder 2006.). Suitable migration habitat occurs in the Project study area and they are likely to occur during spring and fall migration.

Cassin's finch (*Carpodacus cassinii*) breeds in coniferous forest, and occasionally in open juniper woodlands intermixed with sagebrush steppe. Primary habitat during migration is also coniferous forest, though they are occasionally found in a variety of habitats including developed areas, sagebrush steppe, and riparian (Birdweb 2015; Hahn 1996). No breeding habitat occurs in the Project study area. Marginal migration habitat is present, and the species is likely to occur in low numbers during migration.

Cedar waxwings (*Bombycilla cedrorum*) inhabit open, lowland woodlands with shrubs and small trees, especially when berry-producing trees and shrubs are present. They are often found in streamside woods, forest clearings, edges of wetlands, residential areas, orchards, and stands of Russian olive (*Elaeagnus angustifolia*; BirdWeb 2008). Very little habitat is present and it is widely scattered throughout the Project study area.

Fox sparrows (*Passerella iliaca*) breed in dense riparian thickets at montane to alpine elevations. Migration habitat is similar to breeding habitat, but includes lower elevation brushy riparian areas (Weckstein et al. 2002). Within Washington, they breed in the Cascades, Blue Mountains, and northeastern Washington and winter primarily west of the Cascades, but they also winter in small numbers along the Columbia River and on migration occur throughout eastern Washington in suitable habitat (BirdWeb 2015, eBird 2015). Within the Project study area, breeding habitat does not occur. Marginal wintering habitat occurs along the Columbia River and potential migration habitat occurs in brushy wooded riparian areas in the Project study area.

In the intermountain west, willow flycatchers (*Empidonax traillii*) breed in riparian areas with a dense layer of tall shrubs such as willows (*Salix* spp.), tamarisk (*Tamarix* spp.), and occasionally cottonwood (*Populus* spp.) or Russian olive (BirdWeb 2015). Migration habitat is similar to breeding habitat. Potential habitat may occur in riparian areas along rivers and streams in the Project study area and species occurrence is possible during breeding season and migration.

The gray flycatcher (*Empidonax wrightii*) is associated with sagebrush and juniper (*Juniperus* spp.) habitats. The Project study area is within the migration corridor for the gray flycatcher (BirdWeb 2008). Suitable habitat is present within the Project study area, but the species is rare in the Project study area; a single individual was observed singing a few hundred meters north of NNR-6 by POWER biologists during the 2013 field surveys.

Lewis's woodpecker is (*Melanerpes lewis*) associated with open forests; primary habitats in Washington include ponderosa pine forests, Garry oak (*Quercus garryana*) stands, and forested riversides with large cottonwoods and other hardwoods (Larsen et al. 2004). Limited suitable habitat is present within the Project study area, primarily along the Yakima River and Burbank Creek, and possibly along Lmuma

Creek, the Columbia River, Johnson Creek, and Foster Creek. There is limited suitable habitat present within the Project study area, primarily along Lower Crab Creek.

The lesser goldfinch (*Carduelis psaltria*) is typically found in dry, open woodlands, pastures, steppe, forest openings, and beside streams. In Washington, they are closely associated with Garry oak, especially at the brushy edges of Garry oak stands. The Project study area is outside the known range of the lesser goldfinch (BirdWeb 2008). Potential suitable habitat exists within the Project study area, but it is unlikely that lesser goldfinch is present.

In Washington, the loggerhead shrike breeds primarily in shrub-steppe habitats. The Project study area is within the core breeding habitat zone for loggerhead shrikes (Larsen et al. 2004). Loggerhead shrikes have been documented in the Project study area and large tracts of suitable shrub-steppe habitats occur throughout the Project study area.

Oregon vesper sparrows (*Pooecetes gramineus affinis*) are commonly found in dry grasslands, sagebrush steppe, and agricultural fields. They are uncommon in sagebrush-steppe areas that are heavily grazed or have little grass cover (BirdWeb 2008; Paige and Ritter 1999). Suitable habitat exists throughout the Project study area and they were occasionally observed by POWER biologists during 2013 field surveys.

The sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), and Brewer's sparrow (*Spizella breweri*) are sagebrush-obligate avian species. The Project study area is within the core breeding habitat for sage sparrows (Larsen et al. 2004). Sage sparrows are known to occur in the JBLM YTC (DES 2000) and the Project study area and are abundant in NNR-6 and NNR-7. Suitable habitat is present throughout the Project study area. The sage thrasher is common in sagebrush and bitterbrush habitats in the Columbia Basin, but was more widespread prior to the conversion of large tracts of sagebrush habitats to agricultural lands. The Project study area is within the core breeding habitat zone for sage thrasher (Larsen et al. 2004). Sage thrashers occur in the JBLM YTC during the summer months (DES 2000), and were commonly observed along the Project study area by POWER biologists. Suitable habitat is present throughout the Project study area. Brewer's sparrows were also commonly observed in the Project study area by POWER biologists, and suitable habitat is present throughout the Project study area.

Vaux's swifts (*Chaetura vauxi*) forage over woodlands, lakes and rivers, where flying insects are abundant. They typically nest in old growth coniferous forests. The Project study area is within the known range of the Vaux's swift, probably used only during migration (BirdWeb 2008; Larsen et al. 2004).

Yellow-billed cuckoo was listed as threatened under the ESA in November 2014 (USFWS 2014). In western North America, yellow-billed cuckoos inhabit large continuous riparian zones with cottonwoods and willows. Though once abundant in portions of Washington, such as along wooded rivers in eastern Washington and along the lower Columbia River near present-day Vancouver, they were rare in the state by about 1940. Breeding has not been documented in Washington since 1934 (WDFW 2012). Vagrants are rarely sighted in Washington (WDFW 2012, eBird 2015). None of the alternatives cross potential yellow-billed cuckoo habitat, but potential habitat does exist within one mile of Route Segment 1a/NNR-1 along the Yakima River. Yellow-billed cuckoos will not be impacted by the proposed Project.

## **4.0 AVOIDANCE AND MINIMIZATION**

As described in the FEIS, Pacific Power will implement specific measures to avoid and minimize impacts to migratory birds and their habitat during the siting and design, construction, and operation and maintenance phases of the proposed Project. A complete list of the Required Design Features (RDFs; avoidance and minimization measures) for the proposed Project can be found in Chapter 2 of the FEIS. This section summarizes the most pertinent avoidance and minimization measures that will aid in

avoidance and minimization of impacts to bird species, and facilitate compliance with the MBTA. Some of the avoidance and minimization measures are specifically designed to avoid impacts to migratory birds, while others are broader or more general in nature but will ultimately avoid and minimize impacts to migratory birds by avoiding and minimizing things that indirectly harm birds, such as habitat loss or degradation, fires, weed spread, or predator attraction.

#### **4.1 Siting, Design, and Surveys**

During the siting, design, and survey phase, Pacific Power has, and will continue to, avoid and minimize impacts to migratory birds and their habitats. Many avoidance and minimization measures have been proposed in the FEIS. Prior to construction being authorized, a POD will be prepared, which will include specific plans to address all mitigation requirements. These plans will detail additional measures required to minimize potential proposed Project impacts on natural resources. Plans will include reclamation and revegetation of the ROW corridor, resource protection, noxious weed control, dust control, hazardous spill prevention, fire prevention, and storm water pollution prevention. The POD will also outline any required monitoring guidelines for the construction, operation, and maintenance of the proposed Project in order to avoid inadvertent impacts to resources.

##### **4.1.1 Bird-Safe Design Standards**

The proposed Project will be designed to conform to bird-safe design standards, including *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee [APLIC] 2006), *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012) and PacifiCorp's *Bird Management Program Guidelines* (PacifiCorp 2006).

##### **4.1.2 Use of Existing Utility Corridors**

Routing and siting of the proposed new transmission line Project would maximize the use of existing utility corridors and closely parallel Pacific Power's existing Pomona-Wanupum 230 kV transmission line for much of its length, typically staying within 200 to 300 feet of its centerline. The use of existing transmission line corridors will minimize impacts through the use of already established ROW corridors, road networks, etc. Whenever possible, locations of the new structures will match the spans of adjacent transmission line structures.

##### **4.1.3 Predetermining Spatial Limits of Construction Activities**

The spatial limits of construction activities will be predetermined with activity restricted to those limits. Land management agencies and landowners will approve all construction spatial limits in coordination with the construction contractor. Work areas will be identified and sensitive areas will be flagged as described in the POD to alert construction personnel that those areas are to be avoided. Within the limits of standard tower design and in conformance with engineering and Pacific Power requirements, structures will be placed to avoid sensitive features, including but not limited to, wetlands, riparian areas, water courses, sensitive habitats and species. To minimize ground disturbance, the alignment of any new access roads or cross country routes will follow the landform contours where practicable, provided that such alignment does not cause additional impacts to resource values. Any new access road or cross country route will be approved by the appropriate land manager and/or landowner prior to use.

##### **4.1.4 Reclamation, Revegetation, and Monitoring Plan**

Pacific Power will prepare a Reclamation, Revegetation, and Monitoring Plan in consultation with the authorizing agencies. The Reclamation, Revegetation, and Monitoring Plan will specify disturbance types and appropriate revegetation techniques to be applied to proposed Project work areas and access roads. Techniques will be approved by the appropriate land management agencies and would include reseeding with certified weed-free native or other acceptable species. The Reclamation, Revegetation, and Monitoring Plan will include construction, operation and maintenance procedures approved by the

appropriate land management agencies for use of access roads and temporary work areas. Revegetation monitoring for a designated time period will occur as required by the appropriate land manager and/or landowner. The Reclamation, Revegetation, and Monitoring Framework Plan (for federal lands) will be approved by the BLM, JBLM YTC, and Reclamation prior to issuance of their respective authorizations to proceed with construction.

#### **4.1.5 Fire Protection and Control Plan**

A Fire Protection and Control Plan will be developed and incorporated into the POD. The Fire Protection and Control Plan will include measures to be implemented during construction and maintenance, such as: restricting smoking to designated areas; restricting equipment parking to sites cleared of all flammable material; equipping vehicles with appropriate fire suppression tools and equipment; and training Pacific Power and/or its contractors on fire safety, minimizing fire hazards, to safely suppress a fire until firefighters can respond. Pacific Power and its contractors will initiate discussions with local fire districts, regional fire prevention staff, and BLM and JBLM YTC fire personnel prior to construction to provide transmission line safety training, including safety procedures for conducting fire suppression activities near a transmission line.

## **4.2 Construction**

Construction of the proposed Project and associated infrastructure has the potential to impact birds and bird habitat in or near the ROW corridor. The potential for disturbance of birds and habitat is greatest during the construction phase of the proposed Project. Avoidance and minimization measures listed below will avoid or minimize the potential impacts during construction.

### **4.2.1 Environmental Training**

Prior to construction, all supervisory construction personnel will be instructed on the protection of ecological resources. To assist in this effort, the construction contract will address: a) federal, state, and local laws regarding plants and wildlife; b) the importance of these resources and the purpose and necessity of protecting them; and c) methods for protecting sensitive resources.

### **4.2.2 Limiting Ground Disturbance**

All construction vehicle movement outside the ROW corridor will be restricted to pre-designated access, contractor-acquired access, or public roads unless approved by the authorized land managers and/or landowner. Ground disturbance will be limited to that necessary to safely and efficiently install, operate, and maintain the proposed Project and will be described in detail in the POD. An effort will be made to minimize the blading of native plant communities during construction consistent with safe construction practices. In construction areas where re-contouring is not required, vegetation will be left in place wherever possible and original contour will be maintained to avoid excessive root damage and allow for re-sprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours. Road construction and maintenance will include dust control measures, as required and identified in the approved POD.

### **4.2.3 Trash Management and Pet Exclusion**

To avoid attracting and augmenting predator populations, all waste products and food garbage from construction sites will be deposited in covered waste receptacles and removed daily. Garbage will be transported to an approved or designated suitable disposal facility. No pets will be allowed on the proposed Project site during construction.

### **4.2.4 Protection of Aquatic Habitat**

In order to reduce stream pollution and sedimentation as well as reduce disturbance to riparian vegetation, roads will be built at right angles to streams to the extent practicable. Existing public roads will be

utilized to the extent possible. Appropriately sized culverts will be installed where needed. All construction and maintenance activities will be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and stream banks. To minimize the potential for chemical pollution, construction crews will inspect and maintain tanks and equipment containing oil, fuel, or chemicals for drips or leaks and to prevent spills onto the ground. Vehicle and equipment refueling and the storage of potentially hazardous materials will not occur near waterbodies or drainages. The construction contractor will fuel all highway-authorized vehicles off-site.

#### **4.2.5 Reclamation, Rehabilitation, and Revegetation**

New or improved access (e.g., blading, widening existing access), that is not required for ongoing Project maintenance activities or by the land management agencies, will be closed or rehabilitated following construction. Closing access roads would protect the resources in that area from further disturbance by limiting new or improved accessibility by OHVs and other motorized vehicles.

In construction areas where ground disturbance is significant, surface reclamation will occur as required by the landowner or land management agency. The method of reclamation will normally consist of, but is not limited to, returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control, placing water bars in the road, and filling ditches.

All areas on the BLM, JBLM YTC, and Reclamation lands that are disturbed as a part of the construction and/or maintenance of the proposed Project will be drill seeded where practicable with a an agency-approved mixture of certified weed-free native and/or non-native species seed for revegetation, unless an alternative method (e.g., broadcast seeding) is required due to slope or terrain. The BLM, JBLM YTC, and Reclamation will prescribe seed mixtures to fit each range site on their respective ownerships. Drill seeding will be done in late October or November to maximize the chance of success. The agencies may recommend broadcast seeding as an alternative method in some cases. In these cases, seed will be applied at 1.5 to 2.0 times the drill seeding rate when broadcasted and the seed will be promptly covered by methods such as harrowing, raking, or rolling with a culti-packer. Revegetation materials will meet the requirements of federal, state, and county noxious weed control regulations and guidelines.

#### **4.2.6 Noxious Weed Control**

Pacific Power and their contractors will comply with all federal, state, and county noxious weed control regulations and guidelines. To prevent the introduction of weed seeds into new areas, construction crews will wash all equipment before entering the Project study area and when leaving areas where noxious weeds are present. Reclamation, rehabilitation, and revegetation will reduce the potential for establishment of noxious weeds.

#### **4.2.7 Fire Management**

All measures specified in the Fire Protection and Control Plan will be followed during construction. The construction contractor will fuel all highway-authorized vehicles off-site to minimize the risk of fire. Fueling of construction equipment that is transported to the site via truck and is not highway authorized will be done in accordance with regulated construction practices and federal, state, and local laws. Helicopters will be fueled and housed at local airfields or at staging areas. Crews will carry fire suppression equipment including, but not limited to, shovels, buckets, and fire extinguishers on all construction vehicles.

#### **4.2.8 Seasonal and Spatial Buffers**

Pacific Power and contractors will restrict construction and maintenance activities during sensitive periods such as the bird breeding season. Restricting these activities would eliminate the potential disturbance of birds during these critical periods of their life cycles. Restrictions will include:

- Avoid construction or maintenance activities within 0.25 to 1.0 mile radius of an active raptor nest, if possible, unless specific features (e.g., terrain, barriers) dictate reduced buffers. Spatial buffers and seasonal restrictions would vary depending on the species (Romin and Muck 2002): Nests of any raptor species not specified here would be buffered by 0.25 mile. Specified nest buffers include:
  - Bald eagle nest – 1.0 mile buffer from January through August.
  - Burrowing owl – 0.25 mile buffer from March through August.
  - Ferruginous hawk – 0.5 mile buffer from March through July.
  - Golden eagle – 0.5 mile buffer from January through August.
  - Osprey (*Pandion haliaetus*) – 0.5 mile buffer from April through August.
  - Peregrine falcon – 1.0 mile buffer from February through August.
  - Prairie falcon – 0.25 mile buffer from April through August.
- Songbirds:
  - Avoid construction or maintenance activities during the songbird breeding season, typically from March 1 through July 31. If construction or maintenance activities must occur during this time period, qualified biologists will conduct clearance surveys prior to activity. If migratory bird nests are identified, spatial buffers of at least 100 feet around the nest will be initiated. Individual nests will not be marked. Spatial buffers and seasonal restrictions would vary depending on the species. No ROW mowing will occur during the nesting season.
- Bald eagle wintering areas:
  - Construction or maintenance activities within 0.25 mile of a bald eagle winter roost would occur between 8:00 a.m. and 5:00 p.m.

#### 4.2.9 Reporting Any Newly Discovered Special Status Species

If any new populations of federal or state listed wildlife species are discovered during ongoing Project surveys or construction, these findings will be reported within 48 hours to the appropriate federal and/or state land management agency. Any newly discovered populations will be protected in accordance with applicable laws and the resource management policies of the state and federal agencies. If sensitive bird species are discovered during construction, operation, and maintenance activities within the ROW corridor or designated and approved work areas, a protective buffer zone will be established and the appropriate federal or state agency will be contacted immediately.

#### 4.2.10 Speed Limits

Speed limits for travel on newly constructed roads will be posted at 25 miles per hour (mph) in order to reduce the potential for bird collision. Posted speed limits on existing roads will be adhered to. Overland travel areas will have speed limits of 15 mph.

### 4.3 Operation and Maintenance

Though the proposed Project's greatest potential for impact on birds and bird habitat will occur during the construction phase, operation and maintenance of the proposed Project has potential to impact birds as well. Many of the avoidance and minimization measures apply to both the construction and the operation and maintenance phases (e.g., minimizing disturbance to birds and habitat, seasonal and spatial buffers, trash management and pet exclusion, protection of aquatic habitat, fire management, reporting of special status species, and speed limits). A few avoidance and minimization measures, though implemented during the design or construction phases, are primarily intended to avoid or minimize impacts that could occur during the operation phase. Examples of such measures include use of existing utility corridors, reclamation, revegetation, and monitoring framework plan, fire protection and control plan, bird-safe design, perch deterrents, and bird-safe design including flight diverters.

#### **4.3.1 Use of Existing Utility Corridors**

Routing and siting of the proposed Project was done to maximize the use of existing utility corridors and closely parallel Pacific Power's existing transmission line within those corridors, typically staying within 200 to 300 feet of its centerline. The use of existing transmission line corridors will minimize impacts through the use of already established ROW corridors, road networks, etc. Whenever possible, locations of the new structures will match the spans and locations of the adjacent transmission line structures.

#### **4.3.2 Minimizing Disturbance to Birds and Habitat**

When practicable, maintenance activities will be restricted during sensitive periods for birds (breeding or nesting). An effort will be made to minimize the blading of native plant communities during operation and maintenance consistent with safe construction practices. In order to reduce stream pollution and sedimentation as well as reduce disturbance to riparian vegetation, roads will be built at right angles to streams to the extent practicable. Existing public roads will be utilized to the extent possible. Appropriately sized culverts will be installed where needed. All maintenance activities will be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and stream banks.

#### **4.3.3 Reclamation, Revegetation, Weed Control, and Monitoring**

Pacific Power and their contractors will comply with all procedures in the Reclamation, Revegetation, and Monitoring Plan as well as federal, state, and county noxious weed control regulations and guidelines. The Plan will include construction, operation and maintenance procedures approved by the appropriate land management agency for use of access roads and temporary work areas.

#### **4.3.4 Fire Management**

Crews will carry fire suppression equipment including, but not limited to, shovels, buckets, and fire extinguishers on all construction, operation, and maintenance vehicles. The Fire Protection and Control Plan will include measures to be implemented during construction and maintenance.

#### **4.3.5 Bird-safe Design, Including Flight Diversers**

To minimize collision and electrocution potential, the proposed Project will be designed to conform to bird-safe design standards (PacifiCorp 2006, APLIC 2006, APLIC 2012). Bird flight diversers will be installed in locations with known avian mortality through collision with transmission line infrastructure.

#### **4.3.6 Avoiding Predator Augmentation**

Perch deterrents will be installed on new transmission structures within four miles of an active Sage-Grouse lek. All waste products and food garbage will be removed daily. Garbage will be transported to an approved or designated suitable disposal facility. No pets will be allowed on the Project site during operation, and/or maintenance.

#### **4.3.7 Speed Limits**

Speed limits for travel on newly constructed roads will be posted at 25 mph in order to reduce the potential for wildlife collision. Posted speed limits on existing roads will be adhered to. Overland travel areas will have speed limits of 15 mph.

#### **4.3.8 Reporting of Special Status Species**

If any new populations of federal or state listed or sensitive wildlife species are discovered these findings will be reported to the appropriate federal and/or state agency. Any newly discovered populations will be protected in accordance with applicable laws.

Pacific Power's Bird Management Program Guidelines include protocols for documenting the incidence of mortalities from collision with their transmission lines and problem nests, contacting the appropriate

resource agency, and additional actions to be taken to reduce mortalities, such as installing bird flight diverters or marking static wires in sensitive areas when warranted (PacifiCorp 2006).

## 5.0 IMPACT ANALYSIS

For the purposes of the analysis in this Plan for migratory birds and their habitat, the Project study area was defined as a two-mile wide corridor (i.e., a one-mile buffer of route segment centerlines of the FEIS Agency Preferred Alternative). Analysis of impacts was based on occurrence and potential for occurrence of species and habitat within the Project study area.

### 5.1 Habitat Types Crossed by the FEIS Agency Preferred Alternative

#### 5.1.1 Shrub-Steppe

In the Project study area, shrub-steppe habitat consists primarily of big sagebrush and stiff sagebrush (*Artemisia rigida*). Stiff sagebrush typically occurs on rocky shallow soils with Sandberg's bluegrass (*Poa secunda*; JBLM YTC 2002). Sagebrush shrublands with a perennial grass understory is the most common vegetation cover type within the FEIS Agency Preferred Alternative Project study area, covering 62.8 percent (41,629.2 acres) of the Project study area. Sagebrush shrublands with an annual grass understory comprise 0.1 percent of the Project study area (58.7 acres).

Shrub-steppe habitats are used by a diverse group of wildlife species. Some of these are sagebrush obligates (restricted to sagebrush habitats during the breeding season or year-round) or sagebrush dependent species (near-obligates; occurring in both sagebrush and grassland habitats). Sagebrush obligates include the sage sparrow, Brewer's sparrow, sage thrasher, and sage-grouse (Paige and Ritter 1999). As these species breed only in shrub-steppe habitats, disturbance or conversion of shrub-steppe to agricultural or annual grasslands directly affects their distribution. Shrub-steppe habitats typically provide unobstructed views over large areas, creating ideal hunting conditions for some raptors. Raptors that breed and/or forage in shrub-steppe habitats include prairie falcon, ferruginous hawk, Swainson's hawk, and golden eagle (Dobkin and Sauder 2004; Dobler et al. 1996).

#### 5.1.2 Annual and Perennial Grasslands

Annual grasslands in the Project study area are typically dominated by annual grasses, such as cheatgrass. Annual grasslands cover approximately 21.8 percent of the FEIS Agency Preferred Alternative Project study area (14,490.4 acres). Most native shrub-steppe birds either do not use cheatgrass or occur at lower densities where it is the predominant ground cover (Shaw et al. 1999). However, cheatgrass monocultures produce an open landscape that is used by wildlife species including the long-billed curlew and burrowing owl (Rich et al. 2005).

Within the FEIS Agency Preferred Alternative Project study area, perennial grasslands are less common (2.1 percent; 1,423.6 acres) and are dominated by perennial bunchgrasses such as crested wheatgrass (*Agropyron cristatum*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass, Idaho fescue (*Festuca idahoensis*), needle and thread grass (*Hesperostipa comata*), squirreltail (*Elymus elymoides*), and Thurber's needlegrass (*Achnatherum thurberianum*). Many of the same species found in shrub-steppe habitats utilize perennial grasslands, including Brewer's sparrow, vesper sparrow, lark sparrow (*Chondestes grammacus*), loggerhead shrike, and common nighthawk (*Chordeiles minor*).

#### 5.1.3 Rock/Basalt Cliffs

Rock talus and exposed rock habitats are important nesting and cover habitats for a variety of wildlife species. Rock/basalt cliffs occur on approximately 19.9 acres (less than 0.1 percent) within the FEIS Agency Preferred Alternative Project study area. Cliff and talus slope habitats support small amounts of vegetation, and provide shade, cover, nesting, and rearing sites. Cliffs are considered a priority habitat by

the WDFW (2008), and are commonly used as nesting substrates by several raptor species, including golden eagle, peregrine falcon, prairie falcon, red-tailed hawk (*Buteo jamaicensis*), and great-horned owl (*Bubo virginianus*).

#### **5.1.4 Riparian and Wetland Communities**

Riparian and wetland communities comprise a small portion of the Project study area, but these communities are characterized by higher productivity and greater habitat and species diversity compared to adjacent uplands (Knutson and Naef 1997). Riparian and wetland habitats are used by a great number of species including bald eagle, cedar waxwing, American white pelican, great blue heron, sandhill crane, tundra swan, yellow warbler (*Setophaga petechia*), and song sparrow (*Melospiza melodia*).

The majority of riparian areas within the FEIS Agency Preferred Alternative Project study area are seasonally moist uplands. These drier riparian areas are typically vegetated with upland shrubs, including sagebrush. A small wetland is present in the JBLM YTC Cantonment Area (Route Segment NNR-2). Burbank Creek (Route Segment NNR-3) and Foster Creek (NNR-6) support wooded riparian vegetation, primarily dominated by black cottonwood (*Populus trichocarpa*) and willow.

#### **5.1.5 Disturbed Areas and Existing Infrastructure**

Within the Project study area, sagebrush-steppe habitat has been fragmented by the invasion of non-native plants, roads, residential development, livestock grazing, agricultural land use, and altered fire-regimes. The Agency Preferred NNR Alternative – Overhead Design Option closely parallels the existing Pacific Power Pomona-Wanapum 230 kV transmission line that primarily uses H-frame poles similar to the ones identified for the proposed Project. At the eastern end of the Project study area (Route Segments NNR-7 and NNR-8), one additional 230 kV transmission line (Puget Sound Energy Wanapum-Wind Ridge) and two 500 kV lines (BPA Schultz-Wautoma No. 1 and BPA Vantage-Schultz No. 1) exist within one mile of the proposed FEIS Agency Preferred Alternative centerline. Other prominent infrastructure and disturbance within the Project study area includes urban and suburban development, JBLM YTC facilities, bivouac areas and training activities, road networks I-82, state and county highways, all-weather gravel access roads for military training, and numerous light-duty dirt roads), agricultural areas, communication towers, canals, and fire breaks. Generally speaking, infrastructure and disturbance is heaviest at the southwestern end of the NNR Alternative Project study area (Route Segments NNR-1 and NNR-2) and lightest along the north-central portion near Route Segment NNR-6. Locations of existing infrastructure and disturbance are discussed in Section 3.3.4 (Route Segment Considerations).

Wildfires have occurred within eight miles of the Project study area for the FEIS Agency Preferred Alternative. The majority of these wildfires were concentrated within the JBLM YTC boundary. Due to the type and intensity of military training that occurs at the JBLM YTC, the incidence and risk of fire is higher compared with adjacent lands and naturally occurring fire cycles. The incidence of fire ignition and spread at the JBLM YTC has been declining since 1996 due to improvements to their fire management policy, increased support and maintenance of firebreaks (JBLM YTC 2002).

Livestock grazing occurs outside of JBLM YTC on both public and private lands. In addition to grazing on private land, grazing leases are authorized on BLM land and Washington State Department of Natural Resources state trust land. Livestock grazing, which decreases cover of native forbs and perennial bunchgrasses, ended on JBLM YTC land in 1995 (Livingston 1998).

## **5.2 Description of Potential Long-Term and Short-Term Impacts**

Impacts are considered short-term if they disturb vegetation or wildlife, but do not prevent the reestablishment of vegetation and wildlife communities to pre-impact structure and functionality within five years. Disturbance at new or expanded infrastructure (e.g., substations, transmission towers, and

permanent access roads used for ongoing maintenance and operation) is constructed, will result in long-term impacts. Long-term impacts would also occur where tall vegetation within the ROW corridors requires vegetation removal to maintain minimum clearance for conductors. Disturbance at temporary work areas at each structure site, at pulling and tensioning sites, material staging sites, and turn-around areas have potential to cause short-term or long-term disturbance, depending on vegetation type. Impacts to grasslands are frequently considered short-term because these communities typically recover more quickly than plant communities possessing a woody component (Olson et al. 2000; Lesica et al. 2005). Long-term impacts continue for an extended period of years. Due to their woody component, long-term impacts can be expected in sagebrush dominated areas. Another example of short-term versus long-term impact would be collision risk with construction vehicles, which would be a short-term impact in most cases (assuming population levels recover within a few years) versus the long-term impact of collision risk with the conductor lines with the risk continuing for the duration of the proposed Project.

### **5.2.1 Direct Habitat Loss**

Direct habitat loss would result from temporary trampling of herbaceous vegetation and removal of vegetation due to construction of the new transmission line, access roads, and temporary work spaces. Vegetation would be permanently removed and disturbed at structure bases and along permanent access roads. Vegetation removal could have a variety of effects on habitat including changes in community structure and composition. The degree of impact depends on the type and amount of vegetation affected and the rate at which vegetation would regenerate after construction. Within the Project study area, the recovery of vegetation following revegetation would vary by plant community type following construction. Grasslands and herbaceous wetlands would generally recover within five to seven years, while shrublands (e.g., sagebrush) may require 30 to 120 years, depending on the subspecies and size of disturbance (Olson et al. 2000; Lesica et al. 2005; Baker 2006; Knick and Connelly 2011). Because the FEIS Agency Preferred NNR Alternative closely parallels an existing Pacific Power transmission line for the majority of its length, utilizing nearby existing roads will reduce the need for new access roads, thus greatly decreasing the amount of direct habitat loss associated with the FEIS Agency Preferred Alternative. Avoidance and minimization measures implemented during construction and operation are anticipated to be effective at minimizing the amount of vegetation that would be impacted. Avoidance and minimization measures include: minimizing construction sites within native plant communities; maintaining intact vegetation wherever possible; minimizing the blading of native plant communities during construction, consistent with safe construction practices; utilizing overland travel where feasible; and reseeding disturbed areas using an Agency approved mixture of native and non-native species or seed for revegetation as detailed in the POD. Direct habitat disturbance is presented in Table 3 and discussed for each route segment in Section 5.3.4.

### **5.2.2 Spread of Invasive Weeds**

Ground disturbance and vegetation removal can increase the potential for the introduction and spread of noxious weeds and invasive species (Olson 1999; Levine et al. 2003). Disturbed areas, such as roads and construction work areas, can act as conduits for weeds to become established in native habitats adjacent to the disturbed areas (Gelbard and Belnap 2003). Linear features such as power lines and roads are also associated with a greater abundance of noxious and invasive weeds that decrease with increasing distance from the linear feature (Gelbard and Belnap 2003; Bradley and Mustard 2006; Bradley 2010). Non-native plant invasions have the potential to alter bird habitat quality by outcompeting native plants, altering the natural fire regime, and by changing ecosystem processes (e.g., nitrogen cycling). Construction of access roads and the movement of construction equipment and other vehicles along these roads would increase the potential for the spread of noxious weeds in the affected areas (Sheley et al. 1999; Gelbard and Belnap 2003). Avoidance and minimization measures would be implemented to reduce the potential spread of noxious weeds and invasive species from proposed Project activities and include the following: reseeding disturbed areas with certified weed-free materials (e.g., borrow material, straw wattles, and bale barrier) and land management agency approved native or non-native species; washing all equipment before

**TABLE 3 SUMMARY OF DISTURBANCE TO HABITAT TYPE BY FEIS AGENCY PREFERRED ALTERNATIVE ROUTE SEGMENTS**

ROUTE SEGMENT	SHRUB-STEPPE COVER TYPES									GRASSLAND AND FORB COVER TYPES									CLIFF COVER TYPE			RIPARIAN, WETLAND, AND AQUATIC COVER TYPES <sup>2</sup>									DISTURBED COVER TYPES		
	SAGEBRUSH / PERENNIAL GRASSLAND			SAGEBRUSH / ANNUAL GRASSLAND			OTHER SHRUBLANDS			ANNUAL GRASSLAND / NOXIOUS WEEDS			FORB			PERENNIAL GRASSLAND			ROCK / BASALT CLIFFS			INTERMITTENT STREAM / DRY GULLY			RIPARIAN / WETLAND			TREES			AGRICULTURE / DISTURBED		
	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>	Short-term Disturbance (acres)	Long-term Disturbance (acres)	% Disturbed within Project Study Area <sup>1</sup>
1a/NNR-1	0.0	3.7	1.2	0.0	0.0	0.0	0.0	4.8	9.1	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.4	0.5
NNR-2	0.0	4.4	0.2	0.0	2.4	15.0	0.0	1.5	2.8	4.8	1.0	0.2	0.0	0.0	0.0	2.0	0.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	38.2	5.8	1.1	0.4
NNR-3	0.0	39.8	0.6	0.0	2.0	9.7	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	5.2	2.9	13.4	1.1	0.4	15.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1
NNR-4	0.0	10.8	0.2	0.0	9.2	53.3	0.0	1.1	20.3	1.1	0.2	0.1	0.0	0.0	0.0	0.4	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNR-5	0.0	8.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	48.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNR-6	0.0	26.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.6	0.3	0.7	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNR-7	0.0	38.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNR-8	0.0	8.9	0.2	0.0	0.5	24.6	0.0	0.0	0.0	2.4	0.5	1.6	0.0	0.0	0.0	0.8	0.1	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

<sup>1</sup>Percentage of habitat within the one-mile buffer of the route segment centerline (Project study area) that will be disturbed by either short-term or long-term disturbance. Refer to table 3.3-2 within Chapter 3 of the FEIS for a summary of acres of each cover type present within the one-mile buffer of each route segment (Project study area).

<sup>2</sup>Open water will be spanned; no direct disturbance will occur in open water

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entering the construction area and when leaving areas where noxious weeds are present; closing and revegetating new or improved access roads that are not required for maintenance; and complying with all federal, state and county noxious weed control regulations and guidelines. In addition, a Noxious Weed and Invasive Plant Management Plan would be developed in consultation with land management agencies and local weed control districts, and would be incorporated into the final POD. The Noxious Weed and Invasive Plant Management Plan would emphasize control of cheatgrass during follow-up visits to prevent, to the extent practical, the establishment of cheatgrass before, during, and shortly after establishment of reclaimed vegetation.

### **5.2.3 Alteration of Fire Regime**

Biological change through habitat modification and degradation could occur in the Project study area by a wildland fire event. Non-native plants, particularly cheatgrass, create a more continuous fuel bed than native bunchgrasses, resulting in an increased risk of wildfire. Wildfires in turn, increase opportunities for cheatgrass establishment. This creates a positive feedback loop, often resulting in a self-sustaining cycle that permanently converts large portions of the landscape from sagebrush steppe to annual grasslands dominated by cheatgrass (Brown 2000; Paysen et al. 2000). In addition, increased use of access roads and the proposed Project ROW corridor could lead to an increase in fire danger from campfires, un-extinguished cigarettes, and vehicle exhaust systems coming into contact with dry vegetation. To minimize the potential for wildland fire and loss of bird habitat, the following avoidance and minimization measures would be implemented: the development and implementation of a Noxious Weed and Invasive Plant Management Plan; closing or restoring new or improved access roads that are not required for maintenance; all applicable fire laws and regulations would be observed during the construction period and construction personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires; and a Fire Protection and Control Plan would be developed and incorporated into the POD. This plan would include measures to be implemented during construction and maintenance, such as: restricting smoking to designated areas; restricting equipment parking to sites cleared of all flammable material; equipping vehicles with appropriate fire suppression equipment; and training Pacific Power and its contractors on fire safety, minimizing fire hazards, and how to safely suppress a fire until firefighters can respond.

A potential indirect effect of habitat loss is habitat fragmentation, which may affect habitat connectivity and predation risk. Fragmentation of habitat may be caused by the replacement of sagebrush steppe with early successional grassland habitat or by the presence of the infrastructure which may cause behavioral avoidance of the ROW corridor, even where habitat is not directly removed. Loss of connectivity through habitat fragmentation may inhibit daily movements of birds within their home-ranges as well as migration movements. Fragmentation may also inhibit dispersal ability, leading to greater isolation among habitat patches (Saunders et al. 1991; Washington Wildlife Habitat Connectivity Working Group 2010; Washington Wildlife Habitat Connectivity Working Group 2012; Robb and Schroeder 2012). Fragmentation may increase the risk of predation by attracting predators. Howe et al. (2014) found a positive correlation between sagebrush steppe/annual grassland habitat edge and density of common ravens (*Corvus corax*), a common nest predator of many avian species.

### **5.2.4 Collisions**

Construction and maintenance of the proposed Project has the potential to cause biological disturbance through bird injury or mortality from collisions or interactions with construction and maintenance equipment and transmission line structures. Potential direct mortality from construction equipment includes collision with animals and crushing of nests or dens. Bird collisions with overhead wires typically involve large, less maneuverable species such as pelicans or species that fly at high speeds and low altitudes such as ducks (California Energy Commission [CEC] 2002; Manville 2005; PacifiCorp 2006). Other factors that influence the likelihood of collisions with wires include the habitat type where lines are located, age of birds (juveniles are more likely than adults to collide with lines), and

environmental characteristics (e.g., visibility, weather, time of day). Collisions are more likely to occur in areas with high concentrations of birds in close proximity to lines (CEC 2002; PacifiCorp 2006). Available literature indicates that waterfowl, including ducks, geese, swans, cranes, and shorebirds appear to be most susceptible to collisions when power lines are located near wetlands (Erickson et al. 2005; Faanes 1987; Anderson 1978). In general, raptors are considered less susceptible to collisions with overhead wires than other groups of birds; however, an increased risk of collision occurs where there are repeated flights across power lines, especially during bad weather or while pursuing prey (APLIC 1994; APLIC 2006; Manosa and Real 2001). Avoidance and minimization measures would be incorporated and implemented to minimize bird injury and mortality associated with the proposed Project. Specific avoidance and minimization measures to reduce collision risk would include: installing bird flight diverters in locations with known avian collision mortality; installing markers on any new fences constructed or repaired in Sage-Grouse habitat; moving vehicles and equipment at slow speeds; restricting construction vehicle movement to pre-designated locations; avoiding construction or maintenance activities within four miles of active sage-grouse leks from February 1 to June 15; avoiding construction during the bird nesting season when possible or conducting pre-construction clearance surveys and buffering active nests by at least 100 feet; and avoiding mowing the ROW corridor during the bird nesting season. Pacific Power's Bird Management Program Guidelines include protocols for documenting the incidence of mortalities from collision with their transmission lines and problem nests, contacting the appropriate resource agency and additional actions to be taken to reduce mortalities such as installing bird flight diverters or marking static wires in sensitive areas when warranted (PacifiCorp 2006).

### **5.2.5 Electrocutation**

Raptor electrocution on transmission lines has received substantial attention and has resulted in the development of 'avian-safe' or 'raptor-safe' design guidelines for new transmission lines (APLIC 2006; APLIC and USFWS 2005). Research has indicated that most avian electrocutions occur on low-medium voltage lines (4 kV to 69 kV) on which conductor spacing is small and can be bridged by large birds (APLIC and USFWS 2005). The industry standard for avian protection includes a minimum horizontal separation of 60 inches between conductors (APLIC 2006). This separation is intended to allow sufficient clearance for eagles; however, applying this standard would also help protect smaller birds, including ospreys, hawks, owls, wading birds, and songbirds (PacifiCorp 2006). The proposed Project would have a horizontal separation between conductors of 230 inches (19.5 feet) and would be avian-safe with no potential for electrocution of raptors or other bird species. The proposed Project would result in no identifiable impacts with regard to avian electrocution.

### **5.2.6 Predation**

Mammalian predators and scavengers may use roads and transmission ROW corridors as travel corridors which may facilitate predation on Sage-Grouse (Bennett 1991; Forman and Alexander 1998). Because the proposed Project ROW corridor would occur within sagebrush steppe and grassland habitats that are already open, the effects of mammalian predation on Sage-Grouse are likely to be less pronounced compared with corridor effects in forested landscapes. In the relatively treeless environment of the Project study area, avian predators are more likely to benefit from a transmission line structures than mammalian predators. Armentrout and Haul (2005) reported that Sage-Grouse nests and adults associated with leks near transmission lines were lost at a higher rate to avian rather than mammalian predators. They reported that predation attributed to mammals actually occurred at a lower rate near transmission lines.

Transmission line structures provide substrates for perching, roosting, and nesting for some avian species (i.e., raptors and corvids) (APLIC 2006; Knight et al. 1995; Steenhof et al. 1993). In open areas where natural substrates are limited, this may increase local abundance of avian predator species and increase predation pressures on prey species such as small mammals and nesting birds (Call and Maser 1985; Connelly et al. 2000; Vander Haegen et al. 2002; Howe et al. 2014). The distance that these effects could extend from the transmission line depends on the hunting range of the predator species. Some raptor

species may benefit from the proposed Project by the creation of new perching sites from which to hunt prey. Common raven populations have increased fourfold in the western U.S. during the past 40 years (Sauer et al. 2012). Raven populations often increase following human alteration of landscapes due to increased availability of food (e.g., litter associated with human use, roadkill, refuse, landfills), water (e.g., stock ponds, reservoirs), and nesting substrates (e.g., transmission line structures, communication towers, buildings) (Knight and Kawashima 1993; Kristan et al. 2004; Howe et al. 2014). In eastern Idaho, Howe et al. (2014) reported a 31 percent decrease in the odds of nesting by ravens for every 0.6 mile (1.0 kilometer) increase in distance away from a transmission line ROW, with 48 of 82 nests in the study located on transmission poles.

Long-term monitoring of raven nests at JBLM YTC began in 1994. In 1994, 28 raven nests were located on JBLM YTC; seven (25 percent) of them were located on anthropogenic structures, including one on a power line structure (Paulus and Malkin 1995). In 2013, 47 raven nests were located on JBLM YTC, a 68 percent increase relative to 1994. Only two of the 47 nests were located within one mile of the Agency Preferred Alternative. Both were located near Route Segment NNR-6, including one in a tree along Foster creek, and one on a building located one mile south of Route Segment NNR-6 and one mile east of Route Segment NNR-5. Although an attempt is made to locate all raven nests on JBLM YTC each year, search efforts have not been spatially and temporally consistent (JBLM YTC personal communication February 25, 2014).

A correlation between raven abundance and transmission lines has been established elsewhere (Howe et al. 2014); at JBLM YTC the distribution of raven nests does not appear to be spatially correlated with the locations of transmission lines. None of the active raven nests identified in 2013 were located on Pacific Power's existing Pomona-Wanapum 230 kV transmission line structures that the NNR Alternative closely parallels. It is unclear if the apparent nesting patterns of ravens at JBLM YTC are real or just an artifact of spatial variation in search effort.

The Terrace Heights Landfill is located approximately 3.5 miles southeast of Route Segments NNR-1 and NNR-2 and is likely to provide an abundant source of food for ravens (Paulus and Malkin 1995). Transmission line structures may be more likely to be used by ravens in areas near this abundant food supply.

Because raptor and corvid populations are not likely to be limited by availability of nesting and perching substrates in areas where those resources currently exist, it is reasonable to expect the effect of new transmission structures to be greatest where other tall structures, including transmission lines, do not currently exist. The FEIS Agency Preferred Alternative closely parallels Pacific Power's existing Pomona-Wanapum 230 kV transmission line that primarily uses H-frame poles similar to the ones proposed for the proposed Project. As part of the proposed Project design and wherever feasible, new structures will be placed in sync with the existing Pomona-Wanapum transmission line structures such that most new structures will be located within 200 feet of an existing structure. Given the territorial nature of raptor and corvid species and density limitations imposed by food availability, it seems unlikely that adding a structure 200 feet from a similar existing one would have much, if any, effect on the density of corvids or raptors. The new perches could increase the amount of landscape that is within view of a perch and effectively widen the corridor of increased predation risk, typically by about 200 feet.

To minimize the potential for increased predation rates, the following avoidance and minimization measures will be implemented: the new transmission line will closely parallel the existing Pacific Power 230 kV transmission line, typically staying within 200 feet.; wherever possible, locations of the new structures will match the spans of the adjacent transmission lines; to avoid providing food subsidies to ravens or other predators, food waste will be kept in covered receptacles and removed daily; and perch deterrents will be used within four miles of active Sage-Grouse leks.

### **5.2.7 Disturbance from Human Presence and Avoidance of Infrastructure**

Another potential impact on birds from the construction of the proposed Project would be visual and noise disturbance. For the most part, the increases in noise and visual disturbance from construction would result from temporary human presence during construction and maintenance activities and would be short-term and localized. Short-term disturbance due to the presence of humans and construction equipment may impact bird species by causing them to temporarily vacate habitat in the construction area. Long-term disturbance could also occur; for locations outside of the JBLM YTC, which has controlled access, the proposed Project may also result in increased human presence to areas previously inaccessible, as well as to off-road vehicle recreation (USFWS 2010). For grassland and shrub-steppe species that avoid trees and other tall objects, the presence of permanent structures may have a long-term visual impact, essentially creating indirect habitat loss surrounding the structures if birds avoid occupying the adjacent habitat (Schroeder 2010; Wisdom et al. 2011; Stonehouse 2013). To minimize visual and noise disturbance to birds, the following avoidance and minimization measures would be implemented: restricting construction and maintenance activities during sensitive periods; avoiding construction during the bird nesting season when possible or conducting pre-construction clearance surveys and buffering active nests by at least 100 feet; restricting construction activity to predetermined spatial limits, including restrictions on use outside of the ROW corridor; siting the line to closely parallel Pacific Power's existing 230 kV transmission line, typically staying within 200 feet; wherever possible, locations of the new structures will be in sync with the existing transmission line; adhering to established speed limits in construction and maintenance areas; and closing and revegetating new or improved access that is not required for maintenance.

## **5.3 Project-Related Impacts to Birds and Bird Habitat**

As previously stated, virtually all native bird species in the United States are protected under the MBTA, with the exception of upland game birds (e.g., grouse, quail). This includes 30 out of the 34 special status bird species with potential to occur within one mile of the FEIS Agency Preferred Alternative, as well as numerous additional species not listed as Federal Species of Concern, BLM-Sensitive, or Washington State Threatened and Endangered, but still fully protected under MBTA. While this document does not specifically list every MBTA-protected species with potential to occur within the Project study area, the listed special status bird species are representative of the various taxonomic groups, habitat associations, and potential impacts to other bird species in the Project study area. Potential impacts to MBTA-protected birds include habitat loss and degradation, collision risk, destruction of nests during the breeding season, and disturbance, particularly during the breeding season. Avoidance and minimization measures are expected to reduce impacts to MBTA-protected birds. Some of the key avoidance and minimization measures include avoiding construction during the breeding season or having biologists conduct clearance surveys to find nests and buffer each nest from disturbance until the nesting attempt is complete; maintaining intact vegetation wherever possible; reseeding disturbed areas; implementing a noxious weed control plan; adherence to reasonable speed limits; and siting the line to closely parallel Pacific Power's existing 230 kV transmission line. Digital element occurrence records for Priority Habitats and Species documented within one mile of the FEIS Agency Preferred Alternative were obtained from WDFW in June 2014 (WDFW 2014).

Specific impacts to special status species with documented or potential occurrence within the Project study area, as well as avoidance and minimization measures are discussed in detail below, under Raptors, Waterfowl and Other Aquatic Birds, and Songbirds and Other Upland Bird Species.

### **5.3.1 Raptors**

Five special status raptor species are documented to nest within the Project study area: golden eagle, bald eagle, peregrine falcon, ferruginous hawk, and burrowing owl. Other raptor species documented or likely to nest within the Project study area include prairie falcon, osprey, Swainson's hawk, red-tailed hawk,

American kestrel (*Falco sparverius*), short-eared owl, and great-horned owl. Additional raptor species may occur as non-breeders, such as rough-legged hawk (*Buteo lagopus*) and, and possibly flammulated owl and gyrfalcon on rare occasions. All raptors are protected under the MBTA and are typically sensitive to disturbance while nesting. Nesting sites are vulnerable to construction disturbances because raptors may abandon the nest during periods of high human activity, resulting in egg or nestling mortality and nest failure. Other potential impacts to raptors include collision with the transmission line and habitat loss, including direct habitat loss through vegetation removal and indirect habitat loss or degradation through increased risk of weed invasion and wildfire. Electrocuting is not a significant risk to raptors on 230 kV lines because of adequate separation distance between conductors. Implementation of RDFs such as seasonal restrictions and buffers to avoid nesting raptors during construction would limit disturbance to breeding raptors. Implementation of RDFs to minimize collision risk, vegetation disturbance, weed invasion, and wildfires would further reduce impacts to raptors. Location-specific occurrences and impact levels are discussed in Section 5.3.4.

### **5.3.2 Waterfowl and Other Aquatic Birds**

Within one mile of the FEIS Agency Preferred Alternative, Waterfowl Priority Species Regional Areas have been identified near the two extreme ends of this alternative: the Selah Waterfowl Concentration Area/Selah Gravel Pit wetlands associated with the Yakima River, just northwest of the Pomona Heights Substation and the Wanapum Pools Waterfowl Concentration Area within Wanapum Lake on the Columbia River, just northwest of the Vantage Substation. Wanapum Pool is also identified by WDFW PHS as regularly occupied by common loons in low densities. American white pelicans have also been documented within the Project study area on the Columbia River. Overall, eight special status aquatic bird species occur or are likely to occur within the Project study area: black-crowned night heron; great blue heron; Clark's, western, and eared grebes; tundra swan; American white pelican; and common loon. Waterfowl and aquatic bird injury and mortality could occur through collision with the proposed new transmission line. The only portion of the proposed NNR Alternative ROW corridor with suitable habitat for waterfowl and other aquatic species is the Columbia River crossing at Route Segment NNR-8. In this area, the transmission line route segment would parallel four existing transmission lines within 350 to 1,300 feet. To the extent that collision potential exists, the additional transmission line will likely not add greater risk than what already occurs at the river crossing. It is conceivable that waterfowl and other aquatic species occasionally travel across the proposed route segment from the Yakima River to the Columbia River or vice versa. The FEIS Agency Preferred Alternative more or less parallels one or more existing transmission lines for the entire route. Avoidance and minimization measures include installing bird flight diverters in locations with known avian mortality through collision with transmission line infrastructure and closely paralleling existing transmission lines. Aside from collision risk, the scale of biological change and biological disturbance to waterfowl, other aquatic birds, and their habitat is anticipated to be low.

### **5.3.3 Songbirds and Other Upland Bird Species**

Priority Species Regional Areas identified by PHS within the Project study area include regular concentration areas for loggerhead shrike. Eight other special status songbird and other upland bird species occur or are likely to occur within the Project study area: long-billed curlew, Vaux's swift, gray flycatcher, cedar waxwing, calliope hummingbird, rufous hummingbird, sage thrasher, sage sparrow, black-throated sparrow, brewer's sparrow, and vesper sparrow. The latter five species breed in relatively high densities in sagebrush steppe and are likely to nest within the proposed ROW corridor in shrubs or on the ground. Ground disturbance during the breeding season would have a high probability of destroying nests of these five songbird species causing direct mortality. For all five species nest failure is relatively common under natural conditions and the birds habitually re-nest within the same season if a nest fails. Direct mortality associated with construction is unlikely to have a significant impact on local population sizes of these species. Other impacts to special status upland bird species include direct habitat loss, indirect habitat loss, or degradation, increased predation from corvids and raptors attracted to nesting

and/or perching opportunities on the structures, and disturbance or displacement from noise or visual disturbance, especially during construction. Habitat loss and degradation has the greatest potential to impact songbirds and other upland bird species; however, the amount of habitat loss resulting from the proposed Project will be relatively small. Total short-term and long-term direct disturbance for all habitat types combined is anticipated to be 204 (Table 3). The implementation of avoidance and minimization measures are anticipated to reduce impacts to songbirds and other upland bird species, and include: avoiding construction during the breeding season or having biologists conduct clearance surveys to find nests and buffer each nest from disturbance until the nesting attempt is complete; maintaining intact vegetation wherever possible; minimizing the blading of native plant communities during construction, consistent with safe construction practices; utilizing overland travel where feasible; reseeding disturbed areas with certified weed-free land management agency-approved native and non-native species or seed for revegetation as detailed in the POD; reseeding disturbed areas with certified weed-free materials (e.g., seed, borrow material, straw wattles and bale barriers); washing all equipment before entering the Project study area and when leaving areas where noxious weeds are present; closing and revegetating new or improved access roads that are not required for maintenance; implementing a noxious weed control plan; adherence to reasonable speed limits; and siting the proposed transmission line to closely parallel Pacific Power's existing 230 kV transmission line.

### **5.3.4 Impacts Specific to FEIS Agency Preferred Alternative Route Segments**

#### **5.3.4.1 Route Segment 1a/NNR-1**

Approximately 3.5 acres of long-term and 9.2 acres of short-term disturbance would occur through the construction of Route Segment 1a/NNR-1. The majority of disturbance for this route segment would occur in habitat that has been disturbed in the past and is currently dominated by rabbitbrush (4.8 acres long-term disturbance), exotic annual grasses (0.3 acre long-term and 1.3 acres short-term), and developed areas, such as agricultural and residential areas (0.4 acre long-term and 2.2 acres short-term; Table 3). The remaining 3.7 acres of long-term disturbance would occur within areas classified as sagebrush/perennial grassland. RDFs would be implemented to minimize further habitat degradation, as described above in Sections 4 and 5.3. Impact levels to habitat are expected to be low for 1.7 miles and moderate for 0.7 mile (sagebrush/perennial grassland).

The presence of new transmission structures, which could provide additional perch and/or nesting sites for avian predators, could negatively impact nearby prey, including migratory bird species, particularly when the new structures are built in an area where perching opportunities currently do not exist (i.e., greater than 0.25 mile from existing structures or trees). Construction of Route Segment 1a/NNR-1 would require an estimated 31 structures in a landscape dominated by low growing grasses and shrubs. An estimated 14 new structures would be located greater than 0.25 mile from an existing transmission line or trees.

Within one mile of Route Segment 1a/NNR-1, potentially suitable habitat is present for 30 special status migratory bird species that are possible, likely, or known to occur (Table 2). Potential impacts and RDFs to address them are discussed above in Sections 4 and 5.3. Avian species or resources that have been documented at specific locations within one mile of Route Segment 1a/NNR-1 include a bald eagle nest, and the Selah Waterfowl Concentration Area/Selah Gravel Pit wetlands.

The Selah Waterfowl Concentration Area/Selah Gravel Pit wetlands associated with the Yakima River are located within one mile of Route Segment 1a/NNR-1, just northwest of the Pomona Heights Substation. Four special status aquatic bird species are likely to utilize the area: great blue heron, eared grebe, tundra swan, and American white pelican. Waterfowl and aquatic bird injury and mortality could occur through collision with the new transmission line, though it is not very likely because the route segment will not cross the wetlands or cross between the wetlands and likely feeding areas such as agricultural fields. Bald

eagles are also known to utilize the Selah wetlands and there is a documented bald eagle nest located along the Yakima River approximately 0.8 mile west of Route Segment 1a/NNR-1. RDFs include installing bird flight diverters in locations with known avian mortality through collision with new transmission line infrastructure. Within the breeding season, construction would be avoided within species-specific raptor nest buffers to avoid disturbing nesting birds (1.0 mile for bald eagle; see RDF in Section 4.2.6) Route Segment 1a/NNR-1 is expected to have no identifiable impacts to waterfowl or aquatic bird species. Route Segment 1a/NNR-1 is expected to have 0.3 mile of low impact level on bald eagles.

#### **5.3.4.2 Route Segment NNR-2**

Approximately 12.1 acres of long-term and 12.6 acres of short-term disturbance would occur through the construction of Route Segment NNR-2. All of the short-term disturbance and most of the long-term disturbance for this route segment would occur in habitat that has been disturbed in the past and is currently dominated by rabbitbrush, exotic annual grasses, perennial grasses, and developed areas, such as agricultural and residential areas (Table 3). The remainder of long-term disturbance will include 4.4 acres of areas classified as sagebrush / perennial grassland, 2.4 acres of sagebrush/annual grassland, and 1.3 acres of tree habitat. RDFs would be implemented to minimize further habitat degradation, as described above in Sections 4 and 5.3. Impact levels to habitat are expected to be low for 3.4 miles and moderate for 1.7 miles (0.9 mile of sagebrush/perennial grassland, 0.5 mile of sagebrush/annual grassland, and 0.3 mile of tree habitat).

The presence of new transmission structures, which could provide additional perch and/or nesting sites for avian predators, could negatively impact nearby prey, including migratory bird species, particularly when the new structures are built in an area where perching opportunities currently do not exist (i.e., greater than 0.25 mile from existing structures or trees). Construction of Route Segment NNR-2 would require an estimated 48 structures in a landscape dominated by low growing grasses and shrubs. An estimated 21 new structures would be located greater than 0.25 mile from an existing transmission line.

Within one mile of Route Segment NNR-2, potentially suitable habitat is present for 20 special status migratory bird species that are possible, likely, or known to occur (Table 2). Potential impacts and RDFs to address them are discussed above in Sections 4 and 5.3. Avian species or resources that have been documented at specific locations within one mile of Route Segment NNR-2 include the Selah Waterfowl Concentration Area/East Selah Wetlands, cliff bands with high concentrations of nesting raptors including golden eagles and prairie falcons, and a burrowing owl nesting site.

Cliff bands occur along Selah Creek and tributaries within one mile of Route Segment NNR-2; the cliffs attract high concentrations of raptors; documented nests include four prairie falcon nests (not a special status species, but sensitive to nest disturbance) and one golden eagle nest documented in 2013 just under one mile from the proposed route segment. Cliffs would be spanned thus avoiding direct disturbance to the habitat. Within the breeding season, construction would be avoided within species-specific raptor nest buffers to avoid disturbing nesting birds (0.5 mile for golden eagle and 0.25 mile for prairie falcon; see RDF in Section 4.2.6). Impact levels on golden eagles are anticipated to be moderate for 0.4 mile.

A historic burrowing owl nesting site (last documented occupancy in 1993) occurs approximately 0.75 mile from Route Segment NNR-2. While this particular nest is no longer a management concern, it demonstrates potential for burrowing owls to nest within one mile of Route Segment NNR-2. Potential impacts would occur from disturbance during construction activities or from injury or mortality from vehicle strikes or interactions with other equipment used during construction, including mechanical disturbance or crushing of burrows. If an occupied burrowing owl nesting site is found within 0.25 mile of the proposed route segment ROW corridor, a seasonal restriction on construction would be enacted from March to August within the 0.25-mile buffer. Additional RDFs to reduce impact on burrowing owls

are described in Sections 4 and 5.3. Impact levels to burrowing owl are expected to be moderate for 1.4 miles.

The Selah Waterfowl Concentration Area/East Selah Wetlands associated with the Yakima River are located within one mile—approximately 0.8 mile west of Route Segment NNR-2. Four special status aquatic bird species are likely to utilize the area, including great blue heron, eared grebe, tundra swan, and American white pelican. Waterfowl and aquatic bird injury and mortality could occur through collision with the transmission line, though it is not very likely because the route will not cross the wetlands or cross between the wetlands and likely feeding areas such as agricultural fields. RDFs include installing bird flight diverters in locations with known avian mortality through collision with transmission line infrastructure. Route Segment NNR-2 is expected to have no identifiable impacts to waterfowl or aquatic bird species.

#### **5.3.4.3 Route Segment NNR-3**

Approximately 45.3 acres of long-term and 7.1 acres of short-term disturbance would occur through the construction of Route Segment NNR-3. Permanently disturbed areas would include 39.8 acres of sagebrush/perennial grassland and 2.0 acres of sagebrush/annual grassland (Table 3). Perennial grassland accounts for most of the short-term (5.2 acres) and remaining long-term (2.9 acres) disturbance. Other disturbed habitat includes 0.6 acre of annual grassland/noxious weeds, 0.4 acre of agriculture/disturbed, and 1.5 acres of rock/basalt cliffs. RDFs would be implemented to minimize habitat loss and degradation, as described above in Sections 4 and 5.3. Impact levels to habitat are expected to be low for 1.6 miles and moderate for 7.7 miles (sagebrush/perennial grassland for 7.0 miles and sagebrush/annual grassland for 0.7 miles).

The presence of new transmission structures, which could provide additional perch and/or nesting sites for avian predators, could negatively impact nearby prey, including migratory bird species, particularly when the new structures are built in an area where perching opportunities currently do not exist (i.e., greater than 0.25 mile from existing structures or trees). Construction of Route Segment NNR-3 would require an estimated 69 structures in a landscape dominated by low growing grasses and shrubs. Only an estimated five new structures would be located greater than 0.25 mile from an existing transmission line.

Within one mile of Route Segment NNR-3, potentially suitable habitat is present for 17 special status migratory bird species that are possible, likely, or known to occur (Table 2). Potential impacts and RDFs to address them are discussed above in Sections 4 and 5.3. Species or wildlife resources that have been documented at specific locations within one mile of Route Segment NNR-3 include cliff bands with high concentrations of nesting raptors, several golden eagle nests within four breeding territories, and a historic ferruginous hawk nest.

Cliff bands occur along Selah Creek and tributaries, Lmuma Creek, and the Yakima River Canyon within one mile of Route Segment NNR-3. The cliffs attract high concentrations of raptors, including prairie falcons (not a special status species, but sensitive to nest disturbance) and several golden eagle nests associated with four territories: one on Selah Creek (0.9 mile away from centerline), one on Lmuma Creek (0.1 mile away from centerline), and two in the Yakima River Canyon (0.8 mile away from centerline). A historic ferruginous hawk nest was documented in 1994 on top of a six-foot rock outcrop approximately 0.3 mile from the route segment. Cliffs would be spanned thus avoiding direct disturbance to the habitat. Within the breeding season, construction would be avoided within species-specific raptor nest buffers to avoid disturbing nesting birds (0.5 mile for golden eagle and ferruginous hawk and 0.25 mile for prairie falcon; see RDF in Section 4.2.6). Impact levels on golden eagles are anticipated to be moderate for 3.8 miles and impact levels on ferruginous hawks are expected to be moderate for 1.8 miles.

#### **5.3.4.4 Route Segment NNR-4o**

Route Segment NNR-4o would result in approximately 21.4 acres of long-term and 1.5 acres of short-term disturbance. Permanently disturbed areas would include 10.8 acres of sagebrush/perennial grassland and 9.2 acres of sagebrush/annual grassland (Table 3). Undergrounding NNR-4u would increase the permanently disturbed areas to 24.7 acres of sagebrush/perennial grassland and 17 acres of sagebrush/annual grassland. The remaining 1.4 acres of long-term disturbance and all short-term disturbance (1.5 acres) consists of annual grassland and noxious weeds, other shrublands, and perennial grassland. RDFs would be implemented to minimize habitat loss and degradation, as described above in Sections 4 and 5.3. Impact levels to habitat are expected to be low for 0.4 mile and moderate for 4.1 miles (other shrublands for 0.1 mile, sagebrush/perennial grassland for 2.3 miles and sagebrush/annual grassland for 1.7 miles).

The presence of new transmission structures, which could provide additional perch and/or nesting sites for avian predators, could negatively impact nearby prey, including migratory bird species, particularly when the new structures are built in an area where perching opportunities currently do not exist (i.e., greater than 0.25 mile from existing structures or trees). Construction of Route Segment NNR-4o would require an estimated 35 structures; none of the new structures would be located greater than 0.25 mile from an existing transmission line.

Within one mile of Route Segment NNR-4o, potentially suitable habitat is present for 18 special status migratory bird species that are possible, likely, or known to occur (Table 2). Potential impacts and RDFs to address them are discussed above in Sections 4 and 5.3. Species or wildlife resources that have been documented at specific locations within one mile of Route Segment NNR-4o include a cliff band with a high concentration of nesting raptors, several golden eagle nests within one breeding territory, a historic ferruginous hawk nest, and a historic burrowing owl nesting site.

Cliff bands occur along Lmuma Creek, within one mile of Route Segment NNR-4o; the cliffs attract high concentrations of raptors, including prairie falcons (not a special status species, but sensitive to nest disturbance) and several golden eagle nests associated with one breeding territory, approximately 0.6 mile from the route segment. A historic ferruginous hawk nest was documented in 1994 on top of a six-foot rock outcrop approximately 0.9 mile from the route segment. Cliffs would be spanned thus avoiding direct disturbance to the habitat. Burrowing owl surveys in 2000 located one burrowing owl nesting site within the Project study area, approximately 120 feet from Route Segment NNR-4o. Within the breeding season, construction would be avoided within species-specific active raptor nest buffers to avoid disturbing nesting birds (0.5 mile for golden eagle and ferruginous hawk, 0.25 mile for prairie falcon and burrowing owl; see RDF in Section 4.2.6). Impact levels on golden eagles are anticipated to be moderate for 0.5 mile, impact levels on ferruginous hawks are expected to be moderate for 0.3 mile, and impacts on burrowing owl are expected to be moderate for 2.0 miles.

#### **5.3.4.5 Route Segment NNR-5**

Approximately 8.6 acres of long-term and 0.4 acres of short-term disturbance would occur through the construction of Route Segment NNR-5. Permanently disturbed areas would include 8.4 acres of sagebrush/perennial grassland (Table 3). The remaining long-term (0.2 acre) and short-term (0.4 acre) disturbance was classified as intermittent stream/dry gully. RDFs would be implemented to minimize habitat loss and degradation, as described above in Sections 4 and 5.3. Impact levels to habitat are expected to be moderate for all 1.8 miles of the route segment (sagebrush/perennial grassland).

The presence of new transmission structures, which could provide additional perch and/or nesting sites for avian predators, could negatively impact nearby prey, including migratory bird species, particularly when the new structures are built in an area where perching opportunities currently do not exist (i.e., greater than 0.25 mile from existing structures or trees). Construction of Route Segment NNR-5 would

require an estimated 16 structures in a landscape dominated by low growing grasses and shrubs. An estimated 10 new structures would be located greater than 0.25 mile from an existing transmission line.

Within one mile of Route Segment NNR-5, potentially suitable habitat is present for 17 special status migratory bird species that are possible, likely, or known to occur (Table 2). Potential impacts and RDFs to address them are discussed above in Section 5.3. Species or wildlife resources that have been documented at specific locations within one mile of Route Segment NNR-5 include a burrowing owl nesting site.

A historic burrowing owl nesting site (last documented occupancy prior to 2000) occurs approximately 0.7 mile from Route Segment NNR-5. While this particular nest is no longer a management concern, it demonstrates potential for burrowing owls to nest within one mile of Route Segment NNR-5. Potential impacts would occur from disturbance during construction activities or from injury or mortality from vehicle strikes or interactions with other equipment used during construction, including mechanical disturbance or crushing of burrows. If an occupied burrowing owl nesting site is found within 0.25 mile of the proposed route segment, a seasonal restriction on construction would be enacted from March to August, within the 0.25-mile buffer. Additional RDFs to reduce impact on burrowing owls are described above in Sections 4 and 5.3. Impact levels to burrowing owl are expected to be moderate for 0.6 mile.

#### **5.3.4.6 Route Segment NNR-6o**

Route Segment NNR-6o would result in approximately 27.3 acres of long-term and 3.3 acres of short-term disturbance. Permanently disturbed areas would include 26.5 acres of sagebrush/perennial grassland (Table 3). RDFs would be implemented to minimize habitat loss and degradation, as described above in Section 5.3. For either option, impact levels to habitat are expected to be low for 2.3 mile and moderate for 4.1 miles (sagebrush/perennial grassland).

The presence of new transmission structures, which could provide additional perch and/or nesting sites for avian predators, could negatively impact nearby prey, including migratory bird species, particularly when the new structures are built in an area where perching opportunities currently do not exist (i.e., greater than 0.25 mile from existing structures or trees). Construction of Route Segment NNR-6o would require an estimated 48 structures. None of the new structures would be located greater than 0.25 mile from an existing transmission line.

Within one mile of Route Segment NNR-6o, potentially suitable habitat is present for 18 special status migratory bird species that are possible, likely, or known to occur (Table 2). Potential impacts and RDFs to address them are discussed above in Section 5.3. Species or wildlife resources that have been documented at specific locations within 1.0 mile of Route Segment NNR-6o include a burrowing owl nest, and regular concentration area for loggerhead shrikes.

A historic burrowing owl nesting site (last documented occupancy prior to 2000) occurs approximately 0.7 mile from Route Segment NNR-6o. While this particular nest is no longer a management concern, it demonstrates potential for burrowing owls to nest within one mile of Route Segment NNR-6o. Potential impacts would occur from disturbance during construction activities or from injury or mortality from vehicle strikes or interactions with other equipment used during construction, including mechanical disturbance or crushing of burrows. If an occupied burrowing owl nesting site is found within 0.25 mile of the proposed route segment, a seasonal restriction on construction would be enacted from March to August, within the 0.25-mile buffer. Additional RDFs to reduce impact on burrowing owls are described above in Sections 4 and 5.3. Impact levels to burrowing owl are expected to be moderate for 0.6 mile.

The McDonald Springs regular concentration of loggerhead shrikes is located approximately 0.9 mile from Route Segment NNR-6o. Potential impacts include direct habitat loss, indirect habitat loss or

degradation, increased predation from corvids and raptors attracted to nesting and/or perching opportunities on the structures, and disturbance or displacement from noise or visual disturbance, especially during construction. RDFs would be implemented to minimize impacts, as described above in Sections 4 and 5.3. Because the shrike concentration area is nearly 1.0 mile from the route, no identifiable impacts are anticipated.

#### **5.3.4.7 Route Segment NNR-7**

All of the disturbance (38.1 acres) would occur within areas classified as sagebrush/perennial grassland; therefore, it was all considered long-term impact because sagebrush would recover very slowly following disturbance (Table 3). In 2014, a 23,261-acre fire burned the majority of Route Segment NNR-7. Because perennial bunchgrasses typically recover quickly after a fire and sagebrush typically recovers much more slowly, currently much of the route segment is probably perennial grassland rather than shrubland—though depending on burn severity, over the next several years to several decades the sagebrush cover will likely return. RDFs would be implemented to minimize habitat loss and degradation, as described above in Sections 4 and 5.3. Impact levels to special status species habitat are expected to be low for 7.1 miles and moderate for 1.1 miles.

The presence of new transmission structures, which could provide additional perch and/or nesting sites for avian predators, could negatively impact nearby prey, including migratory bird species, particularly when the new structures are built in an area where perching opportunities currently do not exist (i.e., greater than 0.25 mile from existing structures or trees). Construction of Route Segment NNR-7 would require an estimated 61 structures, but none of the structures would be located greater than 0.25 mile from an existing transmission line.

Within 1.0 mile of Route Segment NNR-7, potentially suitable habitat is present for 25 special status migratory bird species that are possible, likely, or known to occur (Tables 2). Potential impacts and RDFs to address them are discussed above in Sections 4 and 5.3. Species or wildlife resources that have been documented at specific locations within one mile of Route Segment NNR-7 include cliff bands with potential for high concentrations of nesting raptors.

Cliff bands occur within 1.0 mile of Route Segment NNR-7, near the Columbia River. The cliffs likely attract high concentrations of raptors, though PHS data documents no raptor nests within 1.0 mile of Route Segment NNR-7. Cliffs would be spanned without direct disturbance to the cliff habitat. If a raptor nest is found, seasonal restrictions would occur within the species-specific buffer of the active nest (refer to Section 4.2.6). No identifiable impacts to raptors or cliff habitat are anticipated to occur through construction, operation, and maintenance of the proposed Project.

#### **5.3.4.8 Route Segment NNR-8**

Approximately 10 acres of long-term and 3.2 acres of short-term disturbance would occur through the construction of Route Segment NNR-8. Permanently disturbed areas would include 8.9 acres of sagebrush/perennial grassland and 0.5 acre of sagebrush/annual grassland (Table 3). Annual grassland/noxious weeds and perennial grassland accounts for the remaining long-term (0.6 acre) and short-term (3.2 acres) disturbance. RDFs would be implemented to minimize habitat loss and degradation, as described above in Sections 4 and 5.3. Impact levels to habitat are expected to be low for 1.1 miles and moderate for 1.6 miles (sagebrush/perennial grassland).

The presence of new transmission structures, which could provide additional perch and/or nesting sites for avian predators, could negatively impact nearby prey, including migratory bird species, particularly when the new structures are built in an area where perching opportunities currently do not exist (i.e., greater than 0.25 mile from existing structures or trees). Construction of Route Segment NNR-8 would

require an estimated 20 structures, but none of the structures would be located greater than 0.25 mile from an existing transmission line.

Within 1.0 mile of Route Segment NNR-8, potentially suitable habitat is present for 25 special status migratory bird species that are possible, likely, or known to occur (Table 2). Potential impacts and RDFs to address them are discussed above in Sections 4 and 5.3. Species or wildlife resources that have been documented at specific locations within 1.0 mile of Route Segment NNR-8 include regular concentrations of waterfowl and common loons.

The Wanapum Pool fall and winter waterfowl area and common loon use area is located within 1.0 mile of Route Segment NNR-8 on Wanapum Lake, just northwest of the Vantage Substation. Eight special status aquatic bird species occur or are likely to utilize the area: black-crowned night heron; great blue heron; Clark's, western, and eared grebes; tundra swan; American white pelican; and common loon. Common loons and American white pelicans have been specifically documented within one mile of Route Segment NNR-8. Waterfowl and aquatic bird injury and mortality could occur through collision with the new transmission line. Where the proposed route segment ROW corridor crosses the Columbia River, the new transmission line would parallel four existing transmission lines within 350 to 1,300 feet. To the extent that collision potential exists, the additional line will likely not add greater risk than what already occurs at the crossing. RDFs include installing bird flight diverters in locations with known avian mortality through collision with transmission line infrastructure. Route Segment NNR-8 is expected to have no identifiable impacts to waterfowl or aquatic bird species.

## **6.0 RESIDUAL IMPACTS**

Adherence to RDFs is anticipated to successfully avoid and minimize impacts to migratory birds. Compensatory mitigation for impacts to Sage-Grouse and their habitat will benefit migratory birds too, especially those that rely on sagebrush-steppe or grassland habitat (Refer to Appendix B-6 – *Framework for Development of a Sage-Grouse Compensatory Mitigation Plan.*) Following avoidance, minimization, and Sage-Grouse compensatory mitigation, no identifiable residual impacts to migratory birds are anticipated. Therefore, compensatory mitigation specific to migratory birds will not be necessary.

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# **APPENDIX C VISUAL RESOURCES SUPPORTING DATA**

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**APPENDIX C-1  
SENSITIVE VIEWPOINTS: DEFINITIONS, CRITERIA, AND VIEWPOINT  
SUMMARY TABLE**

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**TABLE C-1.1 VISUAL SENSITIVITY DEFINITIONS**

CRITERIA	HIGH	MODERATE	LOW
Use Volume	High Level of Use	Moderate Level of use	Low level of use
User Attitude	High expectations for maintaining scenic quality (i.e. residences)	Users are concerned for scenic quality but it is not the primary focus of their experiences (i.e., dispersed recreation areas and general travel routes)	Areas where the public has low expectations for maintaining scenic quality. Generally commercial or industrial areas where human caused modifications already exist in the landscape
Duration of View	Fixed or continuous views - Long	Intermediate views (i.e., open highway views)	Brief or intermittent views (i.e. highway views in rolling landscapes) - Short

**TABLE C-1.2 VISUAL SENSITIVITY CRITERIA AND LEVELS**

USER ATTITUDE	VIEW DURATION	USE VOLUME	VISUAL SENSITIVITY LEVEL
High	Long	High	High
High	Long	Moderate	High
High	Long	Low	High
High	Moderate	High	High
High	Moderate	Low	High
Moderate	Long	High	Moderate
Moderate	Moderate	Moderate	Moderate
Moderate	Long	Moderate	Moderate
Moderate	Long	Low	Moderate
Moderate	Moderate	High	Moderate
Moderate	Moderate	Low	Moderate
Low	Short	High	Low
Low	Long	Low	Low

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TABLE C-1.3 SENSITIVE VIEWER TABLE

SENSITIVE VIEWER	SENSITIVE VIEWER TYPE				SENSITIVITY					JURISDICTION											
	Recreation	Travel	Special Management	Dispersed User <sup>1</sup>	Aesthetic Concern / User Attitude (High-H; Moderate-M; Low-L)	Use/View Duration (Long-L; Moderate-M; Short-S)	Use Volume (High-H; Moderate-M; Low-L)	Scenic / Historic	Overall Sensitivity	BLM	USFWS	BOR	State - WSDOT	State-Washington P&R Commission	State-WSDNR	State-WDFW	Grant Co. PUD	County	Municipal	Private	Other
Baldy Butte Hang Gliding Launch Area	•	-	-	-	M	L	L	-	M	-	-	-	-	-	-	-	-	-	-	•	-
Beverly Sand Dunes OHV Park	•	-	-	-	M	L-M	M	-	M	-	-	-	-	-	-	-	•	-	-	-	-
Buckshot Boat Launch	•	-	-	-	M	L-M	M	-	M	-	-	-	-	-	-	•	•	-	-	-	-
Burkett Lake Recreation Area/Crab Creek Corridor	•	-	-	-	H-M	L	M	-	H	-	-	-	-	-	-	-	•	-	-	-	-
Columbia Basin Wildlife Area-Lower Crab Creek Unit/Nunnally Lake	•	-	-	-	H-M	L	M	-	H	-	-	-	-	-	-	•	-	-	-	-	-
Columbia Basin Wildlife Area-Priest Rapids Unit	•	-	-	•	M	L	L	-	M	-	-	-	-	-	-	•	-	-	-	-	-
Columbia NWR	-	-	•	•	M	L	L	-	M	-	•	-	-	-	-	-	-	-	-	-	-
Columbia River Corridor (Eligible WSR)	•	-	•	•	M	L	M	-	M	-	-	•	-	-	-	-	-	-	-	-	-
Desert Aire Dock	•	-	-	-	H-M	L	L	-	M	-	-	-	-	-	-	-	•	-	-	•	-
Desert Aire Golf Course	•	-	-	-	M	L-M	H-M	-	M	-	-	-	-	-	-	-	-	-	-	•	-
Desert Aire Boat Launch/ Recreation Area	•	-	-	-	M	L-M	H-M	-	M	-	-	-	-	-	-	-	•	-	-	•	-
Getty's Cove Day Use & Boat Launch	•	-	-	-	M	L	M	-	M	-	-	-	-	-	-	-	•	-	-	-	-
Hanford Reach National Monument/ Saddle Mountain NWR	•	-	•	•	M	L	L-M	-	M	-	•	-	-	-	-	-	-	-	-	-	-
Huntzinger Rd. Boat Launch	•	-	-	-	H-M	L	L	-	M	-	-	-	-	-	-	-	•	-	-	-	-
Interstate 82	-	•	-	-	L-M	S-M	H	-	L-M	-	-	-	•	-	-	-	-	-	-	-	-
Interstate 82 Rest Areas/Viewpoints- Selah Creek Rest Area-East-bound (Overlook), Selah Creek Rest Area-West-bound, Manastash Ridge (East-bound and West-bound Viewpoints)	-	•	-	-	M-H	L	H	-	H	-	-	-	•	-	-	-	-	-	-	-	-

SENSITIVE VIEWER	SENSITIVE VIEWER TYPE				SENSITIVITY					JURISDICTION											
	Recreation	Travel	Special Management	Dispersed Use <sup>1</sup>	Aesthetic Concern / User Attitude (High-H; Moderate-M; Low-L)	Use/View Duration (Long-L; Moderate-M; Short-S)	Use Volume (High-H; Moderate-M; Low-L)	Scenic / Historic	Overall Sensitivity	BLM	USFWS	BOR	State - WSDOT	State-Washington P&R Commission	State-WSDNR	State-WDFW	Grant Co. PUD	County	Municipal	Private	Other
John Wayne Pioneer Trail/Milwaukee Corridor/Beverly Railroad Bridge National Register of Historic Places (NRHP) Site	•	-	-	-	H-M	L	M-L	Historic*	M-H*	-	-	-	-	•	-	-	•	-	-	-	-
Lower Wanapum Dam Boat Launch and Picnic Area	•				M	L	M		M								•				
Priest Rapids Lake	•			•	M	L	M		M			•									
Priest Rapids Recreational Trail	•				H-M	L	M		H								•				
Residences – All Occupied	-	-	-	-	H	L	L		H											•	
Roads – Collector Rural Roads (Huntzinger Rd. E. Selah Rd., Beverly Berke Rd., E. Pomona Rd., Thrall Rd, Coombs Rd., Mieras Rd., O Rd., 24 SW, 28 SW, Lower Crab Creek Rd., Beverly-Berke Rd.)		•			M	M	L-M		M									•	•	•	
Roads – Other Local Roads (Sage Trail Road, Firing Center Rd., Tipp Rd., Burbank Creek Road, 4 <sup>th</sup> Parallel Rd., N. St Hilaire Rd.))		•			M	M	L-M		M									•	•	•	
Saddle Mountain Hang Gliding Launch Area	•				H	L	L		H											•	
Saddle Mountains Management Area Access Route (R Rd Extension)	•				M	S-M	L-M		H/M <sup>2</sup>	•										•	
Saddle Mountains Off-Highway Vehicle (OHV) Area/Saddle Mountains Management Area	•			•	M	S-M	M		H/M <sup>2</sup>	•											
Sand Hollow South Boat Launch	•				M	M	M		M								•				

SENSITIVE VIEWER	SENSITIVE VIEWER TYPE				SENSITIVITY					JURISDICTION											
	Recreation	Travel	Special Management	Dispersed Use <sup>1</sup>	Aesthetic Concern / User Attitude (High-H; Moderate-M; Low-L)	Use/View Duration (Long-L; Moderate-M; Short-S)	Use Volume (High-H; Moderate-M; Low-L)	Scenic / Historic	Overall Sensitivity	BLM	USFWS	BOR	State - WSDOT	State-Washington P & R Commission	State-WSDNR	State-WDFW	Grant Co. PUD	County	Municipal	Private	Other
Selah Butte Watchable Wildflower Area <sup>2</sup>	•			•	H	L	L		H	•											
Selah Butte Watchable Wildflower Area Parking Area (KOP 6s)	•				H	L	L		H	•											
Selah Cliffs Natural Area Preserve Trail	•				H	L	L		H					•							
SR-24		•			M	M	M		M				•								
SR-243		•			M	M	M		M				•								
Upper Wanapum Dam Boat Launch	•				M	L	M		M				•			•					
Vernita Bridge Fishing Area & Boat Launch	•				M	L	M		M												•
Vernita Bridge Rest Stop		•			M	L	M		M				•								
Wanapum Dam Overlook	•				M	L	L-M		M							•					
Wanapum State Park/Boat Launch	•				M	L	M		M				•			•					
Wanapum Heritage Center Picnic Area	•				L-M	L	H-M		M							•					
Wanapum Lake	•			•	M	L	M		M			•									
Yakima Elks Golf & Country Club	•				M	L-M	H-M		M												•
Yakima River Canyon Washington Tourism Route (SR-821)		•			H	M	M	Scenic	H				•								
Yakima Greenway Trail-Yakima River	•				H	L	H-M		H											•	

<sup>1</sup> Not modeled in viewshed analysis

<sup>2</sup> Sensitivity identified during VRI

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**APPENDIX C-2  
SCENIC QUALITY AND DEVELOPMENT CHARACTER PHOTOS**

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**FIGURE C-2.1 TYPICAL CLASS A SCENERY**



**FIGURE C-2.2 TYPICAL CLASS A SCENERY**



**FIGURE C-2.3 TYPICAL CLASS B SCENERY**



**FIGURE C-2.4 TYPICAL CLASS B SCENERY**



**FIGURE C-2.5 TYPICAL CLASS C SCENERY**



**FIGURE C-2.6 TYPICAL CLASS C SCENERY**



**FIGURE C-2.7 INVENTORY OBSERVATION POINT G- CLASS C SCENIC QUALITY**



**FIGURE C-2.8 INVENTORY OBSERVATION POINT H- CLASS C SCENIC QUALITY**



**FIGURE C-2.9 TYPICAL RESIDENTIAL DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.10 TYPICAL RESIDENTIAL DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.11 TYPICAL RESIDENTIAL DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.12 TYPICAL AGRICULTURAL DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.13 TYPICAL AGRICULTURAL DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.14 TYPICAL AGRICULTURAL DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.15 TYPICAL DEVELOPED PARKLAND DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.16 TYPICAL DEVELOPED PARKLAND DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.17 TYPICAL TRANSPORTATION CORRIDOR DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.18 TYPICAL INDUSTRIAL/UTILITY CORRIDOR DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.19 TYPICAL INDUSTRIAL/UTILITY CORRIDOR DEVELOPMENT CHARACTER AREA**



**FIGURE C-2.20 TYPICAL INDUSTRIAL/UTILITY CORRIDOR DEVELOPMENT CHARACTER AREA**

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**APPENDIX C-3  
KEY OBSERVATION POINT PHOTOS**

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**FIGURE C-3.1 KOP 1 - SAGE TRAIL ROAD**



**FIGURE C-3.2 KOP 2 - N. HILAIRE RD.: VIEW LOOKING NORTHEAST NEAR TESTER LANE INTERSECTION**



**FIGURE C-3.3 KOP 3 - MIERAS RD: VIEW LOOKING SOUTHWEST WEST OF PRAIRIE RD**



**FIGURE C-3.4 KOP 4 - SR 24: EASTBOUND VIEW 1.5 MI. WEST OF MEEBOER RANCH**



**FIGURE C-3.5 KOP 5 - SR 243: WESTBOUND VIEW JUST WEST OF ROAD O SW**



**FIGURE C-3.6 KOP 6 - 24 SW RD.: EASTBOUND VIEW 0.2 MI. WEST OF ROAD O SW**



**FIGURE C-3.7 KOP 7 - SADDLE MOUNTAINS ACCESS ROUTE: LOOKING SOUTH C. 3.3 MI. PAST BLM GATE ON R ROAD EXTENSION**



**FIGURE C-3.8 KOP 8 - BURKETT LAKE RECREATION AREA VIEW LOOKING SOUTHEAST FROM DAY USE AREA**



**FIGURE C-3.9 KOP 9 - MILWAUKEE ROAD CORRIDOR: LOOKING NORTHWEST FROM NEAR NUNNALLY LAKE PARKING LOT EAST OF BEVERLY**



**FIGURE C-3.10 KOP 10 – BEVERLY: LOOKING EAST FROM EAST SIDE OF BEVERLY**



**FIGURE C-3.11 KOP 11 - WANAPUM VILLAGE: LOOKING NORTHWEST FROM NORTHWEST SIDE OF VILLAGE**



**FIGURE C-3.12 KOP 12 - JOHN WAYNE-IRON HORSE TRAILHEAD: LOOKING NORTH FROM PARKING TRAILHEAD SOUTH OF WANAPUM DAM**



**FIGURE C-3.13 KOP 13 - DESERT AIRE RESIDENTIAL: LOOKING WEST ACROSS  
PRIEST RAPIDS LAKE**



**FIGURE C-3.14 KOP 14 – TEMPLE LANE**



**FIGURE C-3.15 KOP 15 – YTC: FIRING CENTER ROAD**



**FIGURE C-3.16 KOP 16 – E. POMONA ROAD**



**FIGURE C-3.17 KOP 17 – WSDOT SELAH CLIFFS REST AREA OVERLOOK (NORTH VIEW)**



**FIGURE C-3.18 KOP 17 – WSDOT SELAH CLIFFS REST AREA OVERLOOK (WEST VIEW)**



**FIGURE C-3.19 KOP 18 – SELAH BUTTE WILDFLOWER PARKING AREA**



**FIGURE C-3.20 KOP 19- BADGER POCKET: SILKA ROAD**



**FIGURE C-3.21 KOP 20 – UPPER BADGER POCKET ROAD**



**FIGURE C-3.22 KOP 21 – JOHN WAYNE TRAIL**

**APPENDIX C-4  
VISUAL SIMULATIONS**

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### Existing Condition



View West on Sage Trail Road 0.1-mile West of JBLM-YTC

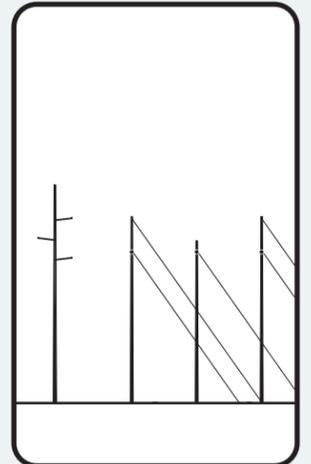
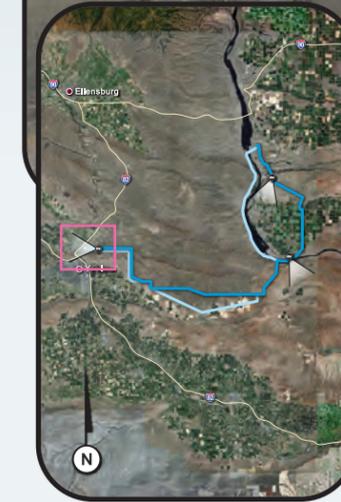
### Simulated Condition



Proposed 230 kV transmission

Pomona Heights Substation

### KOP 1 Sage Trail Road



Proposed Structures

Date/Time: 5/9/2011 1:09pm PST

Wood monopole and heavy angle wood pole structures

Photo Simulations are for demonstration purposes only.  
Final Design may change pending review.



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## Existing Condition



View South-Southeast on SR 243 1.0-mile West of Road O SW

## Simulated Condition



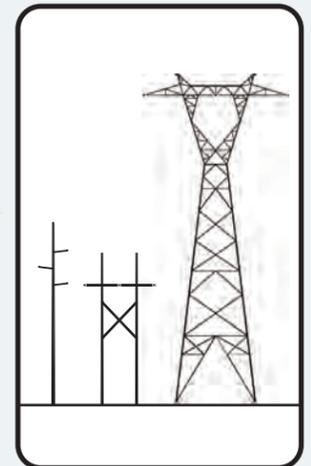
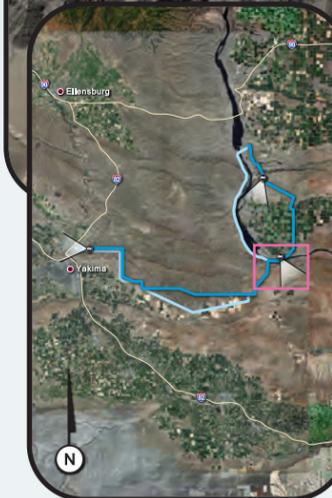
Proposed 230 kV transmission

Columbia River Crossing Structures

Transition Structure

Single Pole Structure

KOP 5  
SR 243



Proposed Structures

Date/Time: 8/30/2011 10:30am PST

195' steel lattice crossing structures, wood transition structure and wood monopole along railroad

Photo Simulations are for demonstration purposes only.  
Final Design may change pending review.

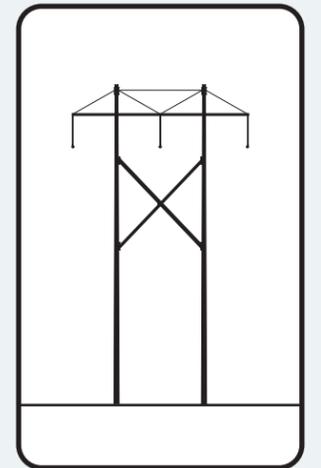
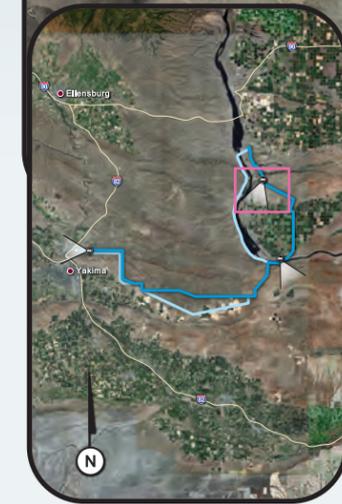


VANTAGE-POMONA HEIGHTS TRANSMISSION PROJECT

August 1, 2012

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KOP 7  
Saddle Mountains Management Area



Proposed Structures

**Date/Time:** 5/11/2011 2:02pm PST

H-frame wood pole structures

Photo Simulations are for demonstration purposes only.  
Final Design may change pending review.



VANTAGE-POMONA HEIGHTS TRANSMISSION PROJECT

August 1, 2012

Existing Condition



View South-Southwest from Saddle Mountain Management Area Access Road

Simulated Condition



Proposed 230 kV transmission

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Existing Condition

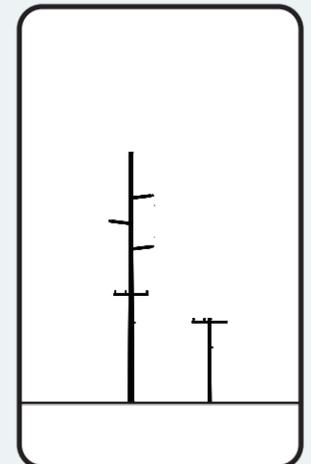
View from Firing Center road, looking west



Simulated Condition

Proposed 230 kV transmission line

KOP 15  
JBLM YTC: Firing Center Road



Proposed Structures

Date/Time: 6/17/2013, 02:07PM PST.

Corten steel and wood monopole structures

Photo Simulations are for demonstration purposes only.  
Final Design may change pending review.



VANTAGE-POMONA HEIGHTS TRANSMISSION PROJECT

March 3, 2014

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### Existing Condition



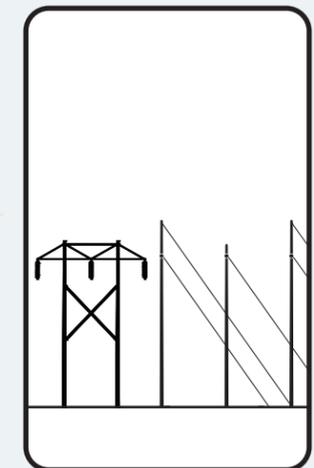
View from Washington State Department of Transportation rest area scenic overlook, looking west

### Simulated Condition



Proposed 230 kV transmission line - Structure located at bottom of canyon on north side

### KOP 17 (West) WSDOT Selah Cliffs Rest Area Overlook



Proposed Structures

Date/Time: 6/17/2013, 02:47PM PST.

Wood H-Frame and heavy angle wood pole structures

Photo Simulations are for demonstration purposes only.  
Final Design may change pending review.



VANTAGE-POMONA HEIGHTS TRANSMISSION PROJECT

March 3, 2014

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### Existing Condition



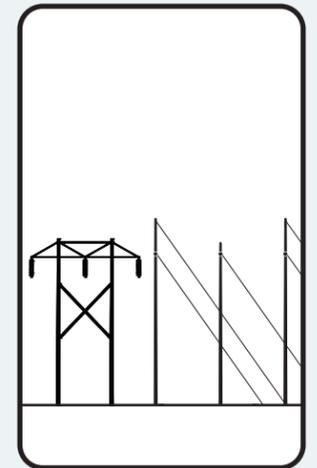
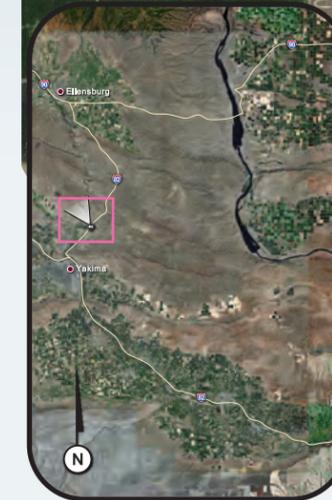
View from eastbound Washington State Department of Transportation rest area interpretive overlook, looking northwest

### Simulated Condition



Proposed 230 kV transmission line - Structure located at bottom of canyon on north side

### KOP 17 (Northwest) WSDOT Selah Cliffs Rest Area Overlook



Proposed Structures

Date/Time: 6/17/2013, 02:47PM PST.

Wood H-Frame and heavy angle wood pole structures

Photo Simulations are for demonstration purposes only.  
Final Design may change pending review.



VANTAGE-POMONA HEIGHTS TRANSMISSION PROJECT

March 3, 2014

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### Existing Condition



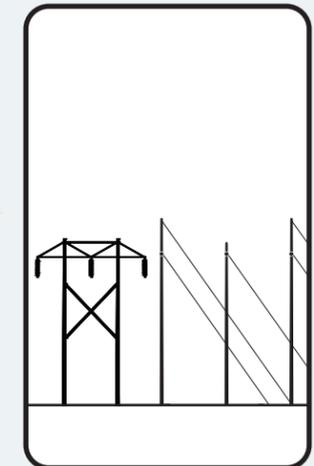
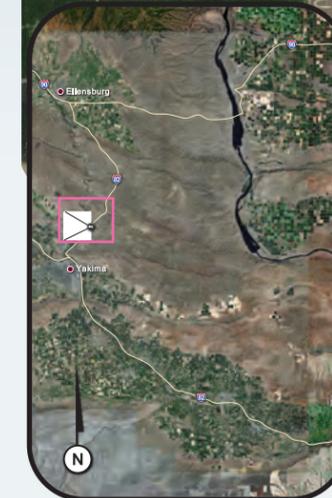
View from Washington State Department of Transportation rest area scenic overlook, looking west

### Simulated Condition



Proposed 230 kV transmission line - Project spans canyon, structures on north & south rims

### KOP 17 (West) WSDOT Selah Cliffs Rest Area Overlook



Proposed Structures

Date/Time: 6/17/2013, 02:47PM PST.

Wood H-Frame and heavy angle wood pole structures

Photo Simulations are for demonstration purposes only.  
Final Design may change pending review.



VANTAGE-POMONA HEIGHTS TRANSMISSION PROJECT

November 19, 2015

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## Existing Condition



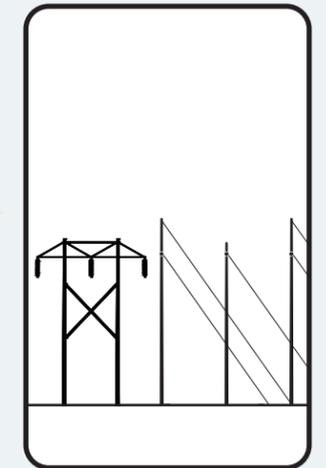
View from eastbound Washington State Department of Transportation rest area interpretive overlook, looking northwest

## Simulated Condition



Proposed 230 kV transmission line - Project spans canyon, structures on north & south rims

## KOP 17s (Northwest) WSDOT Selah Cliffs Rest Area Overlook



Proposed Structures

**Date/Time:** 6/17/2013, 02:47PM PST.

Wood H-Frame and heavy angle wood pole structures

Photo Simulations are for demonstration purposes only.  
Final Design may change pending review.



VANTAGE-POMONA HEIGHTS TRANSMISSION PROJECT

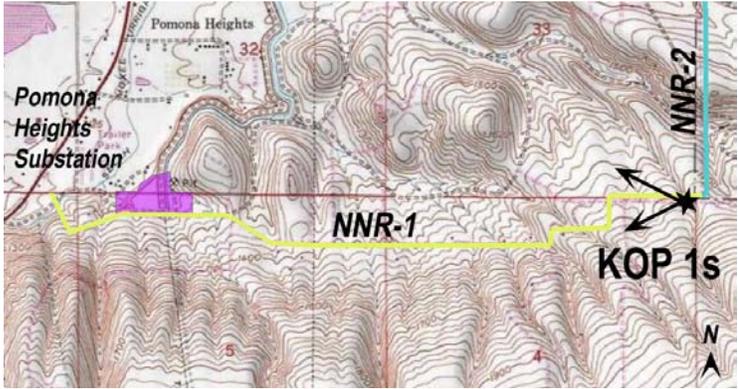
November 19, 2015

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## **APPENDIX C-5 CONTRAST RATING FORMS**

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# VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission <b>Date:</b> May 9, 2011 <b>District/Field Office:</b> N/A <b>Resource Area:</b> N/A <b>Activity (program):</b> 230 kV single pole transmission line <b>Key Observation Point:</b> KOP 1 -Sage Trail Road <b>VRM Class:</b> N/A	<b>Location</b> Township 13N Range 19E Section 4  GPS: 46°38'59"N 120°26'53"W	<b>Location Map</b> 
--	--	---

## Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Moderately sloping	Low, clumping, rounded	Rectangular, weak
<b>Line</b>	Curved, generally horizontal	Jagged, simple	Angular, simple
<b>Color</b>	Brown, tan	Dark to medium green; tan, light gray;	Monotone, tan, white
<b>Texture</b>	smooth	Moderate-fine, dense	Matte, uniform, smooth

## Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Minimal grading, disturbance; use of existing road	Isolated linear, long, simple symmetrical perennial grass revegetation	Narrow (vertical); weakly horizontal, concave (horizontal)
<b>Line</b>	-	Straight, soft	Straight, directional, simple (vertical); weakly horizontal, concave (horizontal)
<b>Color</b>	-	Tan to green	Tan
<b>Texture</b>	-	Fine	Uniform, moderate to smooth

## Contrast Rating Short Term Long Term

		Features											
		Landform/Water Body				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form				X			X		X			
	Line				X	X				X			
	Color				X	X					X		
	Texture				X	X					X		

Does project design meet visual resource management objectives?

N/A

Additional mitigating measures recommended?

Yes (see below)

Evaluators Names: D. Gilbert

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

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**Project Name:** Vantage-Pomona 230 kV Transmission Line Project

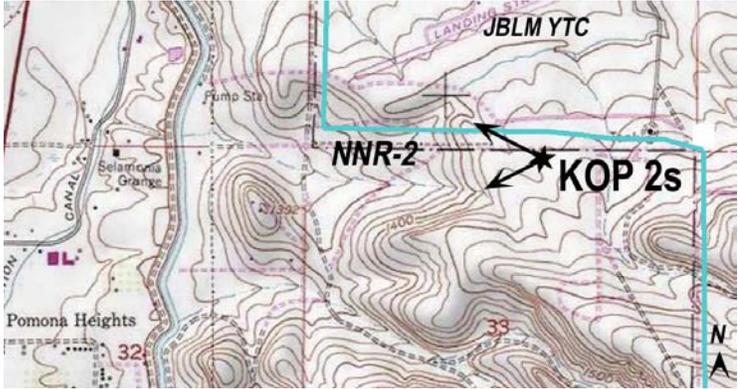
**Date:** May 9, 2011

**Key Observation Point:** KOP 1 –Sage Trail Road

Strong to moderate structure contrasts and weak-moderate vegetation contrasts would result from the introduction of single wood pole structures in a landscape that contains rural residential development and panoramic views of the Selah Valley and Mt. Rainier. Sensitivity is moderate to high. The conductors and introduction of new wood poles would introduce strong form and line structure contrasts, and would moderately contrast with existing structure color and texture in the immediate foreground and foreground in the context of existing modifications in the landscape. Some vegetation clearing around the work areas of structures would cause moderate vegetation contrasts. Overall, project contrasts would be strong-moderate. Additional mitigation measures would include micro-siting of structures to avoid interference with prominent views.



## VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission	<b>Location</b> Township 14N Range 19E Section 33	<b>Location Map</b> 
<b>Date:</b> June 18, 2013	GPS: 46°39'51"N 120°27'20"W	
<b>District/Field Office:</b> N/A		
<b>Resource Area:</b> N/A		
<b>Activity (program):</b> 230 kV H-frame wood pole transmission line		
<b>Key Observation Point:</b> KOP 2s - Temple Lane		
<b>VRM Class:</b> N/A		

### Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Moderately sloping	Low, clumping, rounded, irregular	Narrow (vertical), repeating; horizontal, concave, directional (horizontal) Rectangular, weak;
<b>Line</b>	Curved, undulating, horizontal	Jagged, irregular, soft, simple	Straight, simple
<b>Color</b>	Brown, tan	Dark to medium green; tan, light gray; bisected	Monotone, tan, white, gray
<b>Texture</b>	smooth	Moderate-fine, dense	Moderate to smooth

### Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Minimal grading, disturbance; use of existing fire-break road	Isolated linear, long, simple symmetrical perennial grass revegetation	Narrow (vertical), repeating; weakly horizontal, concave (horizontal)
<b>Line</b>	-	Straight, soft, simple	Straight, directional, simple (vertical); weakly horizontal, concave (horizontal)
<b>Color</b>	-	Tan to green	Tan
<b>Texture</b>	-	Fine	Uniform, moderate to smooth

### Contrast Rating Short Term Long Term

		Features												
		Landform/Water Body				Vegetation				Structures				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
Elements	Form				X			X					X	Does project design meet visual resource management objectives?  N/A  Additional mitigating measures recommended?  X No Evaluators Names: D. Gilbert
	Line				X			X					X	
	Color				X			X					X	
	Texture				X			X					X	

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

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**Project Name:** Vantage-Pomona 230 kV Transmission

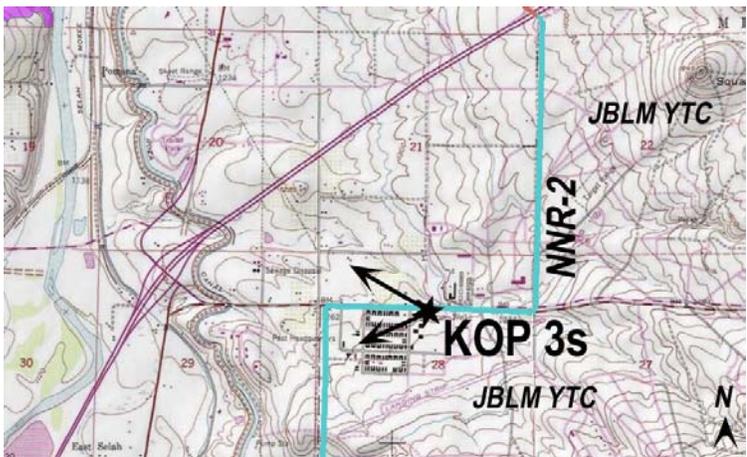
**Date:** June 18, 2013

**Key Observation Point:** KOP 2s – Temple Lane

Weak structure contrasts and weak vegetation contrasts would result from the introduction of additional H-frame structures re-establishment of herbaceous perennial vegetation around the structures. Sensitivity is high. The conductors and structures would introduce weak form and line structure contrasts, and would weakly contrast with existing structure color and texture in the immediate foreground and foreground in the context of existing modifications in the landscape. Some vegetation clearing around the work areas of structures would cause weak vegetation contrasts. Overall, project contrasts would be weak, and impacts would be moderate.



## VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission Project	<b>Location</b> Township 14N Range 19E Section 28	<b>Location Map</b> 
<b>Date:</b> June 17, 2013	GPS: 46° 40' 32" N 120° 27' 24" W	
<b>District/Field Office:</b> N/A		
<b>Resource Area:</b> N/A		
<b>Activity (program):</b> 230 kV single wood pole transmission line		
<b>Key Observation Point:</b> KOP 3s -YTC Firing Center Road		
<b>VRM Class:</b> N/A		

### Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Level, geometric	Variable, vertical, irregular	Vertical, linear, rectangular, directional
<b>Line</b>	Straight, parallel	Irregular, jagged	Regular, vertical, simple
<b>Color</b>	Brown, tan, white, gray	Light to dark greens, tan	Monotone, tan, brown, white, gray
<b>Texture</b>	Fine to course	Fine to moderate	Matte, uniform, smooth

### Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Minimal grading, disturbance; use of existing road	No vegetation clearing occurring	Vertical, linear, rectangular, directional
<b>Line</b>	N/A	N/A	Regular, vertical, simple
<b>Color</b>	N/A	N/A	Monotone, tan, brown, white, gray
<b>Texture</b>	N/A	N/A	Matte, uniform, smooth

### Contrast Rating    Short Term    Long Term

		Features												Does project design meet visual resource management objectives? N/A  Additional mitigating measures recommended? X No  Evaluators Names:    D. Gilbert
		Landform/Water Body				Vegetation				Structures				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
Degree of Contrast	Form			X				X						
Elements	Line			X						X				
	Color			X						X				
	Texture			X							X			

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

**Project Name:** Vantage-Pomona 230 kV Transmission Project

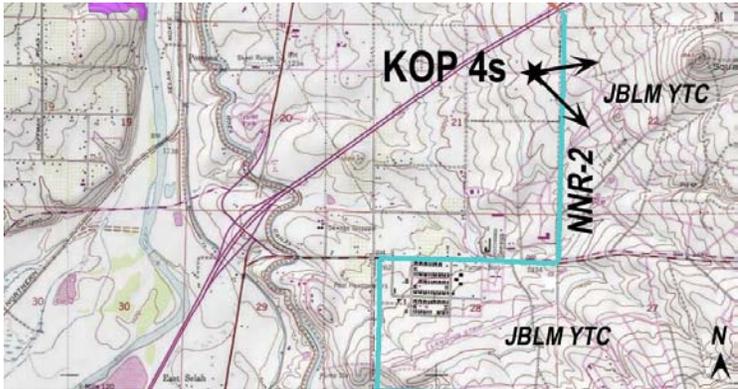
**Date:** June 17, 2013

**Key Observation Point:** KOP 3s- YTC Firing Center Road

Moderate to strong structure contrasts and no vegetation or landform contrasts would result from the introduction of a single wood or Corten steel monopole structure in a landscape that contains existing, similar utility structures. Sensitivity is moderate. The conductors and structures are similar in form, line, color and texture from the existing utility features, but would be substantially different in scale. No vegetation clearing around the work areas would be expected because of the dominance of paved surfaces. Overall, project contrasts would be moderate to strong, and impacts would be moderate to high.



## VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission	<b>Location</b> Township 14N Range 19E Section 21	<b>Location Map</b> 
<b>Date:</b> June 18, 2013	<b>GPS:</b> 46° 41' 23" N 120° 26' 54" W	
<b>District/Field Office:</b> N/A		
<b>Resource Area:</b> N/A		
<b>Activity (program):</b> 230 kV H-frame wood pole transmission line		
<b>Key Observation Point:</b> KOP 4s –East Pomona Road		
<b>VRM Class:</b> N/A		

### Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Moderately gentle, rounded, sloping	Low, clumping, rounded	Rectangular
<b>Line</b>	Curved, generally horizontal	Jagged, simple	Angular, simple
<b>Color</b>	Brown, tan	Dark to medium green; tan, light gray;	Monotone, brown, gray
<b>Texture</b>	smooth	Moderate-fine, dense	Matte, uniform, smooth

### Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Some grading, disturbance visible from this area; use of existing YTC perimeter road; Smooth, flat	Isolated linear, long, simple symmetrical perennial grass revegetation	Narrow (vertical), repeating; weakly horizontal, concave (horizontal)
<b>Line</b>	Minor improvements to YTC perimeter road and spur roads would be visible. Linear, directional, regular	Straight, soft	Straight, directional, simple (vertical); weakly horizontal, concave (horizontal)
<b>Color</b>	tan	Tan to green	Tan
<b>Texture</b>	smooth	Fine	Uniform, moderate to smooth

### Contrast Rating Short Term Long Term

Degree of Contrast		Features												Does project design meet visual resource management objectives?  N/A  Additional mitigating measures recommended? <input checked="" type="checkbox"/> Yes (see below) <input type="checkbox"/> No Evaluators Names: D. Gilbert
		Landform/Water Body				Vegetation				Structures				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
Form				X		X				X				
Line			X			X				X				
Color			X			X				X				
Texture			X			X				X				

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

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**Project Name:** Vantage-Pomona 230 kV Transmission

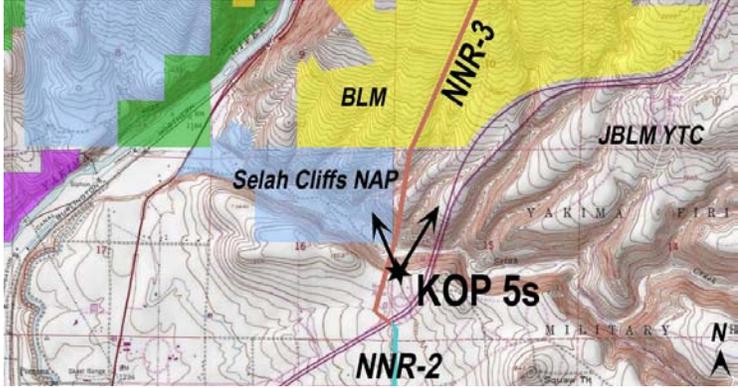
**Date:** June 18, 2013

**Key Observation Point:** KOP 4s –East Pomona Road

Strong structure contrasts and moderate vegetation contrasts would result from the introduction of an H-frame wood pole structure in a landscape that has no existing transmission or similar structures and appears relatively intact. Views of nearby a nearby butte (Push-Ti) and to undeveloped areas of YTC provide a focal point and interest. Sensitivity is moderate to high. The conductors and structures would introduce strong form and line structure contrasts, but would moderately contrast with existing structure color and texture in the immediate foreground and foreground in the context of existing modifications in the landscape. Some vegetation clearing around the work areas of structures and for the construction of spur roads would cause moderate vegetation contrasts. Overall, project contrasts would be strong-moderate, and impacts would be high from adjacent residences.



# VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission Project <b>Date:</b> June 17, 2013 <b>District/Field Office:</b> Wenatchee FO <b>Resource Area:</b> N/A <b>Activity (program):</b> 230 kV H-frame wood pole transmission line <b>Key Observation Point:</b> KOP 5s -WSDOT Selah Cliffs Overlook (North) <b>VRM Class:</b> Interim Class III	<b>Location</b> Township 14N Range 19E Section 15  GPS: 46° 41' 56" N 120° 26' 40" W	<b>Location Map</b> 
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## Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Moderate to steeply sloping	Low, clumping, rounded Patched, irregular	Simple, narrow, vertical
<b>Line</b>	Flowing and slightly curved, horizontal	Jagged, simple; Smooth, uniform	Straight, directional
<b>Color</b>	Brown, tan	Tan, dark to medium green	Monotone tan
<b>Texture</b>	smooth	Fine to moderate-fine, dense	Matte, uniform, smooth

## Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Some grading, disturbance visible at building pads; existing transmission line road used; Smooth, flat	Isolated linear, long, simple symmetrical perennial grass revegetation	Narrow (vertical), repeating; weakly horizontal, concave (horizontal)
<b>Line</b>	Linear, directional, regular	Straight, soft	Straight, directional, simple (vertical); weakly horizontal, concave (horizontal)
<b>Color</b>	tan	Tan to green	Tan
<b>Texture</b>	smooth	Fine	Uniform, moderate to smooth

## Contrast Rating Short Term Long Term

		Features												
		Landform/Water Body				Vegetation				Structures				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
Elements	Form			X			X					X		
	Line			X			X					X		
	Color		X				X					X		
	Texture		X				X					X		

Does project design meet visual resource management objectives?

Yes

Additional mitigating measures recommended?

No

Evaluators Names: D. Gilbert

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

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**Project Name:** Vantage-Pomona 230 kV Transmission Project

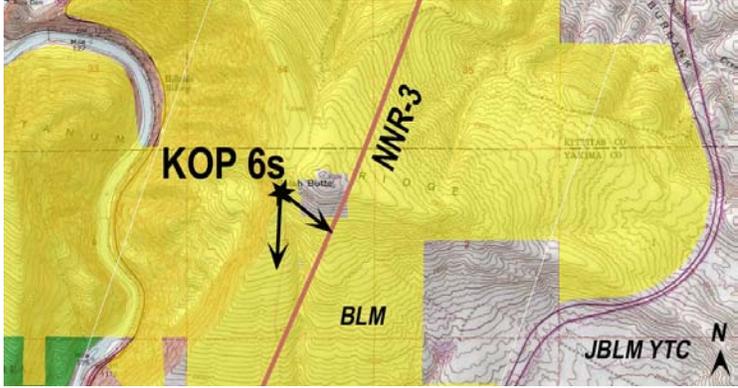
**Date:** June 17, 2013

**Key Observation Point:** KOP 5s –WSDOT Selah Cliffs Overlook (North)

Structure contrasts would be strong at the Selah Canyon crossing to the left of this view where a structure would be prominent. The terrain between the south rim of Selah Canyon and the north side of I-82 slopes at less than eight percent and new access roads would need to be constructed on shrub dominated land causing moderate landscape contrast. At the Selah Canyon crossing, dead-end structures would be used to span the canyon creating strong structure contrasts in these locations. Some new road construction from an existing road would be necessary on the north side (in this view), creating weak to moderate landscape contrast. As the Project joins the existing Pomona-Wanapum 230 kV transmission line, contrasts would be moderate to weak because the new line would be adjacent to the existing line and the existing access roads would be used. BLM Interim VRM Class III lands are crossed beyond the first three-pole structure in this view. From this KOP, moderate-weak and weak contrasts would be seen in the middleground or background, respectively, and the Project would be compliant with the Interim VRM Class III. Where strong contrasts are visible in the immediate foreground (KOP 5s, view west), VRM classes do not apply.



# VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission Project	<b>Location</b> Township 14N Range 19E Section 3	<b>Location Map</b> 
<b>Date:</b> June 19, 2013	<b>GPS:</b> 46° 44' 00" N 120° 26' 03" W	
<b>District/Field Office:</b> Wenatchee FO		
<b>Resource Area:</b> N/A		
<b>Activity (program):</b> 230 kV H-frame wood pole transmission line		
<b>Key Observation Point:</b> KOP 6s – Selah Butte WWA Parking		
<b>VRM Class:</b> Interim Class III		

## Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Gently sloping in FG; Moderate to steeply sloping in MG/BG	Low, clumping, rounded Patchy, irregular	Narrow (vertical), repeating; weakly horizontal, concave (horizontal)
<b>Line</b>	Flowing and slightly curved, irregular; generally horizontal	Jagged, simple; Smooth, uniform	Straight, directional, simple (vertical); weakly horizontal, concave (horizontal)
<b>Color</b>	Brown, tan	Tan, dark to medium green	Tan
<b>Texture</b>	Fine to medium	Fine to moderate-fine, dense	Uniform, moderate to smooth

## Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Some grading, disturbance visible at building pads; existing transmission line road used; Smooth, flat	Isolated linear, long, simple symmetrical perennial grass revegetation	Narrow (vertical), repeating; weakly horizontal, concave (horizontal)
<b>Line</b>	Linear, directional, regular	Straight, soft	Straight, directional, simple (vertical); weakly horizontal, concave (horizontal)
<b>Color</b>	tan	Tan to green	Tan
<b>Texture</b>	smooth	Fine	Uniform, moderate to smooth

## Contrast Rating Short Term Long Term

		Features											
		Landform/Water Body				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X				X				X	
	Line			X				X				X	
	Color		X					X				X	
	Texture		X					X				X	

Does project design meet visual resource management objectives?

Yes

Additional mitigating measures recommended?

No

Evaluators Names: D. Gilbert

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

**Project Name:** Vantage-Pomona 230 kV Transmission Project

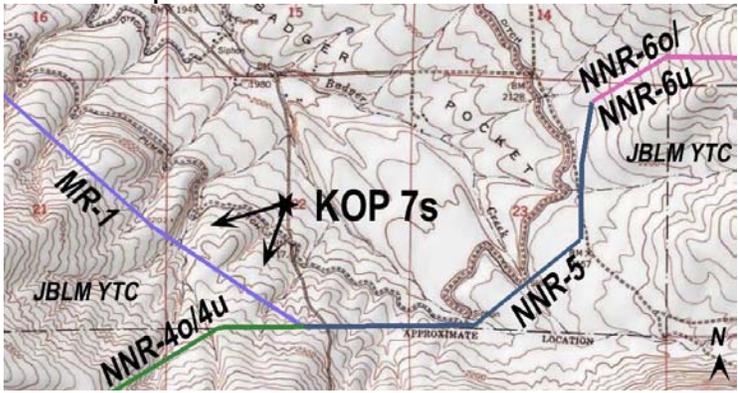
**Date:** June 19, 2013

**Key Observation Point:** KOP 6s – Selah Butte WWA Parking

Weak structure contrasts and weak to moderate landform contrasts would result from the project. Weak structure contrasts would occur because the new transmission line would be visually similar to the existing transmission line, and moderate landform contrasts would occur due to some potential building pad grading and structure sites. Weak vegetation contrasts would occur because similar perennial grasses would be re-established. The project would be seen in the foreground beyond the existing 230kV transmission structures in from this recreational area that frames views to the southeast. Viewing orientation is generally toward Yakima Canyon (in the opposite direction of this view) and topography typically screens views of the Project. Because this is a dispersed recreation use area, views of the Project may occur depending on the viewer location within the area. The Project would be compliant with the Interim VRM Class III because moderate contrasts would be seen in the immediate foreground and foreground distance zones.



# VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission Project	<b>Location</b> Township 16N Range 20E Section 22	<b>Location Map</b> 
<b>Date:</b> June 18, 2013	GPS: 46° 51' 37" N 120° 18' 29" W	
<b>District/Field Office:</b> N/A		
<b>Resource Area:</b> N/A		
<b>Activity (program):</b> 230 kV H-frame wood pole transmission line		
<b>Key Observation Point:</b> KOP 7s-Silka Road		
<b>VRM Class:</b> N/A		

## Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Gently sloping, rounded	Uniform, simple in FG; Low, clumping, rounded in MG/BG	Strongly, narrow (vertical); weakly horizontal, concave (horizontal)
<b>Line</b>	Simple, horizontal	Jagged, simple; Straight, soft	Straight, directional, simple (vertical); weakly horizontal, concave (horizontal)
<b>Color</b>	Tan, brown	Medium green; tan, light gray;	Tan
<b>Texture</b>	Smooth	Moderate-fine, dense Fine	Uniform, moderate to smooth

## Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	New road and building pad construction; Exposed soils Moderately sloping	Cleared areas around structure building pads cleared create edges in sagebrush dominated areas	Strongly, narrow (vertical); weakly horizontal, concave (horizontal)
<b>Line</b>	Graded road parallel to line introduces ground plane, linear, directional element	Straight, soft	Straight, directional, simple (vertical); weakly horizontal, concave (horizontal)
<b>Color</b>	Brown, tan	Brown, tan	Tan
<b>Texture</b>	Fine	Fine	Uniform, moderate to smooth

## Contrast Rating Short Term Long Term

		Features												Does project design meet visual resource management objectives?  N/A  Additional mitigating measures recommended? <b>X</b> No Evaluators Names: D. Gilbert
		Landform/Water Body				Vegetation				Structures				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
Elements	Form			X		X						X		
	Line			X		X						X		
	Color			X			X					X		
	Texture			X			X					X		

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

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**Project Name:** Vantage-Pomona 230 kV Transmission Project

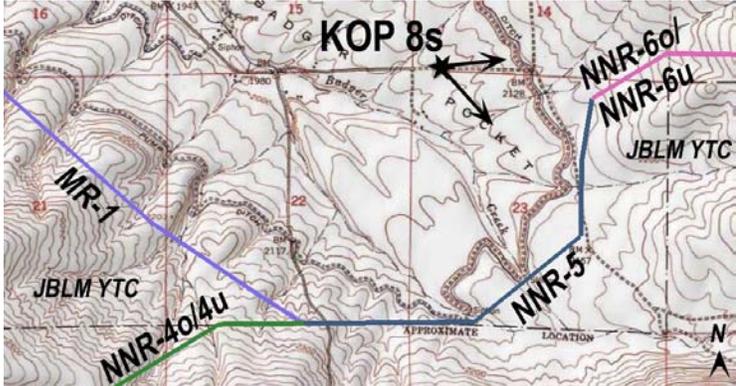
**Date:** June 18, 2013

**Key Observation Point:** KOP 7s-Silka Road

Structure contrasts would typically be strong in this area route segment because no existing transmission lines or similar infrastructure is located in the vicinity of the Project, except on the left from this view (to the south) where there an existing transmission line is currently in view from the rural residential and agricultural landscape. New access roads and vegetation clearing in an area generally without roads or other infrastructure would cause moderate to strong vegetation and landform contrasts.



# VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission Project	<b>Location</b> Township 16N Range 20E Section 14	<b>Location Map</b> 
<b>Date:</b> June 18, 2013	GPS: 46° 52' 04" N 120° 17' 41" W	
<b>District/Field Office:</b> N/A		
<b>Resource Area:</b> N/A		
<b>Activity (program):</b> 230 kV underground transmission line		
<b>Key Observation Point:</b> KOP 8s-Upper Badger Pocket Rd		
<b>VRM Class:</b> N/A		

## Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Gently sloping, rounded	Uniform, simple in FG; Low, clumping, rounded in MG/BG	Strongly, narrow (vertical); weakly horizontal, concave (horizontal)
<b>Line</b>	Simple, horizontal	Jagged, simple; Straight, soft	Straight, directional, simple (vertical); weakly horizontal, concave (horizontal)
<b>Color</b>	Tan, brown	Medium green; tan, light gray;	Tan
<b>Texture</b>	Smooth	Moderate-fine, dense Fine	Uniform, moderate to smooth

## Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Duct bank cut and fill areas; Exposed soils Moderately to steeply sloping	Cleared areas along the duct bank create edges in sagebrush dominated areas	N/A
<b>Line</b>	Graded road and cut/fill areas parallel to existing road introduces ground plane, linear, directional element	Straight, soft	N/A
<b>Color</b>	Brown, tan	Brown, tan	N/A
<b>Texture</b>	Fine	Fine	N/A

## Contrast Rating Short Term Long Term

		Features											
		Landform/ Water Body				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form	x				x				x			
	Line		x			x				x			
	Color		x			x				x			
	Texture		x			x				x			

Does project design meet visual resource management objectives?  
N/A

Additional mitigating measures recommended?  
**X** No

Evaluators Names: D. Gilbert

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

**Project Name:** Vantage-Pomona 230 kV Transmission Line Project

**Date:** June 18, 2013

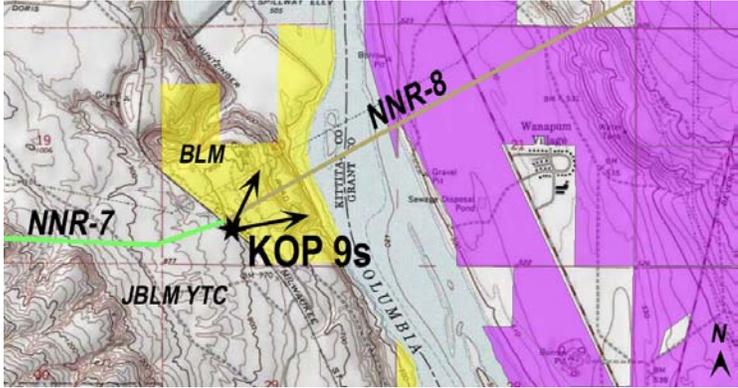
**Key Observation Point:** KOP 8s-Upper Badger Pocket Rd

**Underground Design Option:**

Strong structure contrasts would be viewed in the middleground by rural residences in an agricultural landscape as a result of the underground to overhead transition station. The transition station would strongly contrast with the existing transmission line structure form and color, and moderately contrast in line and texture. The existing transmission line road is seen axially in this view, and the right-of-way of the project would appear to repeat this directional, linear landscape feature as the right-of-way parallels the existing line where minimal cut and fill is required in flatter terrain. However, in some areas of steep, undulating terrain, duct bank cut and fill areas would cause deviations in the vegetation and landform form, line and color created by the jagged edge of the right-of-way, and moderate to strong vegetation and landform contrasts would result.



## VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission Project	<b>Location</b> Township 16N Range 23E Section 21	<b>Location Map</b> 
<b>Date:</b> June 18, 2013	GPS: 46° 51' 41" N 119° 56' 59" W	
<b>District/Field Office:</b> N/A		
<b>Resource Area:</b> N/A		
<b>Activity (program):</b> 230 kV H-frame wood pole transmission line		
<b>Key Observation Point:</b> KOP 9s- John Wayne Trail		
<b>VRM Class:</b> Interim Class III		

### Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Flat to moderately sloping; rough, rugged	Low, clumping, rounded	Vertical, bold, complex, angular, geometric
<b>Line</b>	Horizontal, angular	Jagged, simple	Angular, simple, thin, concave
<b>Color</b>	Brown, tan	Dark to medium green; tan, light gray;	Gray, white, red
<b>Texture</b>	Course, rough	Moderate-fine, dense	Matte, uniform, smooth

### Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Horizontal, flat, geometric	Low, clumping	Vertical, bold, complex, angular, geometric
<b>Line</b>	Hard, angular	Simple, straight	Angular, simple, thin, concave
<b>Color</b>	Tan	Tan, brown	Gray
<b>Texture</b>	Smooth	Smooth, fine	Matte, uniform, smooth

### Contrast Rating    Short Term    Long Term

		Features												Does project design meet visual resource management objectives?  Yes  Additional mitigating measures recommended? <input checked="" type="checkbox"/> Yes (see below) <input type="checkbox"/> No Evaluators Names: D. Gilbert
		Landform/Water Body				Vegetation				Structures				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
Degree of Contrast	Form		X				X					X		
Elements	Line		X				X					X		
	Color			X			X					X		
	Texture			X			X					X		

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

---

**Project Name:** Vantage-Pomona 230 kV Transmission Line Project

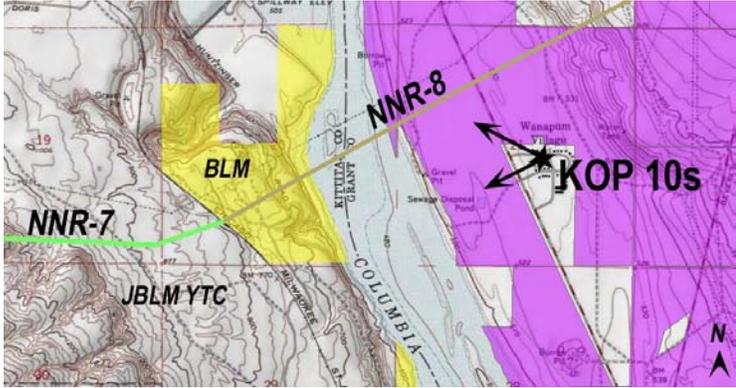
**Date:** June 18, 2013

**Key Observation Point:** KOP 9s- John Wayne Trail

Weak contrasts would result from the introduction of lattice steel crossing structures in an industrial dominated landscape with panoramic views. Users of the John Wayne Trail view the Wanapum Dam and associated utility infrastructure, as well as the Columbia River, in a superior position. The building pad of the nearest crossing structure would create moderate contrasts in form and line. The project would be similar in scale, form, line color and texture as the existing crossing structures.



## VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)

<b>Project Name:</b> Vantage-Pomona 230 kV Transmission Project	<b>Location</b> Township 16N Range 23E Section 21	<b>Location Map</b> 
<b>Date:</b> May 11, 2011	GPS: 46° 51' 41" N 119° 56' 56" W	
<b>District/Field Office:</b> N/A		
<b>Resource Area:</b> N/A		
<b>Activity (program):</b> 230 kV lattice steel transmission line structures		
<b>Key Observation Point:</b> KOP 10s -Wanapum Village		
<b>VRM Class:</b> N/A		

### Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	Flat in foreground; sloping,	Low, clumping, rounded	Vertical, bold, complex, angular, geometric
<b>Line</b>	Horizontal, angular	Jagged, simple	Angular, simple, thin, concave
<b>Color</b>	Brown, tan	Dark to medium green; tan, light gray;	Gray, white, red
<b>Texture</b>	Course, rough	Moderate-fine, dense	Matte, uniform, smooth

### Proposed Activity Description

	Landform/Water	Vegetation	Structures
<b>Form</b>	N/A	N/A	Vertical, bold, complex, angular, geometric
<b>Line</b>	N/A	N/A	Angular, simple, thin, concave
<b>Color</b>	N/A	N/A	Gray
<b>Texture</b>	N/A	N/A	Matte, uniform, smooth

### Contrast Rating    Short Term    Long Term

		Features												Does project design meet visual resource management objectives? N/A  Additional mitigating measures recommended? X No  Evaluators Names:    D. Gilbert		
		Landform/Water Body				Vegetation				Structures						
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None			
Degree of Contrast	Form				X											
Elements	Line				X											
	Color				X											
	Texture				X											

## ***VISUAL CONTRAST RATING WORKSHEET (Form 8400-4)***

---

**Project Name:** Vantage-Pomona 230 kV Transmission

**Date:** May 11, 2011

**Key Observation Point:** KOP 10s -Wanapum Village

Weak contrasts would result from the introduction of lattice steel crossing structures in an industrial dominated landscape with panoramic views. Residences in Wanapum Village have level or inferior views of the project, and the Columbia River is within the viewshed from this KOP. Building pads clearing and grading would not be visible from this KOP, and the project would be similar in scale, form, line color and texture as the existing crossing structures.



## **APPENDIX D SEPA CHECKLIST**

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# Vantage to Pomona Heights 230kV Transmission Line

October 2016

*Prepared for:*



**Washington State  
Department of Transportation**

**Washington State Department of Transportation**

South Central Region  
2809 Rudkin Road  
Union Gap, WA 98903

and

**Yakima County**

Public Services  
128 North 2nd Street  
Yakima, WA 98901



*Prepared by:*



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**David Evans and Associates, Inc.**

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<http://www.deainc.com>

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# Environmental Checklist

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## A. Background [\[help\]](#)

### 1. Name of proposed project, if applicable: [\[help\]](#)

Vantage to Pomona Heights 230kV Transmission Line

### 2. Name of applicant: [\[help\]](#)

Pacific Power (part of PacifiCorp)

### 3. Address and phone number of applicant and contact person: [\[help\]](#)

John Aniello  
Senior Project Manager, PMP  
825 NE Multnomah Street  
Portland, OR, 97232

### 4. Date checklist prepared: [\[help\]](#)

January 15, 2015

### 5. Agency requesting checklist: [\[help\]](#)

Washington State Department of Transportation (WSDOT) and Yakima County

### 6. Proposed timing or schedule (including phasing, if applicable): [\[help\]](#)

Construction of the project will last approximately 9 months, and is anticipated to start within 4-8 months after the final SEPA determination has been made and after acquiring all necessary permits.

### 7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [\[help\]](#)

None have been identified.

### 8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [\[help\]](#)

Environmental documents prepared for this project include the following Environmental Impact Statements (EISs) prepared under the National Environmental Policy Act (NEPA) with the US Bureau of Land Management (BLM) serving as the lead federal agency:

- Draft EIS (DEIS) published December 2013, compared eight alternatives and identified an Agency Preferred Alternative and covered all environmental elements identified as important during the scoping process (see text below)
- Supplemental Draft EIS (SDEIS), published January 2015, compared the New Northern Route (NNR) with the Agency Preferred Alternative identified in the DEIS and covered all environmental elements identified as important during the scoping process (see text below)
- Final EIS (FEIS), published October 2016, identified NNR Overhead Design Option as the Agency Preferred Alternative. This also was determined to be the Environmentally Preferred Alternative.

On January 4, 2013, the BLM released the DEIS for public review and comment, identifying an Agency Preferred Alternative paralleling an existing transmission line in Yakima County and generally following Road N and crossing the Saddle Mountains in Grant County (Alternative D in the DEIS). Public meetings were held in Selah and Desert Aire in February 2013 to give the public an opportunity to provide their input on the DEIS and Agency Preferred Alternative. The BLM received letters and e-mails containing more than 250 comments during the comment period which ended on March 8, 2013. As a result of public and agency comments received at the meetings and submitted in writing during the DEIS comment period, the BLM, Pacific Power, and Joint Base Lewis-McChord Yakima Training Center (JBLM YTC) met and identified a new northern route (NNR) that is located largely on JBLM YTC land. BLM determined that a SDEIS was required to analyze the new route.

This new route is similar to a northern JBLM YTC route that was eliminated from consideration in the DEIS because of Western Electricity Coordinating Council (WECC) line separation requirements in place at the time the alternative was being considered. Previously, the separation distance required the placement of the line in areas that would create conflicts with JBLM YTC's aerial operations and military training on the facility. Subsequently, the separation standards were revised by the electrical regulating authorities (WECC and the North American Reliability Corporation). These revisions allow a much closer distance between existing lines and the proposed Vantage-Pomona Heights transmission line, which would minimize impacts to JBLM YTC operations and allow that option to be reconsidered.

On January 2, 2015, BLM released the SDEIS for public review and comment. The SDEIS included as Appendix D a draft SEPA Environmental Checklist consistent with the Washington State Environmental Policy Act (SEPA) that evaluated impacts from NNR, its design options, and potential route segments. Public meetings were held in Selah and Desert Aire in January 2015 to give the public an opportunity to provide their input on the SDEIS and the NNR Alternative. The BLM received letters and e-mails containing more than 90 comments during the comment period which ended on February 17, 2015. No comments were received on the draft SEPA Environmental Checklist.

On October 21, 2016, BLM released the FEIS that included all of the alternatives analyzed in the DEIS and SDEIS. The major change between the EISs is that the Agency Preferred Alternative was revised from Alternative D in the DEIS and SDEIS to Alternative NNR with Overhead Design Option (NNR-Overhead) in the FEIS. The results of the analysis indicated that NNR-Overhead is the Environmentally Preferred Alternative since it meets the agencies' respective purposes and needs while balancing Pacific Power's objectives with the Federal management multi-use mandate.

The remaining sections of this SEPA Environmental Checklist focus on NNR-Overhead as the proposed project because it is the Environmentally Preferred Alternative and the Agency Preferred Alternative. It is composed of route segments 1a/NNR-1 (starting at Pacific Power's Pomona Heights Substation), NNR-2, NNR-3, NNR-4o, NNR-5, NNR-6o, NNR-7, and NNR-8 (ending at BPA's Vantage Substation). The FEIS contains analogous information on SEPA environmental elements for the other alternatives and route segments analyzed through NEPA.

**9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [\[help\]](#)**

None have been identified.

**10. List any government approvals or permits that will be needed for your proposal, if known. [\[help\]](#)**

Numerous local, state, and federal permits and authorizations will be necessary for the proposed project. Those permits include, but are not limited to, the following:

- Administrative Type II permit and SEPA Compliance – Yakima County
- Building permit and SEPA Compliance – Grant County
- Development Agreement, Conditional Use Permit, SEPA Compliance, Shoreline Permitting depending upon pole placement and access road construction, ROW Permit, County Road Franchise Agreement, and building permits, if applicable – Kittitas County

- Utility Franchise and/or Easements and SEPA Compliance – WSDOT and Washington Department of Natural Resources (WDNR)
- National Pollutant Discharge Elimination System (NPDES) – Washington Department of Ecology (WDOE)

Other local, state and federal approval and permits are listed in **Table 1-1** of the FEIS.

**11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)** [\[help\]](#)

Pacific Power proposes to construct, operate, and maintain a new 230 kilovolt (kV) transmission line from Pacific Power’s Pomona Heights Substation located just east of Selah, Washington in Yakima County to BPA’s Vantage Substation located just east of the Wanapum Dam in Grant County, Washington. **Figure 1** (attached) shows the location of the proposed Project within the State of Washington. **Figure 2** shows the Project Study Area and the location of the Pomona Heights and Vantage Substations.

The project (NNR-Overhead) as described in the FEIS is 40.5 miles in length (**Figure 3**). The route crosses federal land managed by the BLM, the JBLM YTC, and Bureau of Reclamation; and state land managed by WSDOT and the WDNR. There are three counties that are crossed: Yakima, Kittitas, and Grant Counties.

As proposed by Pacific Power, most of the transmission line would be constructed on H-frame wood structures between 65 and 90 feet tall. In developed areas, single wood or steel monopole structures between 80 and 110 feet tall would be used. The transmission line route would cross the Columbia River below the Wanapum Dam on steel lattice structures approximately 200 feet tall. The existing Pacific Power Pomona Heights Substation and the existing BPA Vantage Substation would be upgraded with installation of new equipment to interconnect the new 230 kV transmission line to the regional electric grid.

Further details on the proposed project are provided in **Chapter 2** of the FEIS.

**12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.** [\[help\]](#)

See response to item 11., above and attached **Figures 1, 2, and 3**.

**B. Environmental Elements** [\[help\]](#)

**1. Earth**

**a. General description of the site** [\[help\]](#)

(circle one): Flat, rolling, hilly, steep slopes, mountainous,  
other \_\_\_\_\_

Topography in the Project area consists of gently rolling to moderate hilly plateaus and steep slopes from Umtanum Ridge, Manastash Ridge, and the Saddle Mountain Ridges to the Columbia River. Elevations in the Project area range from 400 to 3,400 feet above sea level.

See **Section 3.15.2.1** and **Section 3.15.2.2** of the Project FEIS for more information.

**b. What is the steepest slope on the site (approximate percent slope)? [\[help\]](#)**

The steepest slopes on the site are along route segment NNR-8, which has some vertical cliffs dropping down to the Columbia River. The miles of slopes greater than 30 percent crossed by the route segments are summarized in **Table 4.15-2** of the FEIS.

**c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [\[help\]](#)**

The soil types present in the Project area can be generally divided into three groups:

- Soils found on alluvial fans;
- Soils found on uplands, hillslopes, ridgetops and benches; and
- Soils found on terraces, floodplains, escarpments and channeled scablands.

**Table 3.15-1** in the FEIS describes the soil units in more detail.

Prime and unique farmland and farmland of statewide importance are described in **Section 3.4** and are shown on the **Appendix A – Important Farmland Soils Map** in the FEIS. Acres of land managed for commercial crops in the project area are identified in **Table 3.4-2** and are shown on the **Appendix A – Agriculture & Irrigation Maps**. Miles of prime and unique farmland and farmland of statewide importance crossed by each proposed route segment are described in **Table 3.4-9B**. Impacts of each project alternative on irrigated and dryland agriculture are described in **Table 4.4-3**.

**d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [\[help\]](#)**

Yes. The NNR crosses two areas of moderate-to-high susceptibility to liquefaction – one large area along the Columbia River in route segment NNR-8 and one small area in NNR-2, as well as approximately seven documented landslide deposits (six along NNR-6 and one along NNR-7). See **Section 3.15.2.2** and **Appendix A – Geohazards Map** of the FEIS for more information.

**e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [\[help\]](#)**

**Section 4.15** of the FEIS discusses impacts to soils based on area and length of route. Fill would be required for roads and some transmission structures. Excavation and grading quantities will not be available until final design has been conducted.

**f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [\[help\]](#)**

Potential soil-related impacts of the project would include the following:

- Increased soil erosion in areas where construction activities have disturbed or altered the land surface by exposing soils (temporary);
- Construction of permanent access roads potentially resulting in accelerated wind and water erosion rates (permanent); and

- Degradation of the land surface and loss of soils resulting from accelerated soil erosion (temporary to permanent).

See discussion in **Section 4.15** of the FEIS and its **Appendix A** maps on soil erosion potential by water and wind for more information.

**g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [\[help\]](#)**

Impervious surface numbers are not available at this stage of design. However, a reasonable estimate can be made by considering long term disturbance from structure footprints combined with new and significantly improved roads. Most roads will not be paved, but instead will be compacted gravel. Therefore these surfaces will still be relatively impervious.

- 46.86 total acres of long term disturbance (**Table 2-16** in the FEIS), composed of
- 39.83 acres of long term disturbance due to new and improved roads (**Table 2-8**)
- 6.97 acres of long term disturbance from work pads and transmission (**Table 2-13**)

See **Table 2-7** and **Table 2-10** in the FEIS for more information.

**h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [\[help\]](#)**

**Section 2.3.9** of the FEIS describes Required Design Features (RDFs) committed to by the Project proponent that will help reduce/control erosion and other impacts to the earth. These measures include **SGW-11**, which calls for applying and maintaining standard erosion and sediment control methods to minimize erosion.

**2. Air**

**a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [\[help\]](#)**

The primary types of air pollution during construction would be:

- Combustion pollutants from equipment and vehicle exhaust;
- Fugitive dust particles from disturbed soil associated with auguring holes or foundations for structure installation (overhead design option);
- Fugitive dust particles from disturbed soil associated with land clearing and top soil removal;
- Fugitive dust from grading and earth moving associated with access road construction; and
- Fugitive dust from construction vehicles traveling on unpaved roads becoming airborne.

Impacts to air quality during construction are expected to be short-term, localized, and low.

The primary emission sources associated with the operation and maintenance (O&M) phase of the Project include fugitive dust from vehicles using unpaved access roads and vehicle emissions during periodic maintenance or emergency repair activity. Quantities of emissions would be very small, temporary, and localized. Therefore, air quality impacts during O&M of the proposed Project would be low or none.

See **Section 4.13.3** and **Table 4.13-1** of the FEIS for more information.

**b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [\[help\]](#)**

None have been identified.

**c. Proposed measures to reduce or control emissions or other impacts to air, if any:**

[\[help\]](#)

See **Section 2.3.8** in the FEIS for RDFs to avoid or minimize impacts to air quality.

**3. Water**

**a. Surface Water:** [\[help\]](#)

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.** [\[help\]](#)

The primary surface water features found within the Project area include the Columbia River in the eastern portion of the Project area and the Yakima River in the western portion. Lmuma, Burbank, Johnson, Foster, and Selah Creeks are present within the Project area and contain perennial flow for much of their length. Lmuma and Selah Creeks are crossed by the NNR and flow to the Yakima River, while Johnson and Foster Creeks, both located outside of the ROW, flow to the Columbia River.

With the exception of the perennial streams and rivers mentioned above, surface water in the Project area is scarce. Streams are generally unnamed, small and intermittent, flowing for a short period of time in the spring or in response to a large storm event.

See **Section 3.14.4** and **Appendix A – Water Resources and Wetlands Map** in the FEIS for more information on water resources by route segment.

Help Info: Water bodies include year round and seasonal streams, saltwater, lakes, ponds, wetlands, domestic water intakes, or any forested or un-forested wetlands on the site or downstream/down slope. Please identify possible fish bearing streams and note that an intermittent stream might have fish present for a few weeks or months of the year during periods of high flow.

Within the Project area, aside from the Yakima and Columbia Rivers, only Johnson and Lmuma Creeks are known to support fish populations.

See **Sections 3.3.2.2** and **3.3.2.4** in the FEIS for information on rivers and streams where federally-listed, state-listed, and other special status fish species may occur.

Help info: Also note the presence of seeps, springs, wetlands or manmade water bodies. The site may appear dry but include areas that are transitional between open water and uplands, or it may be periodically inundated or saturated.

Seeps, springs, wetlands, and manmade waterbodies are discussed in **Section 3.14.2.1** of the FEIS. There are over 200 seeps and springs throughout the JBLM YTC, located primarily in the bottom of drainages or on the sides of hills. Wetlands and manmade water bodies are seldom crossed by the Project (**Appendix A – Water Resources and Wetlands Map**).

Help info: Please note any water quality issues relevant to the surrounding watershed such as a Total Maximum Daily Load, or TMDL. This is a locally focused scientific study that calculates the pollution a waterbody can receive and still meet water quality standards. It provides information about the existing conditions and how sensitive the watershed is additional development impacts.

No water features crossed by the Project have been identified as impaired by the WDOE (see **Section 3.14.2.1**).

Help Info: Describe any water-based invasive species known to exist in the area (e.g., water milfoil, New Zealand mud snails, yellow flag iris, Brazilian elodea) and steps taken to avoid their spread during the project. Describe any measures that will be taken to ensure that the equipment being used is not introducing or spreading invasive species. The Washington Invasive Species Council has developed prevention protocols to be used when working in or near water. For

the removal or placement of in-water structures, describe how the material either to be removed or placed has been checked for invasive species and how any invasive species found will be removed and disposed of appropriately.

No water-based invasive animal species (e.g., New Zealand mud snail) are known to occur within the project area.

Plant invasive species known to occur within the Project area include purple loosestrife and reed canarygrass. See **Section 3.2 Vegetation (Table 3.2-2), Section 3.2.4** ( for occurrences by route segment), and **SDEIS Appendix B-4 Noxious Weed Report** for more information.

Preventative measures to avoid their spread are included in RDFs such as **BIO-5, BIO-10, BIO-11** in **Section 2.3.2 Biological Resources**. A Noxious Weed and Invasive Plant Management Plan will be developed and incorporated into the final Plan of Development.

**2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [\[help\]](#)**

Help info: Any part of the project, plan, or other proposal that impacts the shoreline of a water body is identified in this answer. Include grading, fill, or excavation; installation, construction, or demolition; paving; painting or maintenance activities; storage of materials; planting or removal of vegetation; etc. if it will occur within 200 feet of the water and describe where the activities will take place in relation to the waterbody.

You must identify the possibility of intentional or inadvertent filling of, or runoff to streams, wetlands or other water bodies. Attach plans (or preliminary schematic drawing with all water bodies included), if appropriate for the type of activity. If the project involves impacts to aquatics lands, you may need a hydraulic project approval (HPA) from the state Department of Fish and Wildlife, shoreline permits from the local government and possibly a use authorization from the Department of Natural Resources.

Direct impacts to water resources could be caused by access road construction and improvements, right-of-way (ROW) clearing, and site preparation for structures and other facilities such as pulling and tensioning sites, and potentially, maintenance activities. Transmission structures would not be located in intermittent or perennial streams or wetland areas. Depending upon final design, some access road improvements or new access roads may impact intermittent and perennial water courses; however, existing paved and unpaved roads and trails would be used where possible. No long-term impacts to water resources are anticipated to occur as a result of the proposed Project. The estimated 4.4 acres of short term disturbance are restricted to intermittent streams and gullies (**Table 4-14.2** in the FEIS).

The possibility of intentional or inadvertent filling of or runoff to streams, wetland, and other waterbodies is discussed in **Section 4.14 Water Resources** under **Section 4.14.1.3** and **Section 4.14.3**. Potential required permits are discussed in **Section 3.14.3**. Specific erosion and sediment control measures and locations will be specified in a Stormwater Pollution Prevention Plan (SWPPP) as part of the Plan of Development (POD).

**3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [\[help\]](#)**

Help Info: Describe the quantity, type of material, and the location including the size of the area to be filled or dredged. Include the results of toxicity tests or other information about the fill or dredge material. Fill is any material that will change the bottom elevation of an aquatic area, wetland, or water body.

Water bodies include year round and seasonal streams, saltwater, lakes, ponds, wetlands, domestic water intakes, or any forested or un-forested wetlands on the site or downstream/down slope.

Example: Remove 4,000 cubic yards of silt and gravel from Big River to maintain navigational channel between river mile (RM) 3.5 and RM 6.2. Results of toxicity tests are attached.

As stated previously, the Project is not anticipated to result in any long term impacts to perennial waterbodies. However, quantified fill and dredge amounts will not be available until design is advanced.

**4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [\[help\]](#)**

Help info: Describe the quantity and location of any surface water withdrawal or use even if for a nonconsumptive use (meaning that the same quantity of water is returned to the waterbody). This includes temporary or long-term use.

Diversions refer to changes in flow patterns, such as diverting a stream away from a building site or the creation of ponds or inlets.

Ecology regulates the withdrawal of water from surface and underground sources. A permit is not required if the withdrawal is less than 5,000 gallons per day for industrial or domestic use, or for stock watering.

Any work that uses, diverts, obstructs, or changes the natural flow or bed of any fresh water or saltwater of the state may require a Hydraulic Project Approval from the Washington Department of Fish and Wildlife.

For projects involving State-Owned Aquatic Lands, a use authorization from Department of Natural Resources may be needed.

Also consider the connectivity between water bodies for situations of water diversion. Does diversion source contain invasive species that could spread to a new water body?

The Project would not permanently alter the flow in any streams or rivers. The transmission line would span all streams, drainage courses, and rivers; and no structures would be placed in active channels; nor would any specific surface water withdrawals or diversions be required. See **Section 4.14 Water Resources**. Depending upon final design, some access road improvements or new access roads may temporarily impact intermittent and perennial water courses; however, existing public paved and unpaved roads and trails would be used where possible. A cumulative total of 4.5 miles of intermittent streams/gullies will be crossed by all the route segments. See **Section 4.14, Table 4.14-2, and Table 4.14-3** for more information.

**5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [\[help\]](#)**

The NNR crosses 100-year floodplains associated with Lmuma Creek as well Selah Creek. Transmission structures would not be located in intermittent or perennial streams or wetland areas. Transmission line structures may be placed within the 100-year floodplain; however, placement of structures within the floodplain and constructing access roads to these structures is not expected to affect the function and flood storage of the floodplain, or impede or redirect flood flows.

Refer to the **Appendix A – Water Resources Map** for the identified 100-year floodplains.

**6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [\[help\]](#)**

Help Info: Include waste or contaminants associated with industrial wastewater; domestic sewerage; agricultural runoff; stormwater drainage from parking lots, equipment storage areas, chemically-treated lawns and landscaping; etc. Describe the source, the likely contaminants, and quantities if known.

Waste materials means hot or very cold water, sediments, chemical by-products, wash water, sewage, stormwater and other pollutants.

Discharge includes seeping or dripping of hot or very cold water; sediment filled water, controlled runoff, or liquid by-products of an activity, such as bore hole drilling waste products.

Water bodies include year round and seasonal streams, saltwater, lakes, ponds, wetlands, domestic water intakes, or any forested or un-forested wetlands on the site or down stream/down slope. Please identify possible fish bearing streams and note that an intermittent stream might have fish present for a few weeks or months of the year during periods of high flow.

To reduce impacts to water resources, standard erosion and sediment control measures would be implemented. These measures may include using certified weed-free straw wattles and bale barriers, and silt fencing placed at construction boundaries and where soil would be disturbed near a wetland or waterbody. Temporary culverts of appropriate size or temporary work bridges would be installed where needed to minimize stream bank degradation, erosion, and sediment deposition into the waterway. These temporary structures would be removed following completion of construction. Specific erosion and sediment control measures and locations will be specified in a Stormwater Pollution Prevention Plan (SWPPP) as part of the Plan of Development (POD).

See **Section 4.14.3** and **Section 4.14.4** for more discussion of impacts to surface waters.

## **b. Ground Water:**

**1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [\[help\]](#)**

Help info: Describe any new or increased groundwater extractions, including use or purpose and approximate quantities if known. For water discharges to ground, remember to consider how stormwater runoff collected from impervious surfaces is managed onsite. The water resources web map may be a helpful tool.

Excavation for transmission line foundations could encounter groundwater that is close to the surface. Foundation excavation could temporarily alter groundwater flows and could require dewatering to remove excess water from the construction worksite. Dewatering could impact the level of the localized water table, increase soil erosion, and increase the presence of surface water down slope from foundation excavation areas. If groundwater is encountered, dewatering would be performed in accordance with authorizations from applicable regulatory agencies and as detailed in the SWPPP. Dewatering procedures may involve discharge to catch basins, temporary settling basins, temporary holding tanks, or vacuum trucks. Soil compaction from access roads and work areas could alter ground surface percolation rates which would alter groundwater recharge to underlying aquifers. Impacts to groundwater are anticipated to be short-term and would be minimized by erosion and sediment control measures, tilling to reduce soil compaction, and restricting construction vehicle movement to pre-designated access locations. Water will not be discharged to surface water.

See **Section 4.14.3.2** for more information on groundwater impacts.

**2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [\[help\]](#)**

Help info: "Waste material" includes chemicals, sediments, agricultural (pesticides, herbicides, and fertilizer) runoff, wash water, logging slash, log booming or storage debris, treated wood pilings, oil or other fuels from equipment used for construction and/or operational activities.

Short-term impacts to groundwater could result from spills of fuel, oils, hydraulic fluid, or other substances. For example, pollutants could be introduced from improper equipment use. Contamination of water resources through spills would be minimized by project RDFs identified in **Section 2.3.9** such as: providing spill prevention kits and other practices described in the Spill Prevention, Control, and Countermeasure Plan. If refueling and maintaining equipment must occur onsite, these activities will occur outside a 100-foot radius of a waterbody, a 200-foot radius

of all identified private water wells, and a 400-foot radius of all identified municipal or community water supply wells. In addition, for route segments on the JBLM YTC, refueling would not occur within 656 feet of any drainage, wet or dry, and parking or staging of vehicles would be at least 328 feet from drainages. Impacts to groundwater from the application of herbicide for weed control would be avoided by following procedures outlined in the Noxious Weed Control Plan, a part of the POD, including applying herbicides according to the label instructions, using certified pesticide applicators, and maintaining no-spray buffer zones along streams.

See **Section 4.14 Water Resources** for more information.

**c. Water runoff (including stormwater):**

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [\[help\]](#)**

Help info: Describe the following:

1. Source of runoff
2. Intended management systems
3. Where and how the runoff will be discharged off the project site
4. Where and how the runoff will flow to ground or surface waters

Water runoff in the project area originates primarily as precipitation that falls onto various natural and artificial surfaces, and either infiltrates or collects and discharges at natural low points. During construction, water runoff would be minimized by applying and maintaining standard erosion and sediment control methods (specified in the SWPPP). Most water runoff will follow existing drainage patterns. Culverts of appropriate size would be installed where needed and disturbed areas would be reseeded. In addition, all construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and stream banks.

See **Section 4.14 Water Resources** and **Section 2.3.9** for RDFs related to water resources.

- 2) Could waste materials enter ground or surface waters? If so, generally describe. [\[help\]](#)**

Help Info: In considering whether waste could be carried to ground or surface waters, consider potential sources of contamination (such as parking lots, equipment storage, agricultural practices, lawn and landscaping maintenance, animal waste, treated wood, eroding soils, etc.), any treatment provided, and where the runoff will flow or be discharged. Describe the type/source of potential contamination and the waterbody or aquifer it is likely to end up in.

See response to b.2) above.

- 3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.**

The Project would not permanently alter the flow in any streams or rivers. The transmission line would span all streams, drainage courses, and rivers; and no structures would be placed in active channels, nor would any specific surface water withdrawals or diversions be required. See **Section 4.14 Water Resources**. Depending upon final design, some access road improvements or new access roads may temporarily impact intermittent and perennial water courses; however, existing public paved and unpaved roads and trails would be used where possible. A total of 4.5 miles of intermittent streams/gullies will be crossed by all the route segments.

See **Section 4.14**, **Table 4.14-2**, and **Table 4.14-3** for more information.

**d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:**

See RDFs in **Section 2.3.9**, including **SGW-1**, **SGW-7**, **SGW-8**, **SGW-9**, **SGW-11**, and **SGW-12**. Erosion and sediment control measures and locations will be specified in a SWPPP as part of the POD.

**4. Plants** [\[help\]](#)

a. Check the types of vegetation found on the site: [\[help\]](#)

- deciduous tree: alder, maple, aspen, other
- evergreen tree: fir, cedar, pine, other
- shrubs
- grass
- pasture
- crop or grain
- orchards, vineyards or other permanent crops.
- wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
- water plants: water lily, eelgrass, milfoil, other
- other types of vegetation

Help info: Describe if plant species present on site or used in the project are listed as noxious or invasive.

Vegetation within the Project area is described in detail in **Section 3.2.2.1 of the FEIS**. Generally, vegetation consists primarily of annual grassland, sagebrush, perennial grassland and agriculture. The distribution of these vegetation types is shown on **Appendix A – Vegetation & Fire History Map**.

**b. What kind and amount of vegetation will be removed or altered?** [\[help\]](#)

The amount and type of vegetation disturbed is presented in **Table 4.2-4 of the FEIS**.

**c. List threatened and endangered species known to be on or near the site.** [\[help\]](#)

Special status plants (including ESA listed Endangered and Threatened Species) are discussed in detail in **Section 3.2.2.3 of the FEIS** and in **Appendix B-3 Special Status Plant Report of the SDEIS**.

**d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:** [\[help\]](#)

See **Biological Resources** RDFs (such as **BIO-5**, **BIO-7**, and **BIO-12**) in **Section 2.3.2**.

**e. List all noxious weeds and invasive species known to be on or near the site.**

Noxious weeds and invasive species are described in **Section 3.2.2.2** in the FEIS and in SDEIS **Appendix B-4 Noxious Weed Report**.

**5. Animals**

a. **List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Examples include:** [\[help\]](#)

**birds:** hawk, heron, eagle, songbirds, **other:**

**mammals:** deer, bear, elk, beaver, **other:**

**fish:** bass, salmon, trout, herring, shellfish, **other** \_\_\_\_\_

Representative wildlife species for the Project area are presented in **Table 3.3-1** and are described by habitat type in **Section 3.3.3.1**.

b. **List any threatened and endangered species known to be on or near the site.** [\[help\]](#)

Federally threatened, endangered, and candidate species known to occur or which are likely to occur within the Project area are discussed in **Section 3.3. 2**.

c. **Is the site part of a migration route? If so, explain.** [\[help\]](#)

Migration routes and corridors are discussed by special status species, where applicable, in **Section 3.3 and Section 4.3**.

Several special status fish species, such as bull trout, Chinook salmon, and Pacific lamprey, use the Columbia River as a migratory corridor to and from their freshwater breeding sites to the ocean. Similarly, the Columbia River is important migratory pathway for waterfowl and other birds as they move north and south along the Pacific Flyway. Also, the NNR-Overhead Alternative crosses an area identified as an important linkage corridor between extant populations of greater sage grouse (see **Appendix B-5** of the FEIS for more information).

d. **Proposed measures to preserve or enhance wildlife, if any:** [\[help\]](#)

See **Biological Resources** RDFs in **Section 2.3.2**. See also FEIS **Appendix B6 – Framework for Development of a Sage-Grouse Compensatory Mitigation Plan**.

e. **List any invasive animal species known to be on or near the site.**

No water-based invasive animal species (e.g., New Zealand mud snails) are known to occur within the project area.

## 6. Energy and Natural Resources

a. **What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.** [\[help\]](#)

Gasoline, diesel fuel, and helicopter fuel will be used for construction, operation, and maintenance equipment. The Project is an electric transmission line and therefore will move electric energy for a variety of consumer uses.

f. **Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.** [\[help\]](#)

The proposed Project does not cross any lands known to be planned for solar power development. The proposed route does pass through a portion of the state with the second highest potential for solar output (4.1 kilowatt hours/m<sup>2</sup>/day). Land occupied by the new 230 kV transmission line would not be available for solar power development.

- c. **What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:** [\[help\]](#)

None that have been identified.

## 7. Environmental Health

- a. **Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.** [\[help\]](#)

See **Section 4.16 Public Health and Safety** in the FEIS for a discussion of potential Project impacts related electric and magnetic fields.

- 1) **Describe any known or possible contamination at the site from present or past uses.**

None that have been identified.

- 2) **Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

None that have been identified.

- 3) **Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

Gasoline, diesel fuel, and helicopter fuel will be used for construction, operation, and maintenance equipment.

- 4) **Describe special emergency services that might be required.**

Due to the remote nature of the Project area, medical emergencies could require airlifting of victims. Any use of helicopters or other aircraft during Project construction will require close coordination with JBLM YTC because this federal facility is restricted air space.

- 5) **Proposed measures to reduce or control environmental health hazards, if any:**

See RDFs in **Section 2.3.7 Wildland Fire** and **Section 2.3.10 Public Health and Safety** for more information.

### b. Noise

- 1) **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?** [\[help\]](#)

The Project area has relatively low ambient noise levels due to its rural setting. Higher noise levels occur primarily near highway crossings and in agricultural areas. Additional noise is also created by military operations occasionally occurring at the JBLM YTC, and noise levels are somewhat higher near the I-82 corridor and the more urbanized areas of Yakima and Selah. Overall, the Project area typically ranges from very quiet with natural sounds such as birds, insects, and wind dominating to noisy in localized

areas during periods of military operations at JBLM YTC, agricultural operations, shooting, and other outdoor activities generating isolated and periodic peaks of higher levels of noise. (**Section 4.16.3.1**).

**2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [\[help\]](#)**

Noise from the proposed Project can be classified into several types: corona noise (i.e., line crackling), construction noise, and radio noise. Corona and radio noise are more likely in higher voltage lines (more than 230kV). Corona noise would only occur during inclement weather and would likely fall below 60 decibels (dBA). Construction noise would be generated by a wide range of on-site and off-site equipment. The loudest sources of on-site construction noise would include helicopters and blasting. These activities could generate short term intermittent noise levels of 90 to 100 dBA for helicopters and up to 125 dBA for blasting. Off-site sources of noise would be produced primarily by traffic of equipment and personnel, with peak noise levels of between 70 to 75 dBA. Overall, construction noise would extend over a period of approximately 12 months, but work would progress along the selected route, and would seldom be generated from one location for very long.

See **Section 4.16.3** in the FEIS for more information.

**3) Proposed measures to reduce or control noise impacts, if any: [\[help\]](#)**

The following RDFs in **Section 2.3** of the FEIS address noise impacts: **LU-10, PHS-7, PHS-8, PHS-11,** and **PHS-12**.

## **8. Land and Shoreline Use**

**a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [\[help\]](#)**

The proposed project passes through mostly undeveloped land in south-central Washington. Land ownership is mostly on public land, with between 70 and 75 percent of the routes crossing federal land (mostly on the JBLM YTC), between 2 and 5 percent on state land, and between 23 and 25 percent on private land. Land use in these areas includes residential near communities like Yakima and Vantage, grazing, irrigated agriculture, military, existing utilities, recreation, conservation, and transportation.

The proposed route will have generally low to moderate levels of impact to existing and future land uses, resulting primarily from short term displacement of land uses during construction and long term displacement of some land uses that are incompatible with transmission (e.g., residences under the lines). The largest long term disturbance will be to military uses on the JBLM YTC.

See **Section 4.4.3** and **Section 4.4.4** for more information.

**b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [\[help\]](#)**

The various route segments cross a total of 11.8 miles of Farmlands of Unique Importance and 3.6 miles of Prime Farmland. More than 3,800 acres of active croplands have been identified in the Project area (two-mile corridor around and adjacent to proposed route alignment). However, none of these active croplands are actually crossed by the proposed route. No forest land of long-term commercial significance will be converted or affected.

**1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application**

**of pesticides, tilling, and harvesting? If so, how:**

There will be short-term disturbance to some agricultural land uses, mostly grazing, during construction, but these land uses are generally compatible with transmission so they should resume immediately upon completion of construction. There is no working forest land within the project area.

**c. Describe any structures on the site. [\[help\]](#)**

Structures along the proposed route are limited to existing utility infrastructure (e.g., poles, substations, existing distribution lines, etc.).

**d. Will any structures be demolished? If so, what? [\[help\]](#)**

Existing distribution lines (and some of the poles that support them), will be replaced with transmission underbuild, particularly in route segments NNR-1 and NNR-2.

**e. What is the current zoning classification of the site? [\[help\]](#)**

Zoning classifications are only applicable on private land or land owned by the local agencies. In Grant County, zoning along those private portions of route segment NNR-8 are zoned Rural Remote. In Kittitas County, zoning along those private portions of route segment NNR-3 and NNR-4, zoning is mostly Forest and Range. Within Yakima County, zoning along route segments NNR-1, NNR-2, and NNR-3 include Remote/Extremely Limited Development Potential, Agriculture, and Valley Rural.

See **Appendix A – Zoning Map** in the FEIS.

**f. What is the current comprehensive plan designation of the site? [\[help\]](#)**

In Kittitas County, the NNR passes through areas designated as Rural Working near the Columbia River and Badger Pocket, with the remainder of the County's portion of the NNR in Commercial Agriculture. In Yakima County, the Plan 2015 designations crossed by the NNR include Rural Remote, Agriculture Resource, Rural Self-Sufficient, and Federal Land. In the short section of Grant County near the Vantage Substation, the NNR is located within a comprehensive plan designation of Rural Remote.

**g. If applicable, what is the current shoreline master program designation of the site? [\[help\]](#)**

In Grant and Kittitas Counties, the shoreline of the Columbia River is designated as Rural Conservancy under the Counties' respective Shoreline Management Acts. The proposed Project does not cross any areas in Yakima County that fall under shoreline jurisdiction.

**h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [\[help\]](#)**

In general, Grant, Kittitas, and Yakima Counties identify the following as critical areas:

- Wetlands
- Critical Aquifer Recharge Areas
- Frequently Flooded Areas
- Geologically Hazardous Areas
- Fish and Wildlife Conservation Areas

The presence of these various critical areas and potential impacts to them are addressed in various sections of the FEIS, according to the following chart:

Critical Area	Location in FEIS for Information
Wetlands	Section 3.14.3.3; Section 4.14.3.1
Critical Aquifer Recharge Areas	Section 3.14.2.2; Section 4.14.3.2
Frequently Flooded Areas	Section 3.14.3.3; Section 4.14.3.1
Geologically Hazardous Areas	Section 3.15.2.3; Section 3.15.3.5; Section 3.15.3.6; Section 4.15 .3.1 (Table 4.15-2 and Table 4.15-3)
Fish and Wildlife Conservation Areas	
Streams, Lakes, Ponds, and Riparian Areas	Section 3.14.3.3; Section 4.14.3.1
Big Game Winter Range (Kittitas County)	Section 3.3.2.5; Section 4.3.3.6
Upland Wildlife Habitat (Yakima County)	Section 3.3.2.5; Section 4.3.3.6
Priority Habitats and Species	Section 3.3.2.5; Section 4.3.3.6
Species of Local Importance	Section 3.2.2.3, Section 3.3.2.5; Section 4.2.4, Section 4.3.3.6

**i. Approximately how many people would reside or work in the completed project?** [\[help\]](#)

None.

**j. Approximately how many people would the completed project displace?** [\[help\]](#)

The proposed project would result in no displacements.

**k. Proposed measures to avoid or reduce displacement impacts, if any:** [\[help\]](#)

Not applicable.

**l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:** [\[help\]](#)

See **Section 2.3.3** of the FEIS for RDFs related to land use.

**m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:**

Project impacts are limited primarily to dispersed grazing. No active croplands will be affected. See **Section 4.4 Land Use** in the FEIS for more information.

## 9. Housing

**a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.** [\[help\]](#)

No housing would be provided by the proposed project.

**b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.** [\[help\]](#)

No housing would be eliminated by the proposed project.

**c. Proposed measures to reduce or control housing impacts, if any:** [\[help\]](#)

Not applicable.

## 10. Aesthetics

### a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [\[help\]](#)

The steel lattice towers proposed for crossing the Columbia River will be approximately 200 feet tall. Poles will be made of wood or steel and range between 65 feet and 110 feet tall. The conductor (the wire cable strung between transmission line structures through which the electric current flows) would be aluminum stranded with a steel stranded reinforced core. See **Section 2.2** in the FEIS for more information.

### b. What views in the immediate vicinity would be altered or obstructed? [\[help\]](#)

**Section 4.8 Visual Resources** in the FEIS analyzes the visual impact of the proposed Project in detail. Specifically, **Table 4.8-11** summarizes the residual visual impacts (after application of mitigation measures) of the proposed Project. Most of these impacts are considered low. NNR-Overhead will have 4.4 miles of high residual impacts, compared to 16.1 miles in the DEIS and SDEIS Preferred Alternative D.

### c. Proposed measures to reduce or control aesthetic impacts, if any: [\[help\]](#)

See **Section 2.3.5** in the FEIS for RDFs related to visual impacts.

## 11. Light and Glare

### a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [\[help\]](#)

No lights are proposed on any of the transmission structures. Lighting at the existing substations would be unchanged. FAA may require lights on the steel lattice structures that will be used at the crossing of the Columbia River (see **LU-20** in **Section 2.3.3**). Depending on the material used for the conductors, the transmission lines may produce glare.

### b. Could light or glare from the finished project be a safety hazard or interfere with views? [\[help\]](#)

To reduce visual contrasts caused by glare created by standard aluminum conductors (wires), non-specular conductors will be used. See **Section 4.8** in the FEIS for more information.

### c. What existing off-site sources of light or glare may affect your proposal? [\[help\]](#)

None have been identified.

### d. Proposed measures to reduce or control light and glare impacts, if any: [\[help\]](#)

RDF **VIS-6** in **Section 2.3.5** of the FEIS would minimize light and glare impacts from the proposed Project.

## 12. Recreation

### a. What designated and informal recreational opportunities are in the immediate vicinity? [\[help\]](#)

Recreational opportunities in the project area include the following:

- Yakima River Canyon Management Area – hiking, hunting, camping, fishing, rafting
- Selah Butte Watchable Wildflower Area
- John Wayne Pioneer Trail/Iron Horse State Park – walking, hiking, biking, cross-country skiing, snow shoeing, dog sledding
- Selah Cliffs Natural Area Preserve

- Wanapum Heritage Center and Picnic Area
- Wanapum Lake (Columbia River) – fishing, boating, jet skiing, water skiing
- WDFW Game Management Units 278, 340, 371, and 372

See **Section 3.5 Recreation** in the FEIS for more information on recreational resources in the project area.

**b. Would the proposed project displace any existing recreational uses? If so, describe.**

[\[help\]](#)

Most impacts to recreation in the Project area will consist of short term displacement of dispersed hunting activities during construction. In route segments NNR-7 and NNR-8, impacts to users of the John Wayne Pioneer Trail from dust and noise disturbance are possible during construction. It is also possible that part of that trail would need to be permanently realigned or temporarily closed during construction.

See **Section 4.5 Recreation** for more information on the effects of the proposed project on recreation.

**c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [\[help\]](#)**

RDF LU-9 in **Section 2.3.3** in the FEIS specifies that construction will be timed, where practical, to avoid peak use periods at parks, recreation, and preservation areas, and that activities will be coordinated with relevant agencies prior to construction.

See **Section 4.5** in the FEIS for more information on the effects of the proposed project on recreation.

### **13. Historic and cultural preservation**

**a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe. [\[help\]](#)**

A total of 85 cultural resources have been recorded within 75 feet of the NNR-Overhead Alternative centerline. These include nine Traditional Cultural Properties (TCPs), 47 archaeological sites, 28 isolated finds, and one architectural resource. All but one of these resources have either been determined eligible to the National Register or are unevaluated but are assumed to be eligible. Over 67 percent of the land within 75 feet of the centerline has been previously surveyed for cultural resources and it is likely that additional cultural resources that could be determined eligible for the National Register may be found in the unsurveyed areas and possibly in areas that are resurveyed prior to construction.

See **Table 4.11-2**, **Table 4.11-3**, and **Table 4.11-4** for more information.

**b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [\[help\]](#)**

There are 85 total cultural resources within the 150-foot survey corridor and 120 total cultural resources within the 500-foot survey corridor around the NNR-Overhead Alternative (see **Table 4.11-2** and **Table 4.11-3**). These totals include those in DAHP records and sites recently recorded by the Yakama Nation Cultural Resources Program (YNCRP). Included are nine (TCPs) within the 150-foot survey corridor of the eight route segments. The TCPs include ceremonial sites, traditional use sites, legendary sites, and other culturally sensitive properties.

Cultural resources surveys have been conducted by YNCRP staff as well as the Confederated Tribes of the Colville Reservation.

See **Section 3.11** in the FEIS for more information.

**c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [\[help\]](#)**

The YNCRP conducted cultural resource surveys on federal land along some route segments (see **Section 3.11 Cultural Resources and Native American Concerns**). The Cultural Resources Program of the Confederated Tribes and Bands of the Yakama Nation (under contract with Pacific Power) collected oral histories and conducted a TCP study for the Project area and conducted a second study for the NNR and portions of Alternative D. Also, because the NNR lies within the traditional territory of the Moses Columbia Tribe, the Confederated Tribes of the Colville Reservation History and Archaeology Program (under contract with Pacific Power) conducted further TCP studies in the area and prepared a report.

Locations of all previously recorded prehistoric and historic resources, including isolated finds, and of previously conducted cultural resource investigations within one mile of one or more of the alternative route segment centerlines were entered into a geographic information system (GIS) database. Over 2,750 cultural resources have been previously recorded within one mile of the centerline of each alternative including the NNR. Only 190 of these are located within 250 feet of the centerlines. It is acknowledged that:

- Site boundaries are sometimes not well defined; and
- Site data may change as nearby projects increase the number of known sites in the Project vicinity.

Also, the record search identified 31 cultural resource surveys that have been conducted within 75 feet of either side of the alternative centerlines, including the NNR. As a result of previous and recent surveys of federal land along some segments by the YNCRP, the proportion of surveyed land is 67 percent within the 150-foot corridor and 65 percent within the 500-foot corridor.

See **Section 3.11.1** and **Section 4.11.1.1** for more information.

**d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.**

To ensure compliance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 Code of Federal Regulations (CFR) Part 800, Pacific Power will implement stipulations of a Programmatic Agreement (PA) prepared and signed by the BLM, the lead federal agency for Section 106 compliance, JBLM YTC, Reclamation, BPA, Washington State Historic Preservation Officer (SHPO), and other parties. The PA will define the Area of Potential Effects (APE) and will stipulate procedures for:

- identifying cultural resources within the APE;
- evaluating their significance;
- assessing effects;
- avoiding or mitigating adverse effects;
- emergency discoveries;
- reporting; and
- Native American consultation.

Before construction, Pacific Power would arrange for an intensive pedestrian cultural resource survey on all federal and state lands, and on private lands where permission of the land owner has been granted prior to survey. Survey would be conducted within all areas of possible physical disturbance within the APE of the selected alternative following BLM manual guidelines. The APE for the undertaking includes all involved federal, state, and private lands and will include:

- The transmission line ROW along the centerline;

- Any existing unpaved access roads/existing roads that may require improvement and new roads;
- Staging areas, laydown areas, pulling and tensioning areas, and any other temporary use areas; and
- Geotechnical drilling boring locations and new or improved access roads to the drill sites.

APE dimensions will be determined by the BLM and appropriate land managing agencies. The APE for assessing visual effects on cultural resources will be land within a specific distance of the transmission line as determined by the parties to the PA.

The BLM, in consultation with other parties to the PA, will develop and implement specific measures to mitigate adverse effects. These may include Project modifications to avoid adverse impacts, monitoring of construction activities, and data recovery studies. By completing and implementing the PA, the Section 106 process would be complete, although specific activities would still need to be carried out by the BLM and Pacific Power. Procedures for evaluating National Register eligibility, assessing effects, and mitigating adverse effects at specific cultural resources will be addressed in a Historic Properties Treatment Plan prepared after the cultural resource survey has been completed.

See **Section 4.11.5** for more information on mitigation measures and residual impacts. The draft PA is **Appendix E** of the FEIS.

## 14. Transportation

### a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [\[help\]](#)

The main roadways in Grant, Kittitas, and Yakima Counties in the Project area include Interstate (I) 82, Washington State Route (SR) 821 and SR 243. Highways just outside the Project area include I-90 to the north, US Highway 12 to the west, SR 24 to the south, and SR 26 to the northeast. The only county road in the Project area is the Beverly-Burke Road.

In Kittitas County, the major roads in the Project area include:

- Huntzinger Road, a Rural Road running along the eastern boundary of the JBLM YTC in a north-south direction. The road provides access to residences and agricultural operations which also border the western shore of the Columbia River, as well as providing access to the Wanapum Reservoir and the Columbia River/Priest Rapids Reservoir. The road travels from the north, out of the Project area and into the town of Vantage. To the south, the road changes surfaces from paved to gravel adjacent to the Auvil Fruit Company agricultural area.
- Burbank Creek Road is a private road, and intersects with SR 821 on its east side south of the Roza Recreation Site.

In Yakima County, the major roads followed by and adjacent to the Project area include:

- Sage Trail Road, a Rural Road extending east from its western access point at East Selah Road. Sage Trail Road is a county maintained, paved road to Pomona Heights Substation. East of the substation as the road crosses Selah-Moxee Canal, the road is private and becomes gravel.
- East Selah Road accesses I-82, as well as the Pomona Heights Substation. The road serves residences in the Yakima Ridge foothills. The road is primarily chip-sealed, but becomes gravel layered further west as it turns into John Street and a network of gravel and dirt meandering roads mainly used to access homes or the JBLM YTC.
- Temple Lane is an Urban Local road located south of the JBLM YTC boundary between Sage Trail Road and Firing Center Road.
- Shotgun Lane is a private road extending between Firing Center Road and Temple Road.
- Pomona Heights Road is an Urban Local Road that is the northern extension of Shotgun Lane north of Firing Center Road.

- Firing Center Road is an Urban Collector Road connecting I-82 with JBLM YTC.
- Selah Creek Drive is a local road used by residences that is located east of SR 821 and just north of the Selah Creek crossing. This road also provides access to BLM lands located around Selah Butte.

See **Section 3.7 Transportation** in the FEIS for more information on federal, state, and local roads in the project area.

**b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [\[help\]](#)**

Public transit does not serve any portion of the Project area.

**c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [\[help\]](#)**

Not applicable.

**d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [\[help\]](#)**

Transmission line ROW access would be via a combination of new access roads, overland access, improvement to existing roads, or roads. Roads would be upgraded or constructed in accordance with the Proponent's standards for road construction, or according to land management agency requirements (such as BLM Manual 9113, 1985). However, existing paved and unpaved roads and trails would be used, where possible, for the transportation of materials and equipment from the storage yards to the areas where they would be needed along the transmission line ROW.

See **Section 4.7.3** in the FEIS for more information.

**e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [\[help\]](#)**

Yes. Helicopters will be used during construction. Construction activities potentially facilitated by helicopters may include delivery of construction laborers, equipment, and materials to structure sites; structure placement; hardware installation; and wire stringing operations. Helicopters may also be used to support the administration and management of the Project. The Project will cross the Columbia River, a major navigable waterway. The Project does not cross any active railroads. Other air transportation activities that occur in the Project area include intermittent crop-dusting throughout commercial agricultural lands and military air equipment movements on the JBLM YTC. A review by the Federal Aviation Administration (FAA), and JBLM YTC aviation operations as part of the permitting process would further minimize any potential conflicts created by the project.

See **Section 4.7.3** in the FEIS for more information.

**f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [\[help\]](#)**

Impacts associated with the proposed Project would be short-term and related to the movement of personnel and equipment during construction of the transmission line. Traffic associated with operations would involve a limited number of vehicle trips during routine inspection and maintenance activities. Transmission line inspection and maintenance traffic would occur infrequently and would not involve large numbers of vehicles or workers. A project-specific traffic model has not been developed.

**g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.**

Movement of agricultural and forest products will not be affected by the project.

**h. Proposed measures to reduce or control transportation impacts, if any: [\[help\]](#)**

RDFs **TR-1** through **TR- Section 2.3.4** of the FEIS are designed to reduce effects from the project; therefore, no additional mitigation would be required. Along with these RDFs, the **Traffic Management Plan** prepared for the POD would reduce impacts on transportation resources in the Project area. RDFs applicable to transportation resources include: **GEN-1, GEN-4, BIO-14, LU-1, LU-3, LU-5, LU-9 LU-12, LU-13, LU-20, VIS-4, SGW-1,** and **PHS-5.**

See **Section 4.7.5** for more information.

## 15. Public Services

**a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [\[help\]](#)**

The Project will not provide housing, additional transportation, or new population centers that will require increased public services. Construction will create additional risk of fire in the Project area. See discussion below.

**b. Proposed measures to reduce or control direct impacts on public services, if any. [\[help\]](#)**

Wildland fire during construction presents the greatest risk of impact to public services from the proposed Project. The applicant will develop a Fire Protection and Control Plan to reduce risk of wildland fire. Pacific Power would coordinate with federal, state, and local fire agencies at the onset of construction activities. The purpose of this coordination is to ensure that construction sites and personnel are equipped and trained to recognize and minimize fire hazards, to suppress a fire until firefighters can respond, and to locate suitable water sources.

The construction contractor would be responsible for any fire started, either in or out of the Project area, by its employees or operations during construction. The construction contractor would be responsible for notifying emergency response officials and initial attempts at fire suppression. The construction contractor would take aggressive action to prevent and suppress fires on and adjacent to the Project area, and would rehabilitate burned areas as directed by the appropriate land management agency.

Specific construction-related activities and safety measures would be implemented during construction of the transmission line in order to prevent fires and to ensure quick response and suppression in the event a fire occurs.

See **Section 3.12** and **Section 4.12** in the FEIS for more information.

## 16. Utilities

**a. Circle utilities currently available at the site: [\[help\]](#)**  
**electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system,**  
**other \_\_\_\_\_**

The Project parallels existing transmission lines (see 16.b.). All appropriate utilities are available at the existing substations.

**b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [\[help\]](#)**

The proposed Project will construct a new 230kV transmission line between two existing substations. Of the 40.5 total miles crossed by NNR-Overhead, 31.1 miles of the proposed line parallel existing utility lines. Other than the proposed Project itself, no new utilities will be constructed to support the Project. See **Chapter 2** of the FEIS for a detailed Project description.

**C. Signature** [\[HELP\]](#)

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

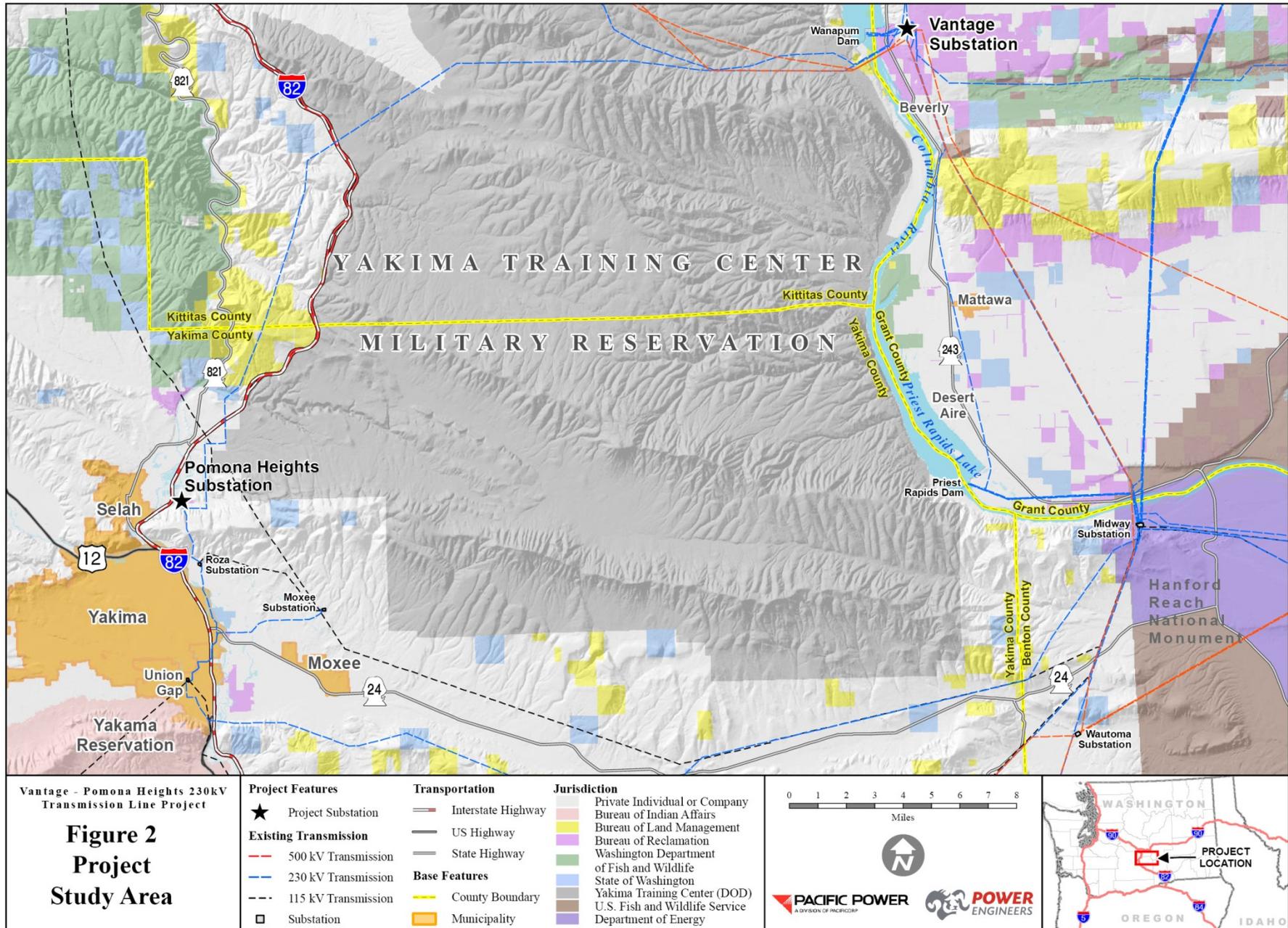
Signature: \_\_\_\_\_

Name of signee \_\_\_\_\_

Position and Agency/Organization \_\_\_\_\_

Date Submitted: \_\_\_\_\_







# **APPENDIX E PROGRAMMATIC AGREEMENT**

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# **PROGRAMMATIC AGREEMENT**

**AMONG**

**BUREAU OF LAND MANAGEMENT;  
JOINT BASE LEWIS-McCHORD YAKIMA TRAINING CENTER;  
BUREAU OF RECLAMATION;  
BONNEVILLE POWER ADMINISTRATION;  
FEDERAL HIGHWAY ADMINISTRATION;  
WASHINGTON STATE DEPARTMENT OF ARCHAEOLOGY AND HISTORIC  
PRESERVATION;  
AND  
PACIFIC POWER**

**REGARDING THE CONSTRUCTION OF THE**

**VANTAGE TO POMONA HEIGHTS 230 KV TRANSMISSION  
LINE PROJECT**

WHEREAS, Pacific Power proposes to construct, operate and maintain the Vantage to Pomona Heights 230 kilovolt (kV) Transmission Line Project (hereafter referred to as “Undertaking”) from its Pomona Heights Substation east of Selah in Yakima County, Washington to the Bonneville Power Administration (BPA) Vantage Substation east of Wanapum Dam in Grant County, Washington (see Appendix A); and

WHEREAS, Pacific Power has applied for rights-of-way (ROWs) from the Bureau of Land Management (BLM), Joint Base Lewis-McChord Yakima Training Center (JBLM YTC), and U.S. Bureau of Reclamation (Reclamation) for construction and operation of the proposed transmission line and related facilities; and

WHEREAS, Pacific Power has submitted an interconnect request to BPA for interconnection of the proposed transmission line to BPA’s transmission network; and

WHEREAS, Pacific Power intends to construct, operate and maintain the Vantage to Pomona Heights 230 kV Transmission Line Project according to general parameters contained in the project Plan of Development (POD) for the Undertaking, and the final BLM approved POD will be appended to and made part of the Record of Decision (ROD) authorizing the ROW; and

WHEREAS, the BLM is considering the issuance of the ROW grant for the construction, operation and maintenance of the Undertaking, and the ROW will incorporate this Programmatic Agreement (PA) by reference; and

WHEREAS, this PA, and the Historic Properties Treatment Plan (HPTP) that will be developed pursuant to this PA, will be incorporated into the approved project POD; and

WHEREAS, the BLM is a multiple use agency responsible for the permitting and issuing of ROWs as well as the protection of cultural resources as authorized under the Federal Land Policy and Management Act (FLPMA) of 1976 (43 United States Code [U.S.C.] §1701); the BLM has been requested to issue ROWs on its land for this Undertaking by Pacific Power; and the BLM is a Signatory of this PA; and

WHEREAS, JBLM YTC is responsible for processing Pacific Power’s application on federal lands managed by the U.S. Army (Army); the Army has established procedures to permit third parties to use Army-managed lands for purposes that do not conflict with its mission as a military training area; environmental stewardship and sustainability are integral parts of the Army’s mission; the Army must analyze and minimize impacts to cultural resources that would result from decisions to grant ROWs for third party uses; and JBLM YTC is a Signatory of this PA; and

WHEREAS, Reclamation is responsible for processing Pacific Power’s application filed on April 17, 2011 requesting a grant of ROW across federal lands managed by Reclamation; cultural resource investigations and construction activities on Reclamation lands fall under jurisdiction of Reclamation; and Reclamation is a Signatory of this PA; and

WHEREAS, the BPA is responsible for processing Pacific Power’s interconnection request submitted in April 2008 to interconnect the proposed new Vantage to Pomona Heights 230 kV transmission line into BPA’s Vantage Substation and the Mid-Columbia transmission system; and BPA is a Signatory of this PA; and

WHEREAS, changes to access, or use and occupancy on the Interstate Highway System require Federal Highway Administration (FHWA) approval, which may apply to the proposed Undertaking; and FHWA is a Signatory of this PA; and

WHEREAS, the BLM will serve as lead federal agency for compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (54 U.S.C. 306108), pursuant to 36 Code of Federal Regulations (CFR) Part 800, the regulations implementing Section 106 of the NHPA; and

WHEREAS, the federal agencies (i.e., BLM, JBLM YTC, FHWA, Reclamation, and BPA) shall comply with applicable requirements of the Archaeological Resources Protection Act (ARPA) (16 U.S.C. §470), American Indian Religious Freedom Act (42 U.S.C. §1996), Section 3(c) of the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. §3001-13), and pertinent treaties during the implementation of this PA; and

WHEREAS, the BLM Spokane District Manager, the “agency official” pursuant to 36 CFR Part 800.2(a), has determined that this project is an Undertaking as defined under 36 CFR Part 800.16(y), and is responsible for signing this PA; and

WHEREAS, the BLM, as the lead federal agency, has determined that the Undertaking may have adverse effects on properties included in or eligible for inclusion in the National Register of Historic Places (National Register), and has initiated consultation with the Advisory Council on Historic Preservation (ACHP), Washington State Department of Archaeology and Historic Preservation (DAHP), and other Consulting Parties pursuant to 36 CFR Part 800; and

WHEREAS, the BLM, in consultation with the ACHP and DAHP, has determined that a phased approach to Section 106 compliance is appropriate, pursuant to 36 CFR Part 800.4(b)(2) for the Undertaking; intensive Class III cultural resource surveys and evaluations of National Register eligibility for some portions of the selected alternative will not be possible until easements are acquired by Pacific Power; under the phased approach intensive Class III surveys and evaluations will be performed only for these portions of the selected alternative following issuance of the ROD; and the identification and evaluation of historic properties and effect determinations, as well as mitigation plans for any adverse effects, will be conducted in accordance with this PA prior to any Notice to Proceed (NTP) and project implementation; and

WHEREAS, the BLM notified the ACHP of the Undertaking on May 17, 2012 and the ACHP has elected not to participate in the consultation; and

WHEREAS, the Washington State Historic Preservation Office (i.e., DAHP) is authorized to enter into this PA in order to fulfill its role of advising and assisting federal agencies in carrying out their Section 106 responsibilities at 36 CFR Part 800.2(c)(1)(i) and 800.6(b) and to comply with the mandates of the Washington State Environmental Policy Act, Washington State Archaeological Sites and Resources Revised Code of Washington (RCW) 27.53, Indian Graves and Records RCW 27.44, and Human Remains RCW 68.50 Acts; and is a Signatory to this PA; and

WHEREAS, Pacific Power, as potential grantee of the ROW, has participated in consultation per 36 CFR Part 800.2(c)(4) and will carry out and fund the stipulations of this PA under the oversight of the BLM; and is an invited Signatory to this PA; and

WHEREAS, the BLM, as the lead federal agency for all Native American consultation and coordination, is responsible for government-to-government consultation with federally recognized Indian Tribes for this Undertaking; will conduct Native American consultation in accordance with 36 CFR Part 800 and will implement tribal consultation; and has invited the federally-recognized Confederated Tribes and Bands of the Yakama Nation and the Confederated Tribes of the Colville Reservation to participate in consultation and be Concurring Parties to this PA; and has invited the non-federally recognized Wanapum Band of Indians to participate in consultation and be a Concurring Party to this PA; and notwithstanding any

decision the tribes may make to sign this PA or not, the BLM will continue to consult with them throughout the implementation of this PA pursuant to 36 CFR 800.2(c).and

WHEREAS, the BLM recognizes that historic properties may also include Traditional Cultural Properties (TCPs). Per National Park Service (NPS) Bulletin 38, a TCP is defined as a type of historic property that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community. A community may include a Native American tribe, a local ethnic group, or the people of the nation as a whole. TCPs may include historic properties that Native American communities consider to be traditional ecological knowledge properties or of traditional religious and cultural importance; and

WHEREAS, the Washington DAHP is responsible for reviewing cultural resource documents and issuing Archaeological Excavation and Removal Permits under RCW 27.44 and RCW 27.53 and Washington Administrative Code (WAC) 25-48 on state and private lands in Washington; and

WHEREAS, the BLM has invited the Washington State Department of Natural Resources (DNR), Washington State Department of Transportation, Yakima County, Grant County, and Kittitas County to participate in consultation due to their interest in the Undertaking and its potential effects and to be Concurring Parties to this PA; and

WHEREAS, the BLM will consult with and document the comments and views of the public on the proposed Undertaking through the National Environmental Policy Act process, pursuant to 36 CFR Part 800.8(c)(1)(iv); and

WHEREAS, this PA shall be appended to and made part of BLM's ROD and any other federal decisions authorizing this Undertaking; and

NOW, THEREFORE, BLM and the other Signatories to this PA agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties.

## **DEFINITIONS**

Terms used in this PA are defined in Appendix B. All other terms not defined have the same meaning as set forth in ACHP's regulations at 36 CFR Part 800.16, Section 301 of the NHPA, and the BLM 8110 Manual.

## **STIPULATIONS**

BLM, in cooperation with JBLM YTC, Reclamation, BPA, FHWA, Washington DAHP, and other parties to this PA, shall ensure that the following stipulations are met and carried out:

### **I. AREA OF POTENTIAL EFFECTS**

The Undertaking is described in Appendix A. Because the route for the Undertaking is not yet selected, a final area of potential effects (APE) will be established after the selected transmission line route is identified in the Final Environmental Impact Statement (FEIS) and will include the areas where the Undertaking may directly or indirectly affect historic properties. Additional adjustments in the APE may be required during final design. For the Draft Environmental Impact Statement (DEIS), Supplemental

Draft Environmental Impact Statement (SDEIS), and Class I Inventory Report/Cultural Resource Technical Report (Stipulation III.A.1), the study area will be equivalent to an APE for each alternative considered for analysis. The APE for the Undertaking includes federal, state, and private lands and is defined as follows:

A. Direct APE. The APE for direct effects is limited to the area of potential ground disturbance by activities related to the Undertaking that may directly cause alterations in the character or use of historic properties located within or partially within the APE. In addition, unless specified otherwise below, the APE for direct effects will include a buffer of no less than 50 feet from the construction footprint. The buffer may need to be larger depending on the characteristics of the affected cultural resources, the nature of the adverse effects, local environmental conditions, and topography. The following are the types of ground disturbance anticipated by the Undertaking:

1. Transmission Line

The ROW for the transmission line will be 125 to 150 feet wide for H-frame structures and 75 to 100 feet wide of single poles. The transmission line's direct APE shall be a 500-foot wide corridor, 250 feet on both sides of the transmission line's centerline.

2. Access Roads

The direct APE for any existing access roads in their current condition, existing roads that will be improved as part of the Undertaking, and newly built roads shall be a 100-foot wide corridor, 50 feet on both sides of the existing road or proposed road centerline, plus a turning radius of 60 feet where specified. The 100-foot corridor may be wider in some locations to allow cut-and-fill disturbance areas on a hillside, as required for safe construction access. These locations will be identified by the BLM, Pacific Power, and the appropriate land-managing agency and will be provided to all Consulting Parties once the POD has been finalized.

3. Pulling and Tensioning Sites, Staging Areas, and Other Temporary Use Areas

The direct APE for material staging areas, pulling and tensioning sites, splicing sites, concrete batch plants, and other temporary use areas shall be the footprint of these areas, plus a buffer as described in Stipulation I.A above. Wherever and whenever feasible, areas of prior disturbance will be used for staging and construction.

4. Vantage Substation

No construction will occur outside the existing facility. All construction and installation of new equipment will occur within the existing substation fence. The APE for the Vantage Substation will be limited to the existing facility and there would be no buffer.

5. Pomona Heights Substation

No construction will occur outside the existing facility. All construction and installation of new equipment will occur within the existing substation fence. The APE for the Pomona Heights Substation will be limited to the existing facility and there would be no buffer.

## 6. Geotechnical Drilling

The APE for geotechnical drill sites shall be the boring location footprint, plus a buffer, no less than 50 feet, extending from the perimeter of the footprint as described in Stipulation I.A above. Access roads leading to drill sites will have the same APE as defined under Stipulation I.A.2.

## 7. Other Work Elements that May Occur but Not Yet Identified

For any other elements related to the Undertaking that are not yet identified, including but not limited to mitigation-related projects, that may directly cause alterations in the character or use of historic properties, the APE for direct effects is limited to the area of potential ground disturbance plus, unless specified otherwise below, a buffer of no less than 50 feet from the construction footprint. The buffer may need to be larger depending on the characteristics of the affected cultural resources, the nature of the adverse effects, local environmental conditions, and topography.

B. Indirect APE. The APE for indirect effects is larger than the direct APE and extends beyond the project's footprint to encompass additional historic properties that could be affected by the Undertaking. For the proposed Undertaking, indirect effects include visual intrusions and changes in access or use.

1. The APE for indirect effects will extend no farther than 3.0 miles from the centerline of proposed transmission line ROW for the selected route.
2. Certain classes of visually sensitive cultural resources, such as TCPs, beyond the 3.0-mile indirect APE may require analyses to assess visual effect. The BLM will consult with the Tribes, DAHP, and other Signatories to determine whether a change in the visual APE is necessary for these cultural resources.

The APEs established above may be modified through consultation with the Signatories and the other Consulting Parties without amending the PA. The BLM shall initiate such consultation as necessary either upon the request of a Consulting Party or Signatory or upon determination that a larger area is necessary to avoid impacts to historic properties. Any modification of the APE will not be implemented without the agreement of all Signatories.

## II. STANDARDS

### A. Professional Qualifications and Cultural Resources Permitting.

1. All actions prescribed by this PA that involve the identification, evaluation, analysis, recording, treatment, monitoring, or disposition of historic properties, and involve the reporting and documentation of such actions in the form of reports, forms, or other records, shall be carried out by or under the direct supervision of a person or persons meeting at a minimum, the Secretary of the Interior's Professional Qualifications Standards for archaeology, history, historic architecture, or architectural history, as appropriate (48 Federal Register [FR] 44738- 44739).
2. Cultural resources investigations on BLM land will be performed under a FLPMA/ARPA Permit for Archaeological Investigations issued by the BLM. Cultural resources investigations on JBLM YTC land will be performed under a permit issued by JBLM YTC. Cultural resources investigations on Reclamation land will be performed under a permit issued by Reclamation. Cultural resources investigations on BPA land will be performed under a FLPMA/ARPA Cultural

Resources Use Permit issued by the BPA.

3. All cultural resource investigations will be consistent with Stipulation II.A.1 and will be performed in accordance with the DAHP's *Washington State Standards for Cultural Resource Reporting*. All excavation on state and private lands will be performed under the Stipulations of this Agreement and in conformance with or under a DAHP Archaeological Excavation permit (WAC 25-48).

B. Documentation Standards.

1. Report and documentation of cultural resources investigations shall conform with the Secretary of the Interior's Professional Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740), as well as with all applicable standards, guidelines, and forms for historic preservation, including National Register Bulletin 15 (*How to Apply the National Register Criteria for Evaluation*), National Register Bulletin 30 (*Guidelines for Evaluating and Documenting Rural Historic Landscapes*), National Register Bulletin 38 (*Traditional Cultural Properties: Guidelines for Evaluation*), Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey (HABS/HAER/HALS) guidance, and guidance established by the Washington DAHP.
2. Technical reports documenting the results of cultural resource investigations shall be prepared for each phase of work, and will distinguish between cultural resources on federal (BLM, JBLM YTC, Reclamation, and BPA) lands, state lands, and private lands.
3. Documentation of sites and isolated finds on federal, state, and private lands shall be consistent with the applicable Washington DAHP guidelines and standards in effect at the time of signing of this PA.

C. Curation and Curation Standards.

1. The materials and records resulting from cultural resources investigations shall be curated in the State of Washington in accordance with 36 CFR Part 79 and the provisions of NAGPRA (43 CFR Part 10).
2. Cultural materials and records obtained from BLM lands in Washington will be curated at the Museum of Anthropology, Washington State University. Cultural materials and records obtained from JBLM YTC and Reclamation lands will be curated at the Wanapum Heritage Center, Grant County Public Utility District. Reclamation will require an artifact inventory catalog submitted to their Archaeologist for review prior to curation at the Wanapum Heritage Center. From BPA lands, cultural materials and records will be curated at a repository meeting the professional standards of the National Park Service (36 CFR Part 79). For state lands in Washington, cultural materials will be reburied on-site, or similar appropriate disposition as developed during tribal consultation, or cultural materials and records will be curated at a repository approved by the DAHP and meeting the professional standards of the National Park Service. Pacific Power will bear all costs associated with federal and state repository curation and long-term care of such materials and records.
3. Cultural materials recovered from private lands are the property of the landowner. Pacific Power shall encourage any collections from private lands to be curated with collections as stipulated in II.C.2. Documentation of any items retained by the landowner shall be included in the technical documentation curated above. If the landowner does not want to retain the cultural materials, then

Pacific Power will have the materials donated, through a written donation agreement, and curated at the facilities identified in II.C.2. Pacific Power will not be obligated to compensate owners for such donations.

### **III. IDENTIFICATION AND NATIONAL REGISTER EVALUATION**

#### **A. Preliminary Identification of Cultural Resources.**

1. Pacific Power has prepared a Class I Inventory Report/Cultural Resource Technical Report for all analyzed alternatives for inclusion as confidential appendices in the DEIS, SDEIS, and FEIS for the Undertaking. The Class I Inventory area includes cultural resources within a 2-mile corridor (one mile either side of centerline) for each alternative as well as the other components of the undertaking identified in Stipulation I.A. The primary data source is the State of Washington's Information System for Architectural and Archaeological Records Data (WISAARD) database.
2. Pacific Power also conferred with BLM, JBLM YTC, Reclamation, BPA, FHWA, Washington DAHP, DNR, the Tribes, and the counties to identify additional cultural resources within the APE prior to the DEIS and SDEIS and in preparing the Class I Inventory Report. Consulting Parties will be afforded an opportunity to provide input on the identification and evaluation of cultural resources.
3. BLM will consult with the Tribes, and when appropriate other Consulting Parties, to identify, record, and evaluate TCPs and properties of religious or cultural concern. Pacific Power arranged for a TCP study to be completed by the Cultural Resource Program of the Yakama Nation prior to completion of the DEIS and SDEIS. Following identification of the New Northern Route Alternative, Pacific Power arranged for a TCP assessment to be completed by the History and Archaeology Program of the Confederated Tribes of the Colville Reservation prior to completion of the FEIS. These confidential studies have been or will be provided to the BLM. The BLM will work with the Tribes to identify which organizations and which persons or offices will be provided copies of the TCP studies (refer to Stipulation III.D.2). BLM shall notify the other signatories to this PA if TCPs occur on their lands and shall notify DAHP of the results of BLM consultations.

#### **B. Intensive Pedestrian Survey of Cultural Resources (Class III Inventory).**

1. The route of the preferred alternative identified in the DEIS and a 10% selected sample of high site potential locations along each alternative analyzed in the DEIS and SDEIS where inventory information is not sufficient for comparative analysis, will be targeted for pedestrian cultural resource surveys prior to completion of the FEIS. The sample survey will be conducted in accordance with BLM standards for Class II probabilistic survey (BLM Manual 8110.21B). Private lands along the selected alternative for which owner permission for cultural resources inventory cannot be obtained will, if possible, be inventoried following easement acquisition, subject to landowner permission. Data resulting from the targeted surveys will supplement the Class I data in the route selection process and preliminary engineering for the FEIS.
2. Following issuance of the ROD by the BLM and prior to Pacific Power's receipt of the NTP for construction, Pacific Power will complete the Class III Inventory of the selected alternative, including private land, as defined in the FEIS and associated undertaking components as defined in Stipulation I.A where previous inventory is lacking or inadequate, and in a manner consistent with Stipulation II and the BLM 8100 Manual.

3. If site boundaries for cultural resources extend outside the direct APE, Class III Inventory of the entire site area will occur to fully document any associated artifacts, features, or structures that are included within the identified site boundary even though they may occur outside the direct APE. Certain classes of properties, including districts and linear historic properties, may extend appreciably outside the direct APE. For these classes of properties, field documentation generally will be limited to 0.25 mile outside of the direct APE, but the documentation will be sufficient to characterize the site and to understand how those portions of the site within the APE do or do not contribute to the National Register eligibility of the site as a whole. This documentation may entail recording cultural resources over multiple land jurisdictions. Where private land is involved, landowner consent for access will be secured by written documentation if cultural resources extend beyond the easement.
4. The BLM shall ensure that Class III inventory is completed by Pacific Power for all areas within the direct effects APE that have not been subject to previous Class III inventories that meet current professional standards. These will include any areas where access was previously denied or where there are modifications to the Undertaking. Evaluations of any cultural resources found will be conducted in accordance with Stipulation III.E and Determinations of Effect will be made in accordance with Stipulation IV. Inventory and evaluations will be completed before any NTP is issued.

C. Inventory of Indirect APE.

1. Pacific Power may be required by the BLM to conduct a viewshed analysis to determine the area from which the proposed Undertaking may be visible. The viewshed analysis, if required, will use GIS analyses to determine the geographic area that may be visually affected by the Undertaking.
2. Pacific Power may be required by the BLM to conduct additional Class I Inventory, if needed, to identify historic properties within the indirect APE as defined by the viewshed analyses. Pacific Power may also seek additional information from consulting parties and other sources regarding potential historic properties, including cultural landscapes, buildings, and structures, that may not have been formally recorded but that are known to be within the indirect APE.
3. Cultural resources within the indirect APE that are eligible or potentially eligible to the National Register under Criteria A, B, and/or C will be assessed for potential visual effects. Cultural resources within the indirect APE that are eligible or potentially eligible to the National Register only under Criterion D will not be assessed for potential visual effects, because changes in visual setting would not be expected to reduce the resource's potential to yield information important in prehistory or history.

D. Confidentiality of Site Information.

1. Pacific Power will not retain confidential and sensitive information, including but not limited to ethnographic data and site-specific information (e.g., on the locations and contents of archaeological sites), obtained beyond the time that is needed to inform the decision-makers and complete measures identified in this PA related to compliance with Section 106 of the NHPA. All reports containing confidential information shall be exempt from the Freedom of Information Act; applicable laws will be observed; sensitive information will be returned to the appropriate parties and will not become part of Pacific Power's official records.
2. Reports or other documents containing confidential and sensitive information regarding places of cultural or religious value to Native Americans (e.g., maps, photographs, site descriptions,

WISAARD data) will be reviewed only by BLM, DAHP, Tribes and the appropriate federal or state land managing agency (36 CFR Part 800.2(d)(2)). Redacted versions of reports may be distributed to the BLM and to other Concurring Parties. Information regarding archaeological resources is confidential and will not be disclosed to the public. The parties to this PA acknowledge that only those resources determined to be historic properties are covered by this PA and therefore subject to the provisions of Section 304 of the National Historic Preservation Act. Section 304 permits non-disclosure only after consultation with the Secretary of the Interior. However, where the properties involved are archeological resources as defined under ARPA, on Federal or Indian land, Section 9 of ARPA applies, and information may be withheld without consultation.

3. All reports containing confidential data shall be stamped “Not for Public Release.” Information regarding TCPs will not be disclosed to the public or to any federal, state, or local agency without explicit written permission from the Tribes.

E. Determinations of National Register Eligibility.

1. The BLM will coordinate the National Register eligibility determination process for this Undertaking. The BLM, as lead agency, will ensure that determinations of eligibility (DOEs) are prepared for all resources that cannot be avoided through project redesign whether on federal, state, or private lands employing NPS Standard Form 10-900.
  - a. For cultural resources identified on state and private land that require additional information to determine National Register eligibility and that cannot be avoided through project redesign, a site-specific evaluation plan shall be prepared in consultation with the Tribe(s) and DAHP in accordance with the BLM 8100 Manual (8110.22 B and C). Development and review of evaluation plans will be coordinated by the BLM. These plans will be reviewed by the appropriate state agency, DAHP, and consulting Tribes. DOEs will be finalized only after implementation of the evaluation plans.
2. Draft DOEs will be provided to the BLM by Pacific Power. BLM will distribute National Register eligibility recommendations to the appropriate land managing agency and Tribes for review and comment. After a 30-day comment period, each land managing agency will submit the Final Signed DOEs for those cultural resources under its jurisdiction to the DAHP for concurrence. The BLM will submit the DOEs for cultural resources under other jurisdictions or on private lands.
  - a. If a DOE concludes and the DAHP concurs that a cultural resource does not meet any of the criteria for National Register eligibility, the resource will be considered ineligible for listing in the National Register. No further review or consideration under this PA will be required for such cultural resources.
  - b. If a DOE concludes and the DAHP concurs that a cultural resource meets one or more of the criteria for National Register eligibility, the resource will be considered eligible for listing in the National Register. These resources will be included in the HPTP described in Stipulation V.
  - c. If the DAHP and the federal agency submitting a DOE do not agree on National Register eligibility, and cannot reach agreement within 30 days, the agency submitting the DOE will obtain a DOE from the Keeper of the National Register (Keeper), pursuant to 36 CFR Part 800.4(c)(2) and 36 CFR Part 63.

- d. The Keeper's determination will be final. Cultural resources determined by the Keeper to be ineligible for inclusion in the National Register will receive no further consideration under this PA. Cultural resources determined by the Keeper to be eligible for inclusion in the National Register will be addressed in the HPTP, as described in Stipulation V.

F. Report Distribution, Review Periods, and Comment.

1. All draft reports and site forms will be distributed by the BLM to the federal and state land managing agencies and the Tribes for review and comment. Redacted versions of draft reports may be distributed by the BLM to other Concurring Parties for review and comment. All draft reports, with comments, will then be distributed to the DAHP for review and comment.
2. Supplemental, evaluation, or addendum reports may be necessary. Cultural resource reports involving land that does not fall under co-management (i.e., from a single jurisdiction), such as the JBLM YTC, will be distributed to the appropriate land managing agencies and DAHP for comment.
3. Unless specified otherwise, review time for cultural resources reports shall be 30 days. Requests for extensions of review times shall be provided to the BLM no less than three days prior to the deadline via email or telephone. Reasonable extension, not to exceed 10 days, will be negotiated between the BLM and the reviewer.
4. Should any reviewer fail to provide notice of delayed review or fail to respond to a request for comment within the specified time limit of review, BLM will assume the reviewer concurs with the adequacy of the report and any recommendations made therein.
5. BLM, in consultation with the DAHP, will determine if the reports are satisfactory. Satisfactory reports will follow the standards outlined in the BLM 8110 Manual and the DAHP's *Washington State Standards for Cultural Resource Reporting* and will take into consideration the comments provided by the appropriate land managing agency, Tribes, and other Consulting Parties.
6. Pacific Power shall provide BLM with monthly status reports containing information necessary for notifying the Consulting Parties of the progress of the implementation of this PA and the subsequent HPTP, including notification of actual construction start dates, efforts, inventory, evaluations, and monitoring. Monthly status reports shall be by email supplemented with photographs or video as appropriate and with monthly conference calls if requested by any consulting party.
7. BLM shall, in conjunction with other state and federal agencies, develop and implement a public presentation on the results of the cultural resource efforts at applicable venues in the project region. BLM shall present the results of the archaeological efforts at a regional professional conference.

#### IV. DETERMINATIONS OF EFFECTS

- A. The BLM shall make determinations of effect consistent with 36 CFR Part 800.4 (d) and identify the type of adverse effect for each affected property in accordance with the criteria established in 36 CFR Part 800.5(a)(1) and (2)(i)-(vii) on those cultural resources within the APE that are listed or determined eligible for the National Register, and provide the DAHP, Tribes, and other Consulting Parties with the results of the finding.

Pacific Power shall submit to the BLM:

1. A list of the historic properties by land ownership that the Undertaking appears likely to affect and that will need to be treated by implementing prescriptions of the HPTP required in Stipulation V;
  2. A list of the historic properties by land ownership within the APE that the Undertaking has no potential to affect; and
  3. A list of the historic properties by land ownership that Pacific Power commits to avoiding through the implementation of formal avoidance measures.
- B. The BLM shall issue a finding of effect, based on BLM's own evaluation of Pacific Power's analysis, and provide all Signatories and other Consulting Parties an opportunity to review the BLM's finding and analysis to support its finding.
- C. The BLM will forward to the DAHP all comments regarding its findings of effect received during the comment period.
- D. If a Consulting Party objects to the BLM's findings, the BLM shall consult with the objecting party and the DAHP regarding the nature of the objection and reconsider its findings. The time frame for consultation shall be 30 days. If the objection is not resolved, the BLM shall further consult with the DAHP. If the DAHP and BLM are not able to resolve the disagreement, BLM will request that ACHP review the finding pursuant to 36 CFR Part 800.5(c)(3)(i).
- E. Visual effects analyses will be conducted on historic properties eligible under Criteria A, B, and/or C to determine if the Undertaking will have an adverse effect on the integrity of the historic property. BLM, in consultation with the DAHP, will determine if the visual effects analyses are satisfactory.
- F. If an adverse effect to a historic property on state or federal land cannot be avoided, the BLM and the land-managing agency must resolve the adverse effect by implementing the prescriptions of the HPTP as described in Stipulation V. If an adverse effect to a historic property on private land will not be avoided, the BLM will work with the property owner and Pacific Power to resolve the adverse effect according to the prescriptions of the HPTP.
- G. Determinations of effect may be subject to change due to changes in the scope and APE of the Undertaking. BLM will conduct additional consultation with all Consulting Parties to this PA regarding proposed changes in any determinations of effect.

## **V. HISTORIC PROPERTIES TREATMENT PLAN**

- A. Pacific Power, in consultation with BLM and the Consulting Parties, will develop a comprehensive HPTP based upon the results of the Class I and Class III Inventories and preliminary engineering data. The HPTP will be completed before the NTP is authorized. The HPTP will identify all historic properties recorded as a result of the Class I and Class III Inventories by land ownership and will provide a detailed description of the potential direct, indirect, and cumulative effects of the Undertaking on each historic property. The HPTP will identify the specific mitigation strategies proposed to address the direct, indirect, and cumulative effects of the Undertaking for each historic property.
- B. The HPTP developed for individual historic properties will be designed to mitigate adverse effects to

the qualities of the historic property that make it eligible for listing in the National Register. Both the manner in which these National Register qualities will be lessened, and how proposed mitigation efforts will offset the effects, will be clearly defined in the treatment plan for each historic property. The HPTP will be developed in concert with DAHP and the tribes to encompass both individual and comprehensive mitigation as needed.

- C. Wherever feasible, avoidance and preservation in place shall be the preferred treatment for historic properties located within the APE. Avoidance may involve redesign of the Undertaking or relocation of specific components of the Undertaking. The HPTP will describe the specific measures that will be implemented to ensure sites are protected and/or avoided. A site-specific Avoidance and Treatment Plan shall be created.
- D. When feasible, or if appropriate, a site-specific Avoidance and Treatment Plan shall be created for each site and shall detail the specific buffer, fencing/barrier and photo-documentation points for photographs before, during and after construction. In addition, topography may be used where possible to reduce the visibility of the transmission line route from visually sensitive historic properties. Treatment plans for specific historic properties on Washington State-owned lands will be developed by Pacific Power in accordance with the above planning process. The Washington State-owned property-specific HPTP will be submitted for review and comment in accordance with Stipulation III.F, prior to being incorporated into the comprehensive HPTP. Treatment measures could include, but will not be limited to, data recovery, completion of National Register nomination forms, and HABS/HAER/HALS documentation, and creative mitigation options including video, podcasts, and support of E 106 applications. The HPTP will adhere to the guidance provided by the ACHP (<http://www.achp.gov/archguide/>), the Secretary of the Interior's Professional Standards, HABS/HAER/HALS guidance, and appropriate state guidelines.
- E. The BLM will submit the draft HPTP to the Consulting Parties for review and comment in accordance with Stipulation III.F. BLM will incorporate the comments, as appropriate, into a revised document and will submit the HPTP to all Consulting Parties for a second review. All Consulting Parties will respond to the second review of the HPTP within 20 days. The final HPTP with comments will then be submitted to the DAHP for review and comment.
- F. The BLM, in consultation with the DAHP, will determine if the HPTP is satisfactory. Satisfactory HPTP plans will follow the Secretary of Interior's Standards for Archaeology and Historic Preservation (48 FR 44716), and will take into consideration the comments provided by the appropriate land managing agency, Tribes, and other Consulting Parties.

## **VI. CULTURAL RESOURCES MONITORING AND TRAINING PLAN**

- A. Prior to the NTP, Pacific Power shall prepare and submit an Undertaking-wide Cultural Resources Monitoring and Training Plan (CRMTP) for review and approval. After BLM receives and reviews the plan, the BLM shall make the CRMTP available to the Consulting Parties for a 30-day review period. The BLM shall take into account comments received prior to approving the NTP.
- B. A professional, who meets the qualification standard as set forth in Section II.A.1, will perform the training, and if any of the Consulting Parties request, a member of their staff shall be allowed to participate in the training. The training shall cover the importance of cultural resources, protection efforts, monitoring protocols and stop work procedures.
- C. A professional, who meets the qualification standard as set forth in Section II.A.1, or who is supervised by someone meeting that standard, will perform construction monitoring. Other types of

experience with construction monitoring and/or traditional cultural knowledge may be substituted for degrees required by the Standards at the discretion of the BLM.

- D. The CRMTP shall outline the criteria used to select areas for monitoring, identify opportunities for Tribes to participate as monitors during project construction, outline the protocols for monitor participation, and include the appropriate Unanticipated Discovery of Cultural Resources documentation (Appendix C). The CRMTP shall include maps clearly delineating areas to be monitored.
- E. Pacific Power will implement the final CRMTP for the Undertaking as approved by the BLM.
- F. The BLM, in consultation with the DAHP, will determine if the monitoring plan is satisfactory. A satisfactory monitoring plan will conform to accepted practices in archaeology and will take into consideration the comments provided by the appropriate land managing agency, Tribes, and other Consulting Parties. Monitoring will be supervised by an individual meeting DAHP standards as well as the Secretary of the Interior's Professional Qualifications Standards for archaeology (48 FR 44738-44739) (see Stipulation II.A.1). Individual monitors who do not meet these standards shall be supervised in the field by someone who does.

## **VII. PLAN FOR THE UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES**

- A. Pacific Power, in consultation with the BLM and the Consulting Parties, will develop and implement a Plan for the Unanticipated Discovery of Cultural Resources (Appendix C) in the event that Undertaking activities bring to light previously unknown cultural resources, or if project activities directly or indirectly affect a known cultural resource in an unanticipated manner.
- B. In the event of an unanticipated discovery, all activities will halt in the immediate vicinity of the discovery and all actions that might adversely affect the cultural resource will be redirected to an area at least 100 feet from the point of discovery. Design changes and initiation of data recovery or other mitigation measures will be implemented as expeditiously as possible. If data recovery is deemed necessary, it will be based upon a Data Recovery Plan developed according to the provisions of the HPTP. In the event a dispute arises with regard to appropriate mitigation measures, the BLM will consult with ACHP in accordance with Stipulation XI to resolve the issue.
- C. While this PA provides for the avoidance of cultural resources, should such efforts fail, the BLM shall immediately notify the Consulting Parties, secure the area, and conduct a damage assessment of the incident of disturbance. The damage assessment shall be conducted by an independent third party professional, experienced in ARPA damage assessment, and selected by BLM. The damage assessment shall follow ARPA or, for cultural resources on private and state land, Washington State regulations.

## **VIII. INADVERTENT DISCOVERY OF HUMAN REMAINS**

- A. If human remains are inadvertently discovered during any cultural resource investigations for the Undertaking, inventory or excavation activities will immediately cease in the vicinity. The cultural resource field director will secure the area and follow the procedures outlined in Stipulation VIII.C-D.
- B. If construction or other field personnel identify what they believe to be human remains, they will immediately halt construction at that location and notify a construction or environmental inspector of the discovery. The environmental inspector will immediately notify the cultural resources field director or cultural resources monitor of the discovery, and then proceed to secure the area and ensure

that further construction or related activities do not occur within a 100-foot buffer. The inspector will also secure the area to ensure no further disturbance or removal of those remains and associated material. The inspector will also ensure that vehicular traffic across the area is restricted to a location removed from the discovery. A cultural resources specialist will examine and evaluate the discovery. If it appears to consist of human remains, the cultural resources specialist will follow the procedures outlined in Stipulation VIII.C- D.

- C. If human remains, or possible human remains, are encountered, Pacific Power will immediately notify both the county coroner and local or agency law enforcement. On federal land, Pacific Power will also notify the BLM and the appropriate land managing agency. On state or private lands, Pacific Power will also notify the BLM and appropriate state agency. The BLM and the county coroner will notify the DAHP's State Physical Anthropologist for all non-forensic human skeletal remains finds. In cases of non-forensic human skeletal remains, the DAHP's State Physical Anthropologist will make a determination of whether the remains are Native American or not. On federal land and in the case of Native American remains, the BLM or other appropriate federal land managing agency would then implement internal procedures for consulting with Tribes and complying with NAGPRA. On state or private land, the DAHP will implement the notification process as outlined under RCW, Title 27 Chapter 27.44, Indian Graves and Records and conduct all further consultation with the affected parties.
- D. Discoveries will be recorded and evaluated following the standards and format used for recording cultural resources during the Class III Inventory of the project (see Stipulation III.B).

#### **IX. UNDERTAKING MODIFICATIONS**

- A. It is anticipated that after the HPTP is finalized, minor modifications to the Undertaking may be necessary. Examples of these modifications include rerouting to avoid other environmental impacts, addition of temporary construction or staging areas, minor changes in access routes or ROW, borrow areas, and other construction contractor-dependent actions. Pacific Power and the BLM will ensure that any area scheduled for ground disturbance will be inventoried for cultural resources prior to any disturbance of the area, as outlined in Stipulation III.B, and a separate addendum report prepared. Review and comment on these reports would follow guidelines described in Stipulation III.F. Should cultural resources be recorded, the BLM would follow the provisions of Stipulations III and IV for determinations of National Register eligibility and project effect. All Undertaking modifications will be discussed with the Consulting Parties. Construction in that location will not occur until the BLM issues a NTP for that specific location.
- B. Should historic properties be identified during any additional cultural resources inventory, Pacific Power, in consultation with BLM, appropriate land managing agency and private landowners, will attempt to relocate or modify the impacting activity to avoid or minimize adverse effects, or if possible, forego the activity. If none of these options are possible, Pacific Power, in consultation with the BLM and Consulting Parties, will prepare a site-specific treatment plan following the guidance provided in the HPTP. Review of the plan would be in accordance with Stipulation III.F. Any modification of the Undertaking's plans, where state lands are concerned, must be reviewed by the state land management agency and DAHP prior to implementation.
- C. Addendum reports generated as a result of modifications to the Undertaking on a single land jurisdiction shall be submitted by BLM to the appropriate land managing agency or private landowner, ACHP, DAHP, and Tribes for comment. Review times will follow those established in Stipulation III.F.

## **X. AMENDMENTS TO THE PROGRAMMATIC AGREEMENT**

- A. Any Consulting Party to this PA, through consultation, may request an amendment to its terms and the provisions of any attachment. The Consulting Party wishing to amend the PA will initiate consultation by completing the form provided as Appendix D and submitting it to the BLM.
- B. BLM will consult with the Consulting Party submitting the suggested amendment, and if there is agreement between BLM and the Consulting Party, submit the form to all other Consulting Parties for concurrent review. Acceptance of amendments may be in the form of a digital signature via email. After review and signature, each required Signatory will return the form to BLM, who will prepare a final copy with a compiled signature page and then send it to all Consulting Parties.
- C. Upon execution of the amendment, each Consulting Party will attach a copy of the executed amendment request form to its copy of the PA, and will enter the amendment number and date on the upper-right-hand corner of the first page of the PA.
- D. Should a dispute arise concerning an amendment, the procedures in Stipulation XI will be followed to resolve the dispute.
- E. No proposed amendment to this PA will take effect until all Signatories to this PA have signed the form.

## **XI. DISPUTE RESOLUTION**

Should any Consulting Party to this PA object at any time to any actions proposed or the manner in which the terms of this PA are implemented, the BLM shall consult with such party to resolve the objection. The BLM shall notify the other Parties of the objection and the timeline for resolution. If the BLM determines that such objection cannot be resolved, the BLM will:

- A. Forward all documentation relevant to the dispute, including the BLM's proposed resolution, to the ACHP. The ACHP shall provide BLM with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the BLM shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, Signatories and Concurring Parties, and provide them with a copy of this written response. BLM will then proceed according to its final decision.
- B. If the ACHP does not provide its advice regarding the dispute within the 30-day time period, the BLM may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the BLM shall prepare a written response that takes into account any timely comments regarding the dispute from the Signatories and Concurring Parties to the PA, and provide them and the ACHP with a copy of such written response.
- C. The BLM's responsibilities to carry out all other actions subject to the terms of this PA that are not the subject of the dispute remain unchanged.

## **XII. REVIEW OF PUBLIC OBJECTIONS**

At any time during implementation of the measures stipulated in this PA, should an objection to any such measure or its manner of implementation be raised by a member of the public, the BLM will take the objection into account and consult as needed with the objecting party and the Consulting Parties to this PA to resolve the objection.

### **XIII. TERMINATION**

If any Signatory to this PA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation X, above. If within 30 days an amendment cannot be reached, any Signatory may terminate the PA upon written notification to the other Signatories.

Once the PA is terminated, and prior to work continuing on the Undertaking, the BLM must either (a) execute a PA pursuant to 36 CFR Part 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR Part 800.7. The BLM shall notify the Signatories as to the course of action it will pursue.

### **XIV. DURATION OF THIS PA**

Unless this PA is terminated pursuant to stipulation XIII above, another agreement executed for the Undertaking supersedes it, or the Undertaking itself has been terminated, this PA will remain in effect until the BLM, in consultation with the parties to this agreement, determines that construction of all aspects of the Undertaking has been completed and that all terms of this PA and any subsequent agreements have been fulfilled in a satisfactory manner, not to exceed 10 years. After that time, annual extensions may be agreed to by the Consulting Parties without a formal amendment to the PA and may be evidenced by electronic or other written agreement.

The Consulting Parties to this PA will consult annually, or more frequently if agreed upon, on the need to amend, change, or terminate this PA until completion of the Undertaking.

**EXECUTION** of this PA by the BLM, JBLM YTC, BPA, Reclamation, FHWA, and Washington DAHP, and implementation of its terms evidence that BLM has taken into account the effects of this Undertaking on historic properties and afforded the ACHP an opportunity to comment.

***SIGNATORIES***

**BUREAU OF LAND MANAGEMENT**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Linda Clark, Spokane District Manager

**JOINT BASE LEWIS-MCCHORD YAKIMA TRAINING CENTER**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Jason A. Evers, Lieutenant Colonel, U.S. Army

Commanding Yakima Training Center

**BUREAU OF RECLAMATION**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Dawn Wiedmeier, Columbia Cascades Area Manager

**BONNEVILLE POWER ADMINISTRATION**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

F. Lorraine Bodi, VP of Environment, Fish & Wildlife

**FEDERAL HIGHWAY ADMINISTRATION**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Daniel M. Mathis, Division Administrator, Washington Division

**WASHINGTON STATE DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Allyson Brooks, State Historic Preservation Officer

***INVITED SIGNATORIES***

**PACIFIC POWER**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

***CONCURRING PARTIES***

**CONFEDERATED TRIBES AND BANDS OF THE YAKAMA NATION**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**CONFEDERATED TRIBES OF THE COLVILLE RESERVATION**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**WANAPUM BAND OF INDIANS**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**YAKIMA COUNTY, WASHINGTON**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**GRANT COUNTY, WASHINGTON**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**KITTITAS COUNTY, WASHINGTON**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## **APPENDIX A**

### **TO THE PROGRAMMATIC AGREEMENT REGARDING THE CONSTRUCTION OF THE VANTAGE TO POMONA HEIGHTS 230 kV TRANSMISSION LINE PROJECT**

#### **Background and Description**

##### **DESCRIPTION OF THE PROJECT**

Pacific Power proposes to construct, operate and maintain the Vantage to Pomona Heights 230 kV Transmission Line Project (or Undertaking) from its Pomona Heights Substation east of Selah in Yakima County, Washington to the BPA, Vantage Substation east of the Wanapum Dam in Grant County, Washington. The route alternatives considered in the Environmental Impact Statement (EIS) range from 40.4 to 67 miles long.

As proposed by Pacific Power, most of the proposed transmission line would be constructed on H-Frame wood pole structures between 65 and 90 feet tall and spaced 650 to 1,000 feet apart depending on terrain. The H-Frame structures would typically be used in open flat to gently rolling terrain. In developed and agricultural areas, single wood or steel monopole structures would be used. The single pole structures would be between 80 and 110 feet tall and spaced 400 to 700 feet apart. The ROW width for the H-Frame structure type would be 125 to 150 feet and for the single pole structure type, 75 to 100 feet. Dead-end or angle structures would require additional ROW to accommodate guy wires and anchors. For the Columbia River crossing, either near the Midway Substation or below the Wanapum Dam, steel lattice structures approximately 200 feet tall would be used to safely span the up-to-2,800-foot crossing.

Construction of the transmission line would require vehicle, truck, and crane access to each new structure site for construction crews, materials and equipment. Access along the transmission line ROW would include existing roads in their current condition, existing roads that would be improved as part of this Undertaking, and new access roads. The Undertaking would use existing roads and trails wherever feasible to minimize the construction of new access roads. In the event that terrain could not be traversed, permanent new roads would be graded to a total width of between 14 and 24 feet (including both the travel surface and shoulders) depending on location and terrain.

During construction of the transmission line, there would be temporary work areas at each structure site to facilitate the safe operation of equipment and construction operations; pulling and tensioning sites; material staging sites and turn-around areas.

Work areas would require a temporary disturbance area of 150 feet by 125 feet (18,750 square feet [0.4 acre]) for H-Frame structures and 150 feet by 80 feet (12,000 square feet [0.3 acre]) for single pole structures.

Pulling and tensioning sites for stringing the conductor would require a temporary disturbance area of 125 feet by 400 feet (50,000 square feet [1.1 acres]). Sites for pulling and tensioning would be located approximately every 11,000 feet or less.

Turn-around areas may be required where construction travel would be restricted by rock outcrops, washes, ravines or sensitive areas. Turn-around areas would typically require a temporary disturbance area of 60 feet by 60 feet or 3,600 square feet (0.1 acre).

Several material staging areas, roughly five acres each, would be required for material and equipment storage and for staging construction activities. Sites for material staging areas would be located on existing disturbed areas and would be determined during detail design.

The new 230 kV transmission line would enter Pacific Power's Pomona Heights Substation on the northwest edge of the substation. All new equipment would be installed within the existing substation fence. A new steel H-Frame terminal structure would be required. New line breakers, new switches, various bus connections and other minor equipment and wiring would be installed to incorporate the new line into the interconnected regional electric transmission grid.

The Vantage Substation is owned by BPA. The new line would enter the east area of the substation. BPA would design and install the new equipment to interconnect the new 230 kV transmission line to the regional electric transmission grid. All new equipment would be installed within the existing Vantage Substation fence.

## APPENDIX B

### DEFINITIONS

*Adverse Effect.* When an Undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the Undertaking that may occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5 and 800.10a). Adverse effects on historic properties include, but are not limited to:

- Physical destruction of or damage to all or part of the property.
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, which is not consistent with the Secretary of the Interior's Professional Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines.
- Removal of the property from its historic location.
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian Tribe or Native Hawaiian organization.
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

*Area of Potential Effects (APE).* The geographic area or areas within which an Undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist (36 CFR Part 800.16).

*Class I Inventory.* A Class I Inventory is a professionally prepared study that includes a compilation and analysis of all reasonably available cultural resource data and literature, and a management-focused, interpretive, narrative overview, and synthesis of the data. The inventory is primarily used for land use planning and environmental evaluations, such as Environmental Assessments (EA) and Environmental Impact Statements (EIS). Existing cultural resource data are obtained from published and unpublished documents, BLM cultural resource inventory records, institutional site files, state and National Registers, interviews, and other information sources. Class I Inventories, which should have prehistoric, historic, and ethnographic elements, are in large part chronicles of past land uses, and as such they should be relevant to current land use decisions. General information about sacred sites and other places of traditional cultural or religious importance to Native Americans or other cultural groups (including "traditional cultural properties" as discussed in National Register Bulletin No. 38) should as much as possible be included in the inventory (BLM Manual 8110).

*Class II Inventory/Probabilistic Field Survey.* A class II probabilistic field survey is a statistically based sample survey, designed to aid in characterizing the probable density, diversity, and distribution of cultural properties in an area, to develop and test predictive models, and to answer certain kinds of research questions. Within individual sample units, survey aims, methods, and intensity are the same as those applied in a Class III survey (BLM Manual 8110).

*Class III Inventory/Intensive Field Survey.* A Class III intensive survey determines the distribution, number, location, and condition of historic properties in an area in order to determine effects and potential mitigation methods. A Class III is used when it is necessary to know precisely what historic properties exist in a given area or when information sufficient for later evaluation and treatment decisions is needed on individual historic properties (BLM Manual 8110).

*Cultural Resource.* A definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups (cf. “traditional cultural property”). Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit described in the BLM 8110 Manual series. They may be but are not necessarily eligible for listing in the National Register (BLM Manual 8110).

*Consulting Parties.* All Signatories, invited Signatories, and Concurring Parties.

*Concurring Parties.* Concurring parties are Consulting Parties who have participated in the consultations and may be invited to concur in the agreement. Concurring parties who choose not to sign the agreement do not invalidate the agreement (36 CFR Part 800.6(c)(3)).

*Cultural Landscape.* A geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

*Cumulative Effects.* The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes other actions (40 CFR Part 1508.7).

*Day(s).* For the calculation of time periods under this PA, “days” means calendar days. Any time period specified in this PA that ends on a weekend or a state or federal holiday is extended until the close of the following business day.

*Effect.* An alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register (36 CFR Part 800.16).

*Historic property.* Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register. The term also refers to artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe and that meet the National Register criteria (36 CFR Part 800.15(1)). The phrase ‘eligible for

inclusion in the National Register' is used to refer to both properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria (36 CFR Part 800.15(2)).

*Phased Approach.* ACHP regulations at 36 CFR Part 800.4(b)(2) states that where alternatives under consideration consist of corridors or large land areas, or where access to properties is restricted, the agency official may use a phased process to conduct identification and evaluation efforts. The agency official may also defer final identification and evaluation of historic properties if it is specifically provided for in a memorandum of agreement executed pursuant to 36 CFR Part 800.6, a programmatic agreement executed pursuant to 36 CFR Part 800.14(b), or the documents used by an agency official to comply with the National Environmental Policy Act pursuant to 36 CFR Part 800.8.

*Signatories.* Signatories execute, may amend, and may terminate an Agreement. *Invited Signatories* may propose amendments to this Agreement and may terminate the agreement per Section Part 800.6(c)(2). Invited Signatories who wish to do so must have participated in the Agreement's execution as evidenced by signature.

*Traditional cultural property (TCP).* A property that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community (National Register Bulletin 38).

*Undertaking.* An undertaking is a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval (36 CFR Part 800.16(y)).

*Visual effect.* A visual effect is present when the proposed project is viewable from a historic property. A visual effect may be beneficial or adverse and may affect the historic property in an aesthetic or obstructive manner. An adverse visual effect diminishes the integrity of the historic property's significant historic features (36 CFR Part 800.5(a)(2)(v)). An adverse visual impact is any modification in landforms, water bodies, or vegetation, or any introduction of structures or other elements that modify the landscape such as hillside cuts, tree removal etc., which negatively interrupts the visual character of the landscape and disrupts the harmony of the basic elements (i.e., form, line, color, and texture). The determination of effect is made from the historic property towards the proposed Undertaking.

## **APPENDIX C**

### **TO THE PROGRAMMATIC AGREEMENT REGARDING THE CONSTRUCTION OF THE VANTAGE TO POMONA HEIGHTS 230 kV TRANSMISSION LINE PROJECT**

#### **PLAN FOR UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES**

In the event that previously unknown cultural resources are discovered within the APE from construction activities of the Pacific Power 230 kV Project, or should those activities directly or indirectly impact known resources in an unanticipated manner, the following actions, at a minimum, will be initiated by Pacific Power or the agency having jurisdiction over the land involved, or a representative duly authorized to perform these tasks:

1. Archaeological monitoring by a professional archaeologist who meets, or who is under the supervision of someone who meets, the Secretary of the Interior's qualifications (36 CFR Part 61) and has specialized experience and expertise necessary to monitor construction activities that will take place during all ground disturbing activities which have the potential to penetrate native deposits within the permit area.
2. All activities will halt in the immediate vicinity of the discovery and all actions that might adversely affect the cultural resource will be redirected to an area at least 100 feet from the point of discovery.
3. Pacific Power, BLM, the appropriate land manager, DAHP, and concerned tribes will be notified immediately (within 24 hours).
  - a. A cultural resource specialist will be called in to assess the discovery. The cultural resource specialist shall meet the Secretary of the Interior's Professional Standards for archaeology.
  - b. In the event that a cultural resource specialist or other necessary persons are not immediately available, Pacific Power will cover or otherwise protect the discovery until such time that the appropriate parties can be present for inspection and evaluation.
4. Upon arriving at the site of the discovery, the cultural resource specialist shall assess the resource. The assessment shall include:
  - a. The nature of the resource (e.g., number and kinds of artifacts, presence/absence of features). This may require screening of already disturbed deposits, photographs of the discovery, collection of Global Positioning System (GPS) data, and other necessary documentation. The specialist will have basic archaeological excavation tools on hand.
  - b. The spatial extent of the resource. This may require additional subsurface examination, mapping or inspection, as is appropriate to the resource.
  - c. The nature of deposition/exposure. This may require interviews with construction personnel and with other persons having knowledge about the resource or the expansion of existing disturbance to establish the characteristics of the deposits.

5. The cultural resource specialist will complete the appropriate inventory form for the land managing agency. BLM will distribute inventory forms to appropriate parties for review and comment.
6. Resources will be considered a "site" should they meet the criteria established by the DAHP and BLM, JBLM YTC, or other agency that has jurisdiction over the land.
7. The site will be evaluated in terms of the criteria of eligibility for the National Register established under 36 CFR Part 60.4. The BLM shall consult with the appropriate land managing agency, DAHP and Tribes prior to making the eligibility determination. If the site is eligible for listing, BLM shall consult with the appropriate land managing agency, DAHP, Tribes, and other Consulting Parties to determine mitigation efforts necessary to lessen or remove further impacts. If necessary, Pacific Power shall prepare a site-specific treatment plan following the guidance provided in the HPTP, as defined in Stipulation V of the PA. For state managed lands in Washington, the DAHP will prepare the site-specific HPTP.
8. Any items found on federal land meeting the definition provided for in NAGPRA of human remains or cultural items encountered in a discovery situation will be handled according to the provisions of NHPA, ARPA, NAGPRA and Washington State laws provided for within Stipulations II.B and VIII of the PA.
9. If the site is determined to be damaged, according to Stipulation VII, a site damage assessment will be conducted by an approved cultural resources specialist. A report will be written and sent to the appropriate land managing agency and the DAHP for review and comments, following Stipulation III.F.
10. Pacific Power will consult with the BLM, and the BLM will consult with the appropriate federal land managing agency, DAHP, Tribes, the appropriate state land managing agency, or, when private land is involved, the property owner, to determine if and when construction activities in the location of the discovery may resume.
11. A technical report will be written at the end of the project by Pacific Power describing any discoveries made or, if appropriate, the lack of discoveries, and will be distributed in accordance with the protocol defined under Stipulation III.F.

**APPENDIX D**

**TO THE PROGRAMMATIC AGREEMENT REGARDING  
THE CONSTRUCTION OF THE PACIFIC POWER VANTAGE TO POMONA HEIGHTS  
230 KV TRANSMISSION LINE PROJECT**

**AMENDMENT FORM**

**AMENDMENT #:  
DATE:**

**1. NEED FOR AMENDMENT:**

**2. AMENDMENT:**



