Exhibit P

Fish and Wildlife Habitats and Species

Biglow Canyon Wind Farm
February 2025

Prepared for

Portland General Electric Company

Prepared by

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Acronyms and Abbreviations

AC	alternating current
APLIC	Avian Powerline Interaction Committee
BCWF or Existing Facility	Biglow Canyon Wind Farm
BGEPA	Bald and Golden Eagle Protection Act
BIGL or Project Developer	BIGL bn, LLC
Certificate Holder or PGE	Portland General Electric Company
Council or EFSC	Oregon Energy Facility Siting Council
gen-tie	generation tie
HMP	Habitat Mitigation Plan
kV	kilovolt
MW	megawatt
NHD	National Hydrography Dataset
NWI	National Wetlands Inventory
OAR	Oregon Administrative Rules
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ORBIC	Oregon Biodiversity Information Center
PWCA	Priority Wildlife Connectivity Area
PV	photovoltaic
RFA	Request for Amendment
Site Certificate	Site Certificate for Amendment 3
Solar Components	photovoltaic solar energy generation and battery storage
WMMP	Wildlife Monitoring and Mitigation Plan

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1.0 Introduction

The Portland General Electric Company (PGE or Certificate Holder) submits this Request for Amendment (RFA) 4 to the Site Certificate on Amendment 3, issued October 31, 2008 (Site Certificate) for the Biglow Canyon Wind Farm (BCWF or Existing Facility) to add photovoltaic (PV) solar energy generation and battery storage (Solar Components) to the operating BCWF.

BCWF, owned and operated by PGE, is located within an approved site boundary comprising approximately 25,000 acres, approximately 2.5 miles northeast of the town of Wasco in Sherman County, Oregon. The BCWF operates under the Site Certificate from the Oregon Energy Facility Siting Council (Council or EFSC) as administered by the Oregon Department of Energy (ODOE). BCWF currently consists of 217 wind turbines, with a maximum blade tip height of 445 feet, and a peak generating capacity of 450 megawatts (MW).

In RFA 4, PGE proposes to add up to 385 MW alternating current (AC) generating capacity from PV solar arrays and 375 MW in battery storage capacity. RFA 4 seeks to expand the BCWF site boundary to include the Solar Components in portions of the existing site boundary and in the proposed expanded site boundary (together, Solar Micrositing Area or RFA 4 Site Boundary[1]).

The Solar Micrositing Area is approximately 3,980 acres and provides a conservative estimate of the maximum area needed for development, micrositing, and temporary disturbances from the Solar Components during construction, rather than the anticipated disturbance footprint. Solar Components will include solar arrays, inverters, battery energy storage system facilities and their subcomponents (i.e., inverters), two collector substations, a total of approximately 3 miles of 230-kilovolt (kV) generation tie (gen-tie) transmission lines, medium voltage collector lines, operations and maintenance structures, site access roads, internal roads, perimeter fencing, facility entry gates, and temporary laydown areas. The maximum generating capacity from the Solar Components will be 385 MW AC and construction may take place in phases.

PGE will own and operate the Solar Components as a part of the BCWF (together, Amended Facility or Facility), which, to date, have been developed by BIGL bn, LLC (BIGL or Project Developer). BIGL, in its capacity as the project developer, supports PGE in this RFA 4 and may construct and temporarily operate the Solar Components on behalf of PGE under a Build-Transfer Agreement.

Exhibit P was prepared to meet the submittal requirements in Oregon Administrative Rules (OAR) 345-001-0010(1)(p) to provide information about the fish and wildlife habitats and species that could be affected by the Solar Components. State threatened, endangered, and candidate species are exclusively addressed in Exhibit Q.

[1] Note, as described in further detail in Section 4.1.1.2 of the RFA 4 Division 27 document, the Solar Micrositing Area is the equivalent of the RFA 4 Site Boundary.

2.0 Analysis Area

Consistent with OAR 345-027-0360(3), ODOE concurred with the Certificate Holder's use of a defined portion of the approved BCWF site boundary and the proposed expanded site boundary (i.e., Solar Micrositing Area/RFA 4 Site Boundary) to establish study area boundaries for RFA 4 under OAR 345-001-0010(35). The RFA 4 Site Boundary reflects the Solar Micrositing Area, and all study areas within the meaning of ORS 345-001-0010(35) are measured from the RFA 4 Site Boundary. The analysis area for fish and wildlife habitat and species identified in Exhibit P includes the Solar Micrositing Area[2] plus a 0.5-mile buffer, in accordance with OAR 345-001-0010(35)(c). The Exhibit P analysis area is shown on Figure P-1.

3.0 Agency Consultation

PGE has consulted with the Oregon Department of Fish and Wildlife (ODFW) regarding the appropriate protocols for documenting the presence of state sensitive species as required in OAR 345-021-0010(1)(p)(D) and the classification of fish and wildlife habitat as required in OAR 345-021-0010(1)(p)(B). An email was sent to ODFW on May 22, 2024, by PGE with a biological study plan associated with the Solar Components. ODFW responded on June 6, 2024, approving of the biological study plan and providing additional recommendations for siting of the Solar Components. The background review and field survey methods specific to botanical surveys were submitted to Oregon Department of Agriculture (ODA) for review on June 10, 2024. ODA provided concurrence with the methods on June 13, 2024, prior to conducting field surveys. ODFW and ODOE visited the Solar Micrositing Area with PGE, the Project Developer, and Tetra Tech on January 10, 2025, to discuss habitat impacts and assess habitat categorization in the field.

4.0 Description of Biological and Botanical Surveys Performed – OAR 345-021-0010(1)(p)(A)

OAR 345-021-0010(1)(p) Information about the fish and wildlife habitat and the fish and wildlife species, other than the species addressed in subsection (q) that could be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0060. The applicant must include:

OAR 345-021-0010(1)(p)(A) A description of biological and botanical surveys performed that support the information in this exhibit, including a discussion of the timing and scope of each survey;

[2] ODOE concurred with excluding the remaining BCWF site boundary that does not overlap with the Solar Micrositing Area from analysis in RFA 4 because no changes are proposed to any BCWF components in the remaining BCWF site boundary as part of RFA 4.

Response: The Certificate Holder provides the result of the appropriate desktop reviews and field surveys below.

4.1 Desktop Review

Tetra Tech conducted a desktop assessment including a review of existing information regarding habitat types and special status species with the potential to occur within the Solar Micrositing Area. The term "special status species" includes federal and state endangered, threatened, proposed, and candidate fish, wildlife, and plant species, as well as state sensitive wildlife species with distribution in Sherman County. Special status species also include eagles. While surveys were performed with an emphasis on special status species, this exhibit focuses on a subset of that group which is just state sensitive species.

Tetra Tech reviewed ODFW's sensitive species list to identify state sensitive species with the potential to occur within the analysis area based on the ecoregion (ODFW 2021), and then removed any not listed in Sherman County (OSULP and INR 2021). Species were further excluded for consideration if no potential habitat was present within the analysis area (OSC 2016). Oregon Biodiversity Information Center (ORBIC) data (ORBIC 2024) were then reviewed to determine known species occurrence locations within the analysis area. The results of this desktop review and the results from field surveys that verified available habitat for wildlife species and provided further documentation of sensitive species within the analysis area are discussed in Section 6.1.

Other resources consulted during the desktop review included the National Land Cover Database, aerial photography, the ODFW Compass mapping tool (ODFW 2024), as well as results from pre- and post-construction surveys performed for the BCWF (Orion Sherman County Wind Farm 2005, WEST 2005, WEST 2009, WEST 2010, WEST 2012a, WEST 2012b, WEST 2012c, WEST 2013, PGE 2023). Exhibit K addresses the Sherman County Comprehensive Plan (Goal 5), which includes the potential for natural resources to occur within the Solar Micrositing Area.

4.2 Field Surveys

Table P-1 provides a summary of biological field surveys conducted at the Solar Components in 2024 within portions of the analysis area (Figure P-1). The survey reports are included in Attachment P-1, except for the wetlands and waters survey report, which is included in Exhibit J, Attachment J-1.

Table P-1. Summary of Field Surveys Conducted in 2024

Survey	Survey Timing	Reference	Extent
Habitat Categorization and Special Status Wildlife Surveys	June	Attachment P-1	Solar Micrositing Area
Botanical Surveys	July		Solar Micrositing Area
Raptor Nest Surveys	June		1/2-mile buffer of Solar Micrositing Area
Wetlands and Waters Surveys	April and May	Exhibit J, Attachment J-1	Wetland Study Area (approximately 1,167 acres)

4.2.1 Habitat Categorization and Special Status Wildlife Surveys

Habitat categorization and special status wildlife surveys were performed in June by Tetra Tech within the Solar Micrositing Area (Attachment P-1). The Survey Area covered 4,636 acres including the entire Solar Micrositing Area and some additional lands that have since been omitted from the Solar Micrositing Area. The objective of the surveys was to categorize habitats per the habitat categories set forth in ODFW's Fish and Wildlife Mitigation Policy (OAR 635-415-0025), consistent with the habitat categorization developed during permitting of the BCWF, and to document the presence of special status wildlife species.

During the habitat categorization survey, habitat categories established by the ODFW Fish and Wildlife Habitat Mitigation Policy were used to rank the habitat subtypes present within the Solar Micrositing Area. Habitat mapping was performed using a minimum of 1-acre mapping unit (except for specialized habitat such as cliffs or rock outcrops). These surveys were conducted by a biologist familiar with vegetation of the Columbia Plateau Ecoregion and were scheduled during the growing season to aid in identification of vegetative species. Meandering transects were walked by a biologist to categorize the composition and structure of habitat by noting the dominant vegetation, presence of large trees, existing disturbance, or other habitat features such as shrub and grass composition and density. Each polygon was then assigned a habitat type, subtype, and habitat quality category that was guided by the habitat categorization for the BCWF.

For the portions of the analysis area that were not covered by the survey, habitat mapping is based on a desktop analysis using aerial photography interpretation and the Certificate Holder's familiarity with the site acquired through operation of the BCWF.

Special status wildlife surveys were conducted concurrently with habitat categorization surveys. The objective of the special status wildlife survey was to document the presence of any special status species within the Survey Area, as well as general wildlife species. During surveys, the biologist walked meandering transects through nonagricultural areas, scanning and listening for wildlife species and recognizable signs of wildlife (e.g., scat, tracks, burrows and nests). Agricultural areas were surveyed by visually scanning and listening for wildlife from accessible roads or bordering nonagricultural lands. The biologist documented the location of special status species, or recognizable sign, and recorded the number of individuals and their behavior, if observed. Special habitats and unique features (i.e., cliffs, ponds, talus slopes, rock outcrops, raptor nests, and big game) were also documented if encountered. Following the survey, the digitized data were downloaded and processed using geographic information system software and reviewed for quality control and assurance.

4.2.2 Botanical Surveys

Botanical surveys were conducted on July 9 and 10, 2024 (Attachment P-1). The purpose of the botanical surveys was to document the presence of federally or state listed endangered, threatened, and candidate vascular plant species and state and county-designated noxious weeds within the

Solar Micrositing Area. The surveys were designed in accordance with Council standards set forth in OAR 345-021-0010 (1)(p) and (q), OAR 345-022-0070, and in coordination with the ODA.

Prior to field surveys, Tetra Tech conducted a review of existing information to identify federal and state endangered, threatened, proposed, and candidate plant species with the potential to occur. No federally listed, proposed, or candidate plant species have the potential to occur within or near the Solar Micrositing Area; however, one state listed threatened and three state candidate vascular plant species have potential to occur.

Tetra Tech reviewed lists of species designated as noxious weeds in Oregon and Sherman County (ODA 2022; SCNWD 2024). Existing literature and other sources were also reviewed to familiarize surveyors with identification of designated noxious weeds that would potentially be encountered within the Survey Area.

Tetra Tech conducted botanical field surveys using the Intuitive Controlled survey method, a standard and commonly accepted survey protocol (USFS and BLM 1998). This method incorporates meandering transects that traverse the survey area and targets the full array of major vegetation types, aspects, topographical features, habitats, and substrate types. While en route, the surveyors searched for target species, and when the surveyors arrived at an area of high potential habitat, they conducted a complete survey for the target species. The botanist maintained a running list of vascular plant species encountered and made informal collections of unknown species for later identification. Data collected for any rare plant population, if encountered, would include species phenology, number of plants observed, habitat information and associated species, and any visible threats such as development, grazing, erosion, or noxious weeds.

4.2.3 Raptor Nest Surveys

PGE has performed raptor nest surveys at regular intervals during operation of the BCWF, with the most recent survey being from 2022 (PGE 2023). Prior to conducting surveys, Tetra Tech reviewed available raptor nest data from the most recent 2022 raptor nest survey, which extended out 2 miles from the BCWF and encompassed the entire Solar Micrositing Area and Exhibit P analysis area. The Survey Area of the 2024 raptor nest survey covered the Solar Micrositing Area and a 0.5-mile buffer (Attachment P-1).

The 2024 survey was performed from the ground in mid-June. The biologist checked the status of all known nests documented during the 2022 PGE survey that occurred within the Survey Area and searched for new nests. Data recorded for each raptor nest included the date; time; unique nest identification; Universal Transverse Mercator coordinates; species occupying the nest; nest status; and nest condition. Nest status (active or inactive) was determined using a combination of cues such as adult behavior (e.g., diving, calling, nest building/repair, incubation, brooding, or feeding of young), presence of eggs or young, or whitewash.

4.2.4 Wetlands and Waters Surveys

Tetra Tech conducted pedestrian surveys to delineate wetlands and other waters on July 9 to 12, 2024 (Attachment J-1). The Survey Area covered the entirety of the Amended Site. Prior to the surveys, Tetra Tech reviewed National Wetlands Inventory (NWI), National Hydrography Dataset (NHD), hydric soils data, and historical aerial photographs in Google Earth to identify potential wetlands and other waters prior to performing field work. Wetlands and surface water data were obtained from the U.S. Fish and Wildlife Service NWI (USFWS 2024), which includes NWI and miscellaneous wetland mapping by state and federal agencies, non-governmental organizations, academia and consultants, and from the U.S. Geological Survey NHD (USGS 2024). Soils data were also obtained from the National Resources Conservation Service Web Soil Survey (NRCS 2024). Tetra Tech used aerial imagery from Google Earth because a wide variety of imagery was available.

The desktop wetland data were used to focus the wetland delineation's field effort while the desktop surface water data were used to focus the non-wetlands water evaluation as necessary.

Data collected during wetlands and waters surveys informed habitat categorization and helped with the determination of state sensitive species presence described in this exhibit. Results from the 2024 wetlands and waters surveys are summarized in Exhibit J and presented in the corresponding survey report (Attachment J-1).

5.0 Identification and Description of Habitat – OAR 345-021-0010(1)(p)(B)(C)

> *OAR 345-021-0010(1)(p)(B) Identification of all fish and wildlife habitat in the analysis area, classified by the general fish and wildlife habitat categories as set forth in OAR 635-415-0025 and the sage-grouse specific habitats described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through 635-140-0025 (core, low density, and general habitats), and a description of the characteristics and condition of that habitat in the analysis area, including a table of the areas of permanent disturbance and temporary disturbance (in acres) in each habitat category and subtype;*
>
> *OAR 345-021-0010(1)(p)(C) A map showing the locations of the habitat identified in (B);*

Response: Application provides information requested under OAR 345-021-0010(1)(p)(B) below.

5.1 ODFW Habitat Categorization

The ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0015) provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. The definition of each category type, as well as an example of each category type within the analysis area, is shown in Table P-2. The Solar Components will not be located in sage-grouse habitat, and therefore the Greater Sage-Grouse Conservation Strategy for Oregon does not apply.

Table P-2. ODFW Habitat Categorization

ODFW Habitat Category	Definition[1]	Examples of ODFW Habitat Categories within Analysis Area
1	Irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population, or unique assemblage.	• None identified in the Analysis Area
2	Essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population, or unique assemblage.	• Fairly undisturbed sagebrush shrub-steppe with old growth shrub structure and low disturbance from grazing, fire, or annual invasive vegetation. • Riparian trees with documented nests of non-sensitive raptor species. • Areas of non-agricultural and non-developed habitat that falls within a Priority Wildlife Connectivity Area (PWCA; ODFW 2023) or big game winter range (ODFW 2013).
3	Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.	• Intermittent streams • Ponds • Freshwater emergent wetland • Fairly undisturbed sagebrush shrub-steppe with moderate disturbance from grazing, fire, or annual invasive vegetation.
4	Important habitat for fish and wildlife species.	• Ephemeral streams • Grasslands with moderate-heavy disturbance from grazing, fire, or annual invasive vegetation.
5	Habitat for fish and wildlife having high potential to become either essential or important habitat.	• No Category 5 habitat is presented in this exhibit.
6	Habitat that has low potential to become essential or important habitat for fish and wildlife.	• Agricultural Areas – These areas include irrigated and non-irrigated cropland. • Developed Areas – These areas include existing infrastructure and developed areas.

1. Source: OAR 635-415-0025.

5.2 Description of Fish and Wildlife Habitat in the Analysis Area

The analysis area covers 11,255 acres in northern Sherman County, Oregon, in the Columbia Plateau. The analysis area comprises primarily agricultural lands with small areas of remnant grassland and shrub-steppe habitat with elevations ranging from approximately 800 to 1,600 feet above sea level. Vegetation within much of the analysis area has been modified due to historic and current agricultural activity, construction and management of the Existing Facility, and historic and current grazing activity. Non-native, invasive grasses and forbs are common throughout the analysis area due to these land uses. Only limited areas of native habitat types occur, and even in those areas, non-native, invasive grasses and forbs, including cheatgrass (*Bromus tectorum*), bulbous bluegrass (*Poa bulbosa*), cereal rye (*Secale* cereale), and prickly lettuce (*Lactuca serriola*), are abundant.

Priority Wildlife Connectivity Areas (PWCAs) provide non-regulatory information on the parts of the landscape expected to have the highest overall value for facilitating wildlife movement. PWCAs include areas of good quality habitat (intact, relatively undisturbed parts of the landscape), as well as the best remaining marginal habitat to help wildlife navigate through developed or degraded areas. The PWCA mapping tool (ODFW 2023) is intended to support planning for restoration, conservation, land-use, transportation, and development projects. Planning units are 40-acre hexagons. A portion of PWCA CP-R23 that includes Biglow Canyon overlaps the northern portion of the analysis area (Figure P-1), with a small portion of the PWCA overlapping the Solar Micrositing Area (ODFW 2023). Areas where the PWCA overlaps with non-agricultural and non-developed habitat were identified as Category 2 habitat.

Big game winter habitat includes areas identified and mapped as providing essential and limited function and values (e.g. thermal cover, security from predation and harassment, forage quantity, adequate nutritional quality, escape from disturbance, etc.) for certain big game species from December through April. Winter habitat includes mapped areas of "Winter Range" use by predominately migratory mule deer (*Odocoileus hemionus*) and Rocky Mountain elk (*Cervus canadensis nelsoni*) and mapped areas of "Occupied Habitat" use by predominately non-migratory bighorn sheep (ODFW 2013). The northern portion of the analysis area overlaps big game winter range associated with the John Day River canyon (Figure P-1). Areas where big game winter range overlaps with non-agricultural and non-developed habitat were identified as Category 2 habitat.

Habitat types and subtypes within the analysis area are described in Table P-3 and displayed in Figure P-2.

Table P-3. Description of Habitat Types within Analysis Area

Habitat Type	Habitat Sub-Type	Dominant Vegetation
Agriculture	Irrigate Cropland	Cultivated crops and associated disturbed areas. Mostly non-irrigated dryland wheat with a few irrigated circles.
	Non-Irrigated Cropland	

Habitat Type	Habitat Sub-Type	Dominant Vegetation
Developed	Developed	Paved and gravel roads, gravel quarries, residences, equipment staging, permanent footprint of existing wind facility.
Grassland-steppe	Grasslands	Weedy grasslands with minimal shrub component and trace forbs. Dominated by cheatgrass (*Bromus tectorum*) and cereal rye (*Secale cereale*). Minimal shrub component dominated by grey rabbitbrush (*Ericameria nauseosa*). Trace amounts of yarrow (*Achillea millefolium*), tumble mustard (*Sisymbrium altissimum*), prickly lettuce (*Lactuca serriola*), salsify (*Tragopogon dubius*), and arrowleaf balsam root (*Balsamorhiza sagittata*). Small areas of native grasslands exist, dominated by bluebunch wheatgrass (*Pseudoroegneria spicata*) with bulbous bluegrass (*Poa bulbosa*) and cheatgrass also occurring.
Riparian	Riparian Trees	Silver maple, walnut, and black locust.
Shrub-steppe	Sagebrush Shrub-steppe	Sagebrush shrubland with understory dominated by annual/non-native vegetation. Dominant shrubs include basin big sagebrush (*Artemesia tridentata*) and grey rabbitbrush. Understory is dominated by cheatgrass and cereal rye, with trace amounts of tumble mustard, yarrow, squirreltail (*Elymus elymoides*), snow buckwheat (*Eriogonum niveum*), and arrowleaf balsam root.
Surface Water	Ephemeral Streams	National Hydrography Dataset (NHD) data.
	Intermittent Streams	NHD data. Includes one delineated palustrine scrub-shrub wetland associated with an intermittent waterway along upper Biglow Canyon. Vegetation includes reed canary grass (*Phalaris arundinacea*) and speedwell (*Veronica americana*).
	Ponds	Ponding associated with an excavated quarry area including two delineated palustrine emergent wetlands. Vegetation includes foxtail barley (*Hordeum jubatum*), tule (*Schoenoplectus acutus*), and common reed (*Phragmites australis*).
Upland	Upland Trees	Dominated by black locust (*Robinia pseudoacacia*), also includes Pacific willow (*Salix lasiandra*) and Russian olive (*Elaeagnus angustifolia*).
Wetland	Freshwater Emergent Wetland	National Wetlands Inventory data.

5.3 Quantity of Habitat Types by Habitat Category within the Analysis Area

Table P-4 shows the acreages within the analysis area of each habitat type with the assigned habitat category. The locations of each habitat type by category within the analysis area are shown on Figures P-2 and P-3, as directed by OAR 345-021-0010(1)(p)(C).

The most prominent habitat category in the analysis area is Category 6 (91 percent). Category 6 includes Agriculture and Developed habitat types, which are dominated by Non-irrigated Cropland subtypes but also include Irrigated Cropland and Developed subtypes. The remaining 9 percent of the analysis area is Category 4 Grassland-steppe and Surface Water habitat types (totaling 3 percent); Category 3 Grassland-steppe, Surface Water, Upland, and Wetland habitat types (totaling 1 percent); and Category 2 Grassland-steppe, Riparian, Shrub-steppe, Surface Water, and Wetland habitat types (totaling 5 percent). Representative photos of the analysis area are included in the Habitat Categorization and Special Status Wildlife Survey Report (Attachment P-1).

Presence of a particular habitat category within the analysis area does not indicate that this habitat will necessarily be impacted by the Solar Components. Section 8.1 presents the areas of permanent disturbance and temporary disturbance (in acres) in each habitat category and habitat type with discussion on potential impacts to fish and wildlife habitat.

Table P-4. Acres of Habitat Type by ODFW Habitat Categories in the Analysis Area

Habitat Type	Habitat Sub-Type	Acres by Habitat Category within Analysis Area[1]						Total Acres within Analysis Area[1]
		1	2	3	4	5	6	
Agriculture	Irrigated Cropland	-	-	-	-	-	170.3	**170.3**
	Non-Irrigated Cropland	-	-	-	-	-	9,944.3	**9,944.3**
Developed	Developed	-	-	-	-	-	177.9	**177.9**
Grassland-steppe	Grasslands	-	278.9	14.4	305.1	-	-	**598.4**
Riparian	Riparian Trees	-	37.1	-	-	-	-	**37.1**
Shrub-steppe	Sagebrush Shrub-steppe	-	228.6	-	-	-	-	**228.6**
Surface Water	Ephemeral Streams	-	-	-	0.1	-	-	**0.1**
	Intermittent Streams	-	12.7	57.7	-	-	-	**70.3**
	Ponds	-	-	0.4	-	-	-	**0.4**
Upland	Upland Trees	-	-	26.4	-	-	-	**26.4**
Wetland	Freshwater Emergent Wetland	-	1.3	0.2	-	-	-	**1.5**
Totals		**0**	**558.6**	**99.1**	**305.2**	**0**	**10,292.5**	**11,255.3**

1. Acres within analysis area do not total the acres of potential impact. Impacts are discussed in Section 8.

6.0 Identification of State Sensitive Species and Site-Specific ODFW Issues – OAR 345-021-0010(1)(p)(D)

OAR 345-021-0010(1)(p)(D) Based on consultation with the Oregon Department of Fish and Wildlife (ODFW) and appropriate field study and literature review, identification of all State Sensitive Species that might be present in the analysis area and a discussion of any site-specific issues of concern to ODFW;

Response: The Certificate Holder identifies all state sensitive species below in compliance with OAR 345-021-0010(1)(p)(D).

6.1 Identification of State Sensitive Species

Based on the desktop analysis and field surveys, 16 state sensitive species and 2 eagle species have potential to occur in the analysis area (Table P-5). Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are addressed in Exhibit P as species of concern protected under the Bald and Golden Eagle Protection Act (BGEPA). Of the 16 state sensitive species that have potential to occur in the analysis area, 6 are sensitive-critical and 10 are sensitive in the Columbia Plateau Ecoregion (ODFW 2021). These species include 2 reptiles, 9 birds, and 5 mammal species. A query of the StreamNet database (StreamNet 2024) and the Certificate Holder's request for information from ORBIC (ORBIC 2024) did not identify any state sensitive fish species with potential to occur in the analysis area. Therefore, no fish are included in Table P-5 below or addressed in this Exhibit P. State threatened and endangered species are addressed in Exhibit Q.

6.2 Site-Specific Issues Identified by ODFW

The only site-specific issue for the Solar Components identified by ODFW was to avoid residual grassland habitats where possible, to leave cover for the sensitive birds in the area (J.L. Thompson, personal communication, June 6, 2024). Impacts to grassland habitats have been minimized through micrositing. Approximately 598 acres of grassland-steppe habitat were identified within the analysis area (Table P-4). Construction of the Solar Components is expected to result in 4.2 acres of permanent disturbance and 0.2 acre of temporary disturbance to grassland-steppe habitat (Table P-6).

Table P-5. ODFW State Sensitive Species and Eagles with Potential to Occur in the Analysis Area

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area [3, 4, 5, 6, 7, 8]	Potential Use of Habitat Within the Analysis Area
Reptiles					
Northern sagebrush lizard	*Sceloporus graciosus graciosus*	Sensitive	Closely associated with steppe habitat with sandy soils and sparse vegetation in the grass/forb layer. Also occurs in chaparral, juniper woodlands, and coniferous forests.	Moderate. Recorded in Sherman County but limited suitable habitat within the analysis area. Not detected during the 2024 surveys, nor during pre- or post-construction surveys at the BCWF.	Shrub-steppe habitats with sandy soils
Western painted turtle	*Chrysemys picta bellii*	Sensitive-Critical	Marshy ponds, small lakes, slow-moving streams, and quiet, off-channel portions of rivers. Prefer waters with muddy bottoms and aquatic vegetation.	Low. Recorded in Sherman County but limited suitable habitat within the Analysis Area. Not detected during the 2024 surveys, nor during pre- or post-construction surveys at the BCWF.	Riparian, surface water, and wetland habitats

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area [3, 4, 5, 6, 7, 8]	Potential Use of Habitat Within the Analysis Area
Birds					
Bald eagle	*Haliaeetus leucocephalus*	None[9]	Typically builds its nest in tall, sturdy trees near water sources, such as rivers, lakes, and coastlines where it can find fish, its primary food source. Known to scavenge opportunistically on carcasses in otherwise unsuitable habitat particularly during winter and migration.	High. Bald eagles are known to nest along the John Day River, but no suitable nesting habitat for bald eagles exists within the Analysis Area. No bald eagles or bald eagle nests detected during the 2024 surveys (Attachment P-1). No bald eagle nests found during raptor nests surveys for the BCWF but bald eagles regularly detected during avian use surveys for the BCWF. Use of the Solar Components is expected to be mostly limited to migration and winter, when the species sometimes feeds on carrion.	All terrestrial habitats
Brewer's sparrow	*Spizella breweri*	Sensitive	Migrant and summer resident that uses sagebrush shrublands, generally with a canopy height greater than 5 feet. Typically nests in brush or in clumps of grass.	Moderate. Not detected during the 2024 surveys. Also not detected during avian use surveys for the BCWF, but one individual found during fatality monitoring for the BCWF. Limited suitable habitat within the analysis area.	Sagebrush and other shrublands

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area [3, 4, 5, 6, 7, 8]	Potential Use of Habitat Within the Analysis Area
Burrowing owl (Western)	*Athene cunicularia hypugaea*	Sensitive-Critical	Occurs in open grassland and shrub-steppe habitats as well as highly disturbed habitats such as agricultural areas. Typically nests in burrows excavated by burrowing mammals. Spring and summer resident that travels south for warmer climates during the winter.	Moderate. Suitable habitat within the analysis area, and eBird sightings documented in the vicinity of the analysis area. This species was detected during pre-construction surveys for the BCWF.	Shrub-steppe, grassland agricultural, and developed habitats
Common nighthawk	*Chordeiles minor*	Sensitive	Long-distance migrant present in Oregon during its breeding season, from May to August. Inhabits any kind of open or semi-open terrain. Nesting habitat is characterized by open landscapes with little ground cover and is most abundant in sagebrush and rocky scablands and rimrock habitats of eastern Oregon. Tends to roost and nest on bare ground, including gravel roads.	Moderate. Suitable habitat within the analysis area, and eBird sightings documented in the vicinity of the Analysis Area. Not detected during the 2024 surveys or during avian use surveys, but one individual found during fatality monitoring for the BCWF.	All terrestrial habitats
Ferruginous hawk	*Buteo regalis*	Sensitive-Critical	Found in open, arid landscapes. Species often uses grasslands and shrub-steppe with scattered shrubs or trees for perching and nesting. Also nests on cliffs, rimrock, and hillsides.	High. Suitable nesting and foraging habitat within the Analysis Area. Not detected during the 2024 surveys. Low numbers have been detected during avian use surveys but no nests detected during raptor nest surveys for the BCWF.	Shrub-steppe, grassland, and riparian habitats

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area [3, 4, 5, 6, 7, 8]	Potential Use of Habitat Within the Analysis Area
Golden eagle	*Aquila chrysaetos*	None[9]	Inhabits a variety of habitats including forests, canyons, shrub lands, grasslands, and oak woodlands. Nests on cliffs, utility towers, or in large trees. Forages in open habitats.	High. Known historical nest territories along the nearby cliffs of the John Day River. Analysis Area lacks nesting habitat but provides foraging habitat. Not detected during the 2024 surveys. Species regularly detected during BCWF avian use surveys but no nests detected within survey area during raptor nest surveys for the BCWF.	All mapped habitats within analysis area
Grasshopper Sparrow	*Ammodramus savannarum*	Sensitive	Migrant and summer resident east of the Cascades. Occurs is dry grassland habitat, generally with low to moderate grass height and low percent shrub cover.	Moderate. Suitable habitat within the Analysis Area and eBird sightings documented in the vicinity of the Analysis Area. Not detected during the 2024 surveys, but regularly detected during avian use surveys for the BCWF.	Grassland habitats
Lewis's woodpecker	*Melanerpes lewis*	Sensitive-Critical	Ponderosa pine forests, oak woodlands, oak-pine woodlands, cottonwood riparian forests, and areas burned by wildfires.	Low. Recorded in Sherman County but limited suitable habitat within the analysis area. Not detected during the 2024 surveys, or during pre- or post-construction surveys at the BCWF.	Riparian habitats

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area [3, 4, 5, 6, 7, 8]	Potential Use of Habitat Within the Analysis Area
Loggerhead shrike	*Lanius ludovicianus*	Sensitive	Found in a variety of open, brushy habitats, including agricultural areas. In Oregon, often uses tall sagebrush for nesting and roosting and open areas with grasses and significant bare ground for foraging.	High. Detected within the Solar Micrositing Area during 2024 special status wildlife surveys. Also detected during avian use surveys for the BCWF. Suitable nesting and foraging habitat within the analysis area.	All terrestrial habitats
Long-billed curlew	*Numenius americanus*	Sensitive-Critical	Prefers open habitat with relatively short grass and little woody vegetation but can occur in dryland wheat.	High. Suitable nesting and foraging habitat within the analysis area. Not detected during the 2024 surveys but detected during avian use surveys for the BCWF.	Grassland habitats, agriculture
Swainson's hawk	*Buteo swainsoni*	Sensitive	Open-country specialists that hunt and forage in grassland, shrubsteppe, and agricultural areas. Nests are frequently in lone trees or isolated shrubs in open country.	High. Suitable nesting and foraging habitat within the analysis area. Not detected during the 2024 surveys but detected during avian use surveys for the BCWF and active Swainson's hawk nests detected during raptor nest surveys for the BCWF.	All mapped habitats within analysis area

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area [3, 4, 5, 6, 7, 8]	Potential Use of Habitat Within the Analysis Area
Mammals					
Hoary bat	*Lasiurus cinereus*	Sensitive	Generally associated with forested habitat. Often found in coniferous forests east of the Cascade Range. Species prefers late-successional conifer forests for roosting. Often forages along riparian corridors and forest openings or forest borders, where it can easily fly. Sometimes found in open cover types like grasslands and meadows, especially when migrating or foraging.	High, during migration. Recorded in Sherman County and predicted habitat within analysis area.Frequently found during fatality monitoring at the BCWF.	Riparian and open water habitat
Pallid bat	*Antrozous pallidus*	Sensitive	Lives in dry, open habitat such as grasslands, shrub-steppe, and dry forest ecotones. Uses crevices in cliffs, caves, mines, or bridges (and sometimes, buildings) for day, night, or maternity roosts, or hibernacula.	Moderate. Recorded in Sherman County and predicted habitat within analysis area. Not detected during fatality monitoring at the BCWF.	Shrub-steppe grassland, riparian, and open water habitat
Silver-haired bat	*Lasionycteris noctivagans*	Sensitive	Relies on late-successional conifer forests but may be found in other habitat types during migration.	High, during migration. Recorded in Sherman County and predicted habitat within analysis area. Frequently found during fatality monitoring at the BCWF.	Riparian and open water habitat
Spotted bat	*Euderma maculatum*	Sensitive	Roosts in caves, cliffs, canyon walls, and trees near meadows. Forages in meadows, shrub-steppe, and along water sources.	Low. Recorded in Sherman County but no predicted habitat within analysis area. Not detected during fatality monitoring at the BCWF.	Riparian, open water and shrub-steppe habitat

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area [3, 4, 5, 6, 7, 8]	Potential Use of Habitat Within the Analysis Area
Townsend's big-eared bat	*Corynorhinus townsendii*	Sensitive-Critical	Occurs in a variety of habitats but most likely to be found near caves, mines, or other roosting areas such as hollow trees, bridges and isolated buildings. Forages in a variety of habitats, including arid pine forests, sage-steppe, and stream corridors.	Moderate. Recorded in Sherman County and predicted habitat within analysis area. Not detected during fatality monitoring at the BCWF.	Riparian, open water and shrub-steppe habitat

1. State Sensitive Species Status Definitions (ODFW 2021):
   Sensitive = Fish and wildlife species that are facing one or more threats to their populations and/or habitat; are defined as having small or declining populations, are at-risk, and/or are of management concern. Implementation of appropriate conservation measures to address existing or potential threats may prevent them from declining to the point of qualifying for threatened or endangered status.
   Sensitive-Critical = Sensitive species of particular conservation concern; have current or legacy threats that are significantly impacting their abundance, distribution, diversity, and/or habitat. They may decline to the point of qualifying for threatened or endangered status if conservation actions are not taken.
2. Expected Habitats (OCS 2016).
3. Oregon Explorer species by county and species predicted habitats (OSULP and INR 2021).
4. ORBIC (2024) occurrence locations are from a variety of sources that vary in accuracy and precision. Because some ORBIC records, particularly older records, have a high level of uncertainty, some occurrence locations are represented by large polygons in order to reflect this lack of precision. These polygons are sometimes more than 1 mile in diameter around a single occurrence location, and do not necessarily reflect the actual location of the sensitive species. As a result, the ORBIC occurrence information was used as a rough approximation of occurrence.
5. eBird 2024
6. Oregon Breeding Bird Atlas (Adamus and Scalf 2021)
7. ODFW Compass mapping tool (ODFW 2024)
8. Results from pre- and post-construction surveys performed for the BCWF (Orion Sherman County Wind Farm 2005, WEST 2005, WEST 2009, WEST 2010, WEST 2012a, WEST 2012b, WEST 2012c, WEST 2013, PGE 2023).
9. Protected by the Bald and Golden Eagle Protection Act.

7.0 Baseline Survey of Habitat Use by State Sensitive Species – OAR 345-021-0010(1)(p)(E)

OAR 345-021-0010(1)(p)(E) A baseline survey of the use of habitat in the analysis area by species identified in (D) performed according to a protocol approved by the Department and ODFW;

The desktop analysis described in Section 4.1 was performed to determine which sensitive species may be using the habitats available within the analysis area for breeding, foraging, or stop-over habitat during migration. Baseline field surveys, including habitat categorization and special status wildlife surveys, botanical surveys, raptor nest surveys, and wetland and waters surveys, were completed in 2024 within portions of the analysis areas described in Section 4.2. Biologists observed one sensitive wildlife species, the loggerhead shrike, during the 2024 surveys. Results of the surveys are described below. Additional details on the field survey methods and results are provided in Attachment P-1. The use of habitats within the analysis area by state sensitive species are summarized in Table P-5.

7.1 Results of Field Surveys

7.1.1 2024 Habitat Categorization and Special Status Wildlife Surveys

Habitat types were identified within the Habitat Categorization Survey Area, which covered 4,636 acres including the entire Solar Micrositing Area (3,980 acres) and some additional lands that have since been omitted from the Solar Micrositing Area. All the habitat types were then categorized according to ODFW's Fish and Wildlife Habitat Mitigation Policy Habitat Categorization flowchart (ODFW 2008). The most prominent habitat category in the Habitat Categorization Survey Area was Category 6, Agriculture habitat type, which included both Irrigated and Non-irrigated Croplands, and Developed habitat subtypes, totaling 96 percent of the Survey Area. The remaining 4 percent contained Category 4 Grasslands habitat subtype, Category 3 Sagebrush Shrub-steppe and Upland Trees habitat subtypes, as well as Category 2 Intermittent and Riparian Tree habitat subtype (Table P-2; Attachment P-1). The survey results did not consider overlap with PWCAs and big game winter range. Overlap with PWCAs and big game winter range are considered in this exhibit and modify some of the habitat categories identified during this survey to a Category 2 habitat, as presented in Tables P-4 and P-6.

Eighteen bird species, five mammal species, and two invertebrate species were observed during the surveys. One special status species, the loggerhead shrike, was documented during surveys. (Attachment P-1).

7.1.2 2024 Botanical Surveys

The botanical surveys were conducted to document the presence of federally or state listed endangered, threatened, and candidate vascular plant species and state and county-designated

noxious weeds within the Solar Micrositing Area (Attachment P-1). The Survey Area for the 2024 botanical surveys consisted of the 3,980-acre Solar Micrositing Area. The botanist observed that vegetation within much of the Survey Area has been modified due to historic and current agricultural activity, construction and management of the Existing Facility, and historic and current grazing activity. No threatened, endangered, proposed, or candidate vascular plant species were observed within the Survey Area. In addition, no suitable habitat for Henderson's ricegrass (*Eriocoma* [*Achnatherum*] *hendersonii*), hepatic monkeyflower (*Erythranthe jungermannioides*), and sessile mousetail (*Myosurus sessilis*) was observed within the Survey Area. Limited suitable habitat for Lawrence's milkvetch (*Astragalus collinus* var. *laurentii*) was observed within the Survey Area, but historic and current anthropogenic activities have resulted in degradation of the limited suitable habitat for Lawrence's milkvetch within the Survey Area. Twelve noxious weed species were identified within the Survey Area.

7.1.3 2024 Raptor Nest Surveys

No state sensitive species were observed nesting within the Survey Area during the 2024 raptor nest surveys (Attachment P-1). A total of five nests were observed within the Survey Area, including one in-use great horned owl (*Bubo virginianus*) nest, one inactive great horned owl nest, and three inactive nests with unknown species determinations.

7.1.4 Wetlands and Waters Surveys

The 2024 wetland and waters surveys covered the entirety of the Solar Micrositing Area (Attachment P-1). A total of two palustrine emergent wetlands, one riverine wetland, three ephemeral waterways, and one desktop delineated intermittent waterway were found within the RFA 4 Site Boundary.

8.0 Description of Potential Adverse Impacts – OAR 345-021-0010(1)(p)(F)

> *OAR 345-021-0010(1)(p)(F) A description of the nature, extent and duration of potential adverse impacts on the habitat identified in (B) and species identified in (D) that could result from construction, operation and retirement of the proposed facility;*

This section describes potential impacts to habitat and state sensitive species that are known to occur or have the potential to occur within the analysis area. Permanent impacts to fish and wildlife habitat are discussed as well as disturbance impacts to mammals, birds, and reptiles. As described in detail in Exhibit B, the Certificate Holder proposes to construct the Solar Components in phases over several years. The impact analysis presented in this exhibit represents a fully built-out scenario, but takes into consideration a phased construction schedule.

Construction and operation of the Solar Components will result in both permanent and temporary impacts to wildlife and their habitats. Due to the multi-year construction schedule of the Solar

Components, both permanent and temporary impacts to fish and wildlife habitat will occur in phases over this time period. Permanent impact areas are those that will be converted from the existing condition to a different condition for the life of the Solar Components. The Solar Components include all solar components, including solar arrays, inverters, battery energy storage system facilities and their subcomponents (i.e., inverters), two collector substations, approximately 3 miles of 230-kV gen-tie transmission lines, medium voltage collector lines, operations and maintenance structures, site access roads, internal roads, perimeter fencing, facility entry gates, and temporary laydown areas.

Direct impacts to habitat include permanent loss of some specific habitat types; indirect impacts may include increased potential for the invasion of noxious weeds, particularly along fence lines and roads. These habitats are identified and described in Section 5.0, and Table P-6 provides the number of acres that will be permanently and temporarily impacted by the Solar Components, organized by habitat type and sub-type. For purposes of analysis, the Certificate Holder considered two solar areas that will occupy approximately 3,234 acres within five fenced areas within the RFA 4 Site Boundary. This entire area is considered permanently disturbed; all temporary disturbance areas are outside the fenced solar areas. The support poles associated with the 2.65-mile-long, 230-kV gen-tie connections from the proposed collector substations to the existing Biglow Canyon Substation are also categorized as a permanent impact. These components are described in detail in Section 4.0 of the RFA 4 Division 27 document (Request for Amendment 4 for the Biglow Canyon Wind Farm).

Construction of the Solar Components is expected to involve up to 59 acres of temporary impacts. The specific extent of each component's temporary impact is detailed in Exhibit C and is described in terms of a total, worst-case scenario impact for the full duration of phased construction. The RFA 4 Division 27 document presents the temporary and permanent impacts of the Solar Components. Restoration of the temporary impact areas will occur following construction per the amended Revegetation Plan (Attachment P-2).

8.1 Potential Impacts to Fish and Wildlife Habitat

Potential impacts on fish and wildlife habitat include the temporary and permanent disturbance to habitat associated with the construction and operation of the Solar Components. The acres of temporary and permanent disturbances are summarized in Table P-6. Some impacts will be avoided or minimized as described in Section 9.0. Impacts that cannot be avoided will be mitigated as described in the Biglow Solar Habitat Mitigation Plan (HMP; Attachment P-3). Impacts to state sensitive species are described in Section 8.2. While big game winter range is present within the analysis area, it is outside of any proposed temporary or permanent disturbance areas.

Table P-6. Acres of Temporary and Permanent Disturbances

ODFW Habitat Category	Habitat Type	Habitat Sub-Type	Temporary Disturbance (acres)	Permanent Disturbance (acres)
1	N/A	N/A	-	-
2	Riparian	Riparian Trees	0.0	0.1
	Shrub-steppe	Sagebrush Shrub-Steppe	0.3	20.7
	Category 2 Subtotal		**0.3**	**20.7**
3	Upland	Upland Trees	0.1	18.6
	Category 3 Subtotal		**0.1**	**18.6**
4	Grassland-steppe	Grasslands	0.2	4.2
	Surface Water	Ephemeral Streams	0.0	0.0
	Category 4 Subtotal		**0.2**	**4.2**
5	N/A	N/A	-	-
6	Agriculture	Irrigated Cropland	0.1	52.0
	Agriculture	Non-Irrigated Cropland	56.7	3,132.4
	Developed	Developed	1.7	5.6
	Category 6 Subtotal		**58.5**	**3,190.1**
Total			**59.1**	**3,233.6**

1. There are not any temporary disturbances in open water habitat types. Refer to Exhibit J for detailed analysis of impacts on wetlands and waters.

8.2 Potential Impacts to State Sensitive Species

This section addresses potential adverse impacts to state sensitive species identified in Section 6.0. Habitat loss and modification resulting from construction activities will occur in permanent impact areas and temporary construction areas, and the associated impacts on wildlife will vary by species. In addition to these habitat-related impacts, potential adverse impacts to sensitive species due to construction and operation activities may include potential nesting and breeding disturbance, collision with solar arrays, security perimeter fencing, overhead collector lines, vehicles and heavy equipment, and disturbance related to artificial lighting.

8.2.1 Reptiles

No state sensitive reptiles were documented during the 2024 surveys (Attachment P-1) or during pre- or post-construction surveys at the BCWF, but two state sensitive reptile species have the potential to occur within the analysis area: northern sagebrush lizard (*Sceloporus graciosus graciosus*) and western painted turtle (*Chrysemys picta bellii*; Table P-5). Potential impacts to these species and other reptiles include habitat loss and direct mortality. There is limited suitable habitat for the northern sagebrush lizard (shrub-steppe) and western painted turtle (riparian, surface

water, and wetland habitats) within the Solar Micrositing Area. Best management practices employed on-site in accordance with the Erosion and Sediment Control Plan (Exhibit I, Attachment I-1) are expected to result in minimal impacts to aquatic reptiles such as the western painted turtle. Per Site Certificate Conditions 130 and 131, implementation of a Hazardous Materials Management and Monitoring Plan and Spill Prevention, Control, and Countermeasure Plan will ensure measures are in place to avoid and minimize environmental effects of spills and hazardous materials. Use of machinery for clearing, grading, and trenching the Solar Components may cause some mortality of non-aquatic reptiles, such as northern sagebrush lizard. Impacts during operation will probably be limited to direct mortality caused by vehicles and are expected to be low.

8.2.2 Birds

Nine state sensitive bird species and two protected eagle species have the potential to occur within the analysis area and could be potentially impacted by the Solar Components (Table P-5). Other, non-sensitive bird species potentially occurring within the Solar Micrositing Area could also be impacted by the Solar Components. Direct habitat loss will occur from the development of the Solar Micrositing Area, and habitat fragmentation may reduce the functionality of this area for birds. However, most of the Solar Components will be located in disturbed habitat and an abundance of similar agricultural lands in the vicinity of the Solar Micrositing Area remain available to provide habitat for avian individuals potentially displaced.

Temporary impacts from noise and visual disturbance associated with the presence of personnel, vehicles, and equipment during construction could disrupt normal feeding or breeding activities or cause birds to avoid the area. Operations will have reduced levels of human activity compared to construction but could still cause birds to alter their typical behavior and/or avoid the area.

Unlike avian fatality data available for wind turbines, there have been limited standard fatality data associated with PV solar energy infrastructure collected and available across the country. The available data on avian mortality at utility-scale solar energy sites suggests mortality at PV facilities is low, compared to collisions occurring with other anthropogenetic infrastructure (e.g., wind turbines, communication towers, tall buildings). In a study by Kosciuch et al. (2020) that analyzed fatality monitoring data from 10 PV solar facilities in California and Nevada, a fatality estimate of 2.5 birds/MW/year was calculated, but this was reduced to an average annual fatality rate of 1.8 birds per MW per year when an outlier project was removed.

It is theorized that waterbirds confuse the reflective array of solar panels located near ground level to be a body of water and attempt to land on them, and other bird species may fly into the reflective panels like they would windows, unable to perceive the difference between the sky and the glass. The Kosciuch et al. (2020) study showed that water obligate bird fatalities were present in most of the studies (80 percent). Water obligates are species that depend on water for mobility and cannot take flight from land, while water associates are species that rely on water for foraging, reproduction, and/or roosting. Kosciuch et al. (2020) stated that the causal mechanism responsible for water obligate mortalities at PV facilities could not be concluded with their study, and their results were not predictive outside of the vicinity of the sites included in their study.

In a recent solar study that included six small solar arrays located next to Lake Michigan, no water obligate mortalities were recorded and only two water associate mortalities showed evidence of death caused by colliding with solar panels (Rodriguez et al. 2023). In addition, an analysis that summarized bird fatalities to date at PV solar facilities in Alberta, Canada, was conducted and found no correlation with water associate and water obligate mortalities being present at higher numbers than other avian species (Kosciuch et al. 2022).

The results from three publicly available studies from large-scale California PV facilities reported the avian taxonomic groups most highly represented as fatalities were passerines (49 percent), followed by doves/pigeons (22 percent), although loons and grebes ranked second at one facility (23 percent; WEST 2014). Passerines are "perching birds" that make up almost half of all bird species, so that high percentage could easily correlate with the high number of birds in that taxonomic group. When analyzing the fatality species composition, often the species with the largest populations spend most of their time close to the ground and inhabit landscapes with relatively low-growing vegetation or are habituated to human structures. These species often represent the highest number of fatalities at PV facilities (e.g., horned larks, western meadow larks, mourning doves, house sparrows, house finches, gray partridge; Kosciuch et al. 2020, Kosciuch et al. 2022, WEST 2014).

In Oregon, results of a fatality study at a 56-MW PV facility near Prineville detected only three bird fatalities during one year of standardized searches, including only two native birds: horned lark (*Eremophila alpestris*) and a dark-eyed junco (*Junco hyemalis*) (ODOE 2020). These findings, which are the first for the region in Oregon, imply that significant fatality events are unlikely at PV solar facilities in the area. However, low numbers of common ground-dwelling bird species fatalities are possible (ODOE 2020).

Although the fatality numbers from solar studies suggest the probability for waterbird fatality events associated with hitting solar panels is low, waterbirds may attempt to land on the solar panels at the Solar Components, which is located in the vicinity of the Columbia River, a known waterbird stop-over area, especially in times of poor weather and low visibility, and during nocturnal migration.

Artificial lighting has been shown to attract nocturnally migrating birds, resulting in collisions with structures such as communication towers, guy wires, and wind turbines. Research has shown that lighting at solar energy facilities can be designed to minimize that attraction, including using lights that are directed downward, have the lowest allowable intensity, and are on timers or motion sensors.

Interactions with overhead electrical systems have the potential to negatively affect birds, especially raptors, primarily through electrocutions and collisions. Electrocution on overhead electric systems is a primary cause of anthropogenic mortality for golden eagles in North America (Dwyer et al. 2020). Powerline collisions appear to be a less frequent source of mortality for raptors compared to electrocutions (Loss et al. 2014). Collisions with powerlines are possible; however, transmission lines will be constructed following the Avian Powerline Interaction Committee (APLIC) recommendations for collision avoidance (APLIC 2012). Powerline electrocution is not

expected at the Solar Components because all transmission lines will be constructed following the latest APLIC design standards (APLIC 2012), as specified in Site Certificate Condition 58.

The security perimeter fencing proposed for the Solar Components, estimated to total up to 31 miles of fence, is an additional collision hazard for birds. The security perimeter fencing will be chain-link and up to 8 feet in height with additional strands of barbed or razor wire on top.

During the 2024 survey effort, no nests of sensitive raptor species were observed in the analysis area. The only sensitive raptor species observed nesting during long-term raptor nesting surveys at the BCWF was the Swainson's hawk (state sensitive). Two great horned owl nests and three inactive nests were recorded during the 2024 raptor nest surveys (Attachment P-1). Most of the nests were associated with Emigrant Canyon in the northern portion of the analysis area. Construction activities occurring near nests during the sensitive breeding season could cause the nests to fail. The protective buffers and survey requirements identified in Site Certificate Condition 132 will be implemented for raptor nests that are determined to be active during construction.

Construction occurring during the breeding season (as early as February and lasting through August) could cause active nests to fail due to direct destruction of nests or nearby disturbance causing nest abandonment. Active nests of all native birds are protected under the Migratory Bird Treaty Act. As described above, nine state sensitive bird species and two eagle species may occur within the analysis area. Impacts to sensitive bird species with the potential to occur within the Solar Micrositing Area are addressed below. Measures described in Section 9.0 will be used to minimize or avoid these potential impacts.

- **Bald eagle (no state status, BGEPA-protected):** No bald eagle nests or bald eagle individuals were recorded during 2024 surveys (Attachment P-1). Bald eagles have been observed during avian use surveys for the BCWF. There is no suitable nesting habitat for the bald eagle within the analysis area. Bald eagle use of the Solar Components is expected to be mostly limited to migration and winter, when the species sometimes feeds on carrion (Buehler 2022). Although bald eagles may occasionally pass through the area, construction and operation of the Solar Components are not expected to adversely impact bald eagles.
- **Brewer's sparrow (state sensitive):** No Brewer's sparrows were recorded during 2024 surveys (Attachment P-1). Additionally, no Brewer's sparrows were detected during avian use surveys for the BCWF; a single individual was found during fatality monitoring for the BCWF (Table P-5). This species uses shrublands, generally with a canopy height of more than 5 feet. Despite the lack of detections, Brewer's sparrows could potentially occur in the limited shrub-steppe habitat within the Solar Micrositing Area. Impacts to appropriate habitat for this species during the construction and operation of the Solar Components include permanent impact to approximately 20.7 acres of Sagebrush Shrub-Steppe habitat, and temporary impact to approximately 0.3 acre of Sagebrush Shrub-Steppe habitat (Table P-6). Construction and operation of the Solar Components may result in the loss of suitable breeding and foraging habitat, potential nesting disturbance, and potential collision risks with vehicles, solar arrays, perimeter fencing, and overhead electrical lines. Sparrow fatalities have been documented at PV solar facilities (WEST 2014), although no Brewer's

sparrows have been reported specifically. Brewer's sparrows are a nocturnal migrant (ADW 2024); therefore, this species may be attracted to artificial lights produced by the Solar Components during migration, increasing collision risks.

- **Burrowing owl (state sensitive-critical):** No burrowing owls were recorded during 2024 surveys (Attachment P-1), but the species was detected during pre-construction surveys at the BCWF (Table P-5). The species inhabits wide-open, sparsely vegetated areas and could occur in grassland, shrubland, agricultural, and developed habitats within the Solar Micrositing Area, especially if burrowing mammals are present. Potential adverse impacts from the construction and operation of the Solar Components include the loss of foraging and breeding habitat, potential collapse of burrows and nesting disturbance, and potential collision risks with vehicles, solar arrays, perimeter fencing, and overhead collector lines during the breeding season. Burrowing owl fatalities have been documented at PV solar facilities (WEST 2014). This species is a nocturnal migrant and, therefore, may be attracted to artificial lights produced by the Solar Components during migration, increasing collision risks.
- **Common nighthawk (state sensitive):** No common nighthawks were recorded during the 2024 surveys (Attachment P-1), but one individual found during fatality monitoring for the BCWF (Table P-5). Common nighthawk is most commonly found in open or semi-open terrain. The species tends to roost and nest on gravel or sparsely vegetated grasslands (Brigham et al. 2020). It is an aerial insectivore that feeds in low-light conditions at dusk and dawn, often near water, but also on insects attracted to artificial lights (Brigham et al. 2020). Potential impacts to common nighthawk during construction and operation of the Solar Components include roosting and nesting disturbance and collision with vehicles, solar arrays, perimeter fencing, and overhead collector lines during the breeding season and collision with vehicles and turbine blades. Nighthawks have been documented at PV solar facilities (WEST 2014). This species is a diurnal migrant and should not be adversely impacted by artificial lighting at the Solar Components during migration.
- **Ferruginous hawk (state sensitive-critical):** No ferruginous hawks were recorded during 2024 surveys (Attachment P-1). Low numbers of ferruginous hawks have been detected during avian use surveys for the BCWF but no nests have been found during raptor nest surveys for the BCWF (Table P-5). The potential adverse impact to this species includes loss of foraging habitat, as no nests were observed within the analysis area. Limited hawk fatalities have been documented at PV solar facilities, and no ferruginous hawk fatalities specifically; therefore, the solar arrays should not create a collision risk to this species.
- **Golden eagle (BGEPA):** No golden eagles were recorded during 2024 surveys (Attachment P-1). Golden eagles were regularly detected during avian use surveys for the BCWF but no nests detected within the survey area during raptor nest surveys for the BCWF (Table P-5). The potential adverse impact to this species includes loss of foraging habitat. No golden eagle fatalities have been recorded at solar fatalities, and the species is assumed not to be at risk of colliding with solar arrays.

- **Grasshopper sparrow (state sensitive):** No grasshopper sparrows were recorded during the 2024 surveys (Attachment P-1), but grasshopper sparrows were regularly recorded during avian use surveys for the BCWF (Table P-5). This species uses dry grassland habitat, generally with low to moderate grass height and low percent shrub cover. It could potentially occur in the limited grassland habitat within the Solar Micrositing Area. Impacts to appropriate habitat for this species during the construction and operation of the Solar Components include permanent impact to approximately 4.2 acres of Grassland habitat and temporary impact to approximately 0.2 acre of Grassland habitat (Table P-6). Other potential adverse impacts from collision risks exist with vehicles, heavy equipment, solar arrays, perimeter fencing, and overhead collector line. Sparrow fatalities have been documented at PV solar facilities (WEST 2014). Grasshopper sparrow is also a nocturnal migrant (Hill and Renfrew 2018); therefore, this species may be attracted to artificial lights produced by the Solar Components during migration, causing additional collision risks.
- **Lewis's woodpecker (sensitive-critical):** No Lewis's woodpeckers were recorded during 2024 surveys (Attachment P-1) or during pre- or post-construction surveys at the BCWF (Table P-5). Lewis' woodpecker is associated with open forests, often at lower elevations, and nest in woodlands of the river valleys of eastern Oregon (Csuti et al. 2001). The Solar Micrositing Area does not provide breeding habitat, but the species has the potential to pass through the Solar Components during migration. As a diurnal migrant (Abele et al. 2004), this species will not be adversely impacted by artificial lighting. This species has also not been documented as a fatality at solar fatalities. Impacts to Lewis' woodpeckers from construction and operation of the Solar Components are anticipated to be minimal.
- **Loggerhead shrike (state sensitive):** One loggerhead shrike was recorded during 2024 surveys (Attachment P-1). The shrike was observed in Upland Trees habitat in the southern portion of the Solar Micrositing Area. Additionally, low numbers (one to two individuals) of loggerhead shrikes have been occasionally detected during avian use surveys for the BCWF. This species uses tall sagebrush for nesting and roosting, and forages in open areas with grasses and bare ground (OCS 2016). Potential adverse impacts to loggerhead shrike include habitat loss, nesting disturbance, and collisions associated with vehicles, solar arrays, perimeter fencing, and overhead collector lines. Loggerhead shrike fatalities have been documented at PV solar facilities, and this species is a nocturnal migrant (WEST 2014); therefore, this species may be attracted to artificial lights produced by the Solar Components during migration, increasing collision risks.
- **Long-billed curlew (state sensitive-critical):** No long-billed curlews were recorded during the 2024 surveys (Attachment P-1), but the species has been detected during avian use surveys for the BCWF (Table P-5). Long-billed curlew is typically found in open grasslands and could occur in grassland or agricultural habitats within the Solar Micrositing Area. Potential adverse impacts from construction and operation of the Solar Components include loss of potential nesting and foraging habitat as well as potential collision with the solar arrays, perimeter fencing, overhead collector line, and vehicles during the spring and

summer months. Long-billed curlew fatalities have been documented at PV solar facilities and this species is a nocturnal migrant (WEST 2014); therefore, this species may be attracted to artificial lights produced by the Facility during migration, creating additional collision risks. Additionally, long-billed curlew is susceptible to human disturbance during the breeding season, which can result in nest abandonment or disruption of brood-rearing (Dugger and Dugger 2002); construction of the Solar Components may adversely impact active breeding attempts if construction occurs in proximity to long-billed curlew during the breeding season.

- **Swainson's hawk (state sensitive):** No Swainson's hawk individuals or nests were recorded within the analysis area during the 2024 surveys. However, Swainson's hawk has been detected during avian use surveys for the BCWF and has been a regularly occurring nesting raptor species at the BCWF (Table 5). Swainson's hawk is an open-country specialist that forages extensively while in flight. Swainson's hawk is more likely to hunt in agricultural areas, such as hay and alfalfa fields, pastures, and grain crops than is most other raptor species (Bechard et al. 2020). Construction of the Solar Components may result in loss of foraging habitat and reduce nesting habitat if trees are removed. To prevent disturbance to nesting Swainson's hawk, the Certificate Holder will not conduct ground-disturbing activities within 0.25 mile of active Swainson's hawk nests during the nesting season, as described in Section 9. Limited hawk fatalities have been documented at PV solar facilities, and no Swainson's hawk fatalities specifically (WEST 2014); therefore, the solar arrays should not create a collision risk to this species.

8.2.3 Mammals

8.2.3.1 Bats

Five state sensitive bat species have the potential to occur within the analysis area: hoary bat, pallid bat, silver-haired bat, spotted bat, and Townsend's big-eared bat. Two state sensitive species (hoary bat and silver-haired bat) were detected during fatality monitoring at the BCWF (Table P-5). The timing and frequency of detections suggest that these species are relatively common and fly through much of the area during the late summer and fall months, concurrent with their migration period. The three additional state-sensitive bat species with the potential to occur in the analysis area—spotted bat (sensitive), pallid bat (sensitive), and Townsend's big-eared bat (sensitive, sensitive-critical)—were not detected during fatality surveys at BCWF. The Facility is not sited near typical breeding or roosting habitat for these species, and there is limited aquatic foraging habitat such as wetland, ponds, and slow-moving streams within the site boundary (Table P-4, Figure P-2). Additionally, construction activities will typically occur during daylight hours when bats are generally absent, and thus construction activities are not anticipated to disturb foraging bats.

Collision with solar panels and security fencing is a potential threat to bats. Post-construction bat mortality data at utility-scale PV solar energy sites are limited. Smallwood (2022) reviewed 18 California fatality monitoring reports from 1982 to 2018 and calculated an average fatality estimate of 0.06 bats/MW/year at PV solar arrays, 2.56 bats/kilometer/year along perimeter fences, and zero

fatalities associated with generation tie-in power lines. Any impacts to bats would most likely occur in late summer and fall, during the migratory period for tree-roosting bats. Insects may be attracted to lighting around structures, which may in turn attract bats to forage near Solar Components infrastructure. Thus, artificial lighting at night may increase the risk of collision fatalities. However, the potential for collision risk due to artificial night lights will be avoided and minimized, as described in Section 9.0. As a result, construction and operation of the Solar Components are anticipated to have minimal impact on these bat species during their migratory period.

9.0 Measures to Avoid, Reduce, or Mitigate Impacts – OAR 345-021-0010(1)(p)(G)

> *OAR 345-021-0010(1)(p) (G) A description of any measures proposed by the applicant to avoid, reduce, or mitigate the potential adverse impacts described in (F) in accordance with the general fish and wildlife habitat mitigation goals and standards described in OAR 635-415-0025 and a description of any measures proposed by the applicant to avoid, minimize, and provide compensatory mitigation for the potential adverse impacts described in (F) in accordance with the sage-grouse specific habitat mitigation requirements described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through 635-140-0025, and a discussion of how the proposed measures would achieve those goals and requirements; and*

This section describes measures to avoid, minimize, and mitigate for impacts to state sensitive and other wildlife species and their habitats, and describes how those measures are expected to achieve the habitat mitigation goals of OAR 635-415-0025. The Solar Micrositing Area does not occur in sage-grouse habitat; therefore, the mitigation requirements associated with the Greater Sage-Grouse Conservation Strategy for Oregon do not apply.

9.1 Avoidance and Minimization

9.1.1 Solar Components Design

Measures employed during design of the Solar Components to avoid and minimize impacts to fish and wildlife habitat, as well as state sensitive species, included the following:

- To the extent feasible, Solar Components have been sited on previously disturbed habitat, including cropland and developed areas thereby minimizing impacts to other habitats more suitable for sensitive and other wildlife species, including the ODFW conservation strategy habitats, grasslands, sagebrush, and wetlands. This siting effort is expected to minimize impacts to wildlife generally and to sensitive species in particular.
- PGE will construct all overhead transmission lines following PGE's avian-safe design standards which are consistent with the suggested practices manual published by APLIC (APLIC 2012). This is expected to minimize the risk of electrocution and collision to all bird

species, and to eagles, Swainson's hawks, and ferruginous hawks in particular. Per Site Certificate Condition 52, the Certificate Holder will implement permanent down-shield lighting at the substations and operations and maintenance buildings. Outdoor lighting will be sited, limited in intensity, shielded, and hooded in a manner that prevents the lighting from projecting onto adjacent properties and roadways. This is expected to minimize the risk of avian collision with Facility infrastructure for all birds and bats in general, but to nocturnal migrant species (including Brewer's sparrows and grasshopper sparrows) and to the crepuscular, insectivorous common nighthawk in particular. Down-shield lighting will be in place year-round, mitigating impacts to birds and bats both during migration and while foraging for insects at any time of the year.

9.1.2 During Construction and Operation

During construction and operation of the Solar Components, measures for avoiding and reducing impacts to wildlife and plants, including state sensitive species, will be implemented as follows:

- Per Site Certificate Condition 52, the Certificate Holder will use the minimum lighting necessary for nighttime construction, repairs, or emergencies. The lighting will be directed downward to limit the illumination to the work area.
- Per Site Certificate Condition 49, the Certificate Holder shall control the introduction and spread of noxious weeds in accordance with the methods, monitoring procedures and success criteria set forth in the Noxious Weed Plan (Attachment P-4).
- Per Site Certificate Condition 62, the Certificate Holder shall restore areas that are temporarily disturbed during construction in accordance with the methods, monitoring procedures and success criteria set forth in the amended Revegetation Plan (Attachment P-2).
- Per Site Certificate Condition 61, an amended Wildlife Monitoring and Mitigation Plan (WMMP) is included as Attachment P-5. Components of the WMMP applicable to the Solar Components include ongoing environmental training for Solar Components personnel and reporting requirements governing incidental wildlife injuries and deaths observed at the Solar Components and raptor nest monitoring. Raptor nest monitoring performed for BCWF covers the entirety of the Solar Micrositing Area and this RFA does not propose any modifications to the methods or timing of future raptor nest monitoring efforts associated with BCWF and the Solar Components.
- Per Site Certificate Condition 132, the Certificate Holder will perform pre-construction raptor nest surveys to determine the location of active raptor nests. Survey methods shall be approved by ODFW. Condition 132 includes nest buffers and seasonal restriction dates within which the certificate holder would not engage in high-impact construction activities (defined in Condition 132).
- Per Site Certificate Condition 31, during construction of the underground collector system, the Certificate Holder shall open the smallest necessary sections of trench during each day

of construction and backfill the trenches as soon as is practical after power lines have been set in the trenches. Doing so is expected to safeguard animals from falling into the trenches and becoming trapped.

9.1.3 Environmental Training and Sensitive Resource Awareness

Per Condition 57, the Certificate Holder will provide environmental training to construction and operation staff to avoid impacts to sensitive species, their habitat, review exclusion areas/seasonal avoidance buffers, and other environmental issues. Training includes reporting injured or dead wildlife discovered incidental to construction and maintenance operations in accordance with the procedures described in the amended WMMP (Attachment P-5).

9.1.4 Avian Protection

The Certificate Holder will implement the following avian protection measures:

- Condition 132 – nest buffers and seasonal restrictions.
- Condition 58 – design and construct all aboveground transmission line structures following the practices suggested by APLIC.
- Company-wide Avian Protection Plan (PGE 2020).
    - Avian-safe design, consistent with Condition 58.
    - Consideration of risk factors for avian collisions and use of flight diverters, if warranted.
    - Internal reporting system for tracking avian mortalities.
- Amended WMMP (Attachment P-5).
    - Includes a Wildlife Incident Response and Handling System designed to respond to avian and bat casualties found by construction and maintenance personnel during construction and operation of the Solar Components.
    - Raptor nest monitoring and nest buffers and seasonal restrictions, consistent with Condition 132.

9.2 Mitigation

After avoidance and minimization measures have been implemented, some impacts to wildlife habitat and sensitive species will remain. Permanent habitat loss will be mitigated for according to ODFW Habitat Mitigation Policy goals and standards, as described in the Solar Micrositing Area HMP (Attachment P-3). Included in this plan are measures for protecting and enhancing sufficient acreages of wildlife habitat to meet the mitigation goals and standards for those habitat subtypes and categories temporarily and permanently impacted by the Solar Components. The mitigation will be in place for the duration of the Solar Components.

10.0 Monitoring Program – OAR 345-021-0010(1)(p)(H)

OAR 345-021-0010(1)(p)(H) A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in (G).

The Certificate Holder will conduct revegetation monitoring as described in the amended Revegetation Plan (Attachment P-2). The Certificate Holder will conduct wildlife monitoring and habitat mitigation monitoring as described in the amended WMMP (Attachment P-5) and the Solar Micrositing Area HMP (Attachment P-3). Monitoring for noxious weeds will occur per the Solar Micrositing Area Noxious Weed Plan (Attachment P-4).

No formal monitoring program is applicable to some of the measures discussed in Section 9.0. For instance, other than through professional review of the information included in this RFA, there is no monitoring program for design of the Solar Components. Similarly, adherence to speed limits will be expected but not formally monitored.

Environmental monitors will be on-site during construction to support implementation of the environmental training and sensitive resource awareness.

11.0 Conclusion

As part of the RFA and Solar Components siting process, the fish and wildlife habitats within the analysis area were identified and categorized pursuant to OAR 635-415-0025. Based on survey results, the Solar Components were adjusted to avoid all impacts to Category 1 habitat and to minimize impacts to Category 2, 3, and 4 habitats. Unavoidable habitat impacts will be mitigated consistent with OAR 635-415-0025.

Therefore, based on the information provided in this exhibit, there is sufficient evidence upon which the Council may find that the design, construction, and operation of the Solar Components, taking into account the proposed mitigation measures, are consistent with the fish and wildlife mitigation goals and standards of OAR 635-415-0025. Accordingly, the Certificate Holder demonstrates compliance with OAR 345-022-0060.

12.0 References

Abele, S.C., V.A. Saab, and E.O. Garton. 2004. Lewis's Woodpecker (*Melanerpes lewis*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5182072.pdf

Adamus, P.R., and R. Scalf. 2021. Update to the Oregon Breeding Bird Atlas. https://oregonbirding.org/obba-update/

ADW (Animal Diversity Web). 2024. Brewer's sparrow (*Spizella breweri*) species account. https://animaldiversity.org/accounts/Spizella_breweri/. Accessed October 2024.

APLIC (Avian Powerline Interaction Committee). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.

Bechard, M. J., C. S. Houston, J. H. Saransola, and A. S. England. 2020. Swainson's Hawk (*Buteo swainsoni*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.swahaw.01

Buehler, D. A. 2022. Bald Eagle (*Haliaeetus leucocephalus*), version 2.0. In Birds of the World (P. G. Rodewald and S. G. Mlodinow, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.baleag.02

Csuti, B., T.A. O'Neil, M.M. Shaughnessy, E.P. Gaines, and J.C. Hak. 2001. *Atlas of Oregon Wildlife*, 2nd edition. Oregon State University Press, Corvallis. 525 pp.

Dugger, B. D., and K. M. Dugger. 2002. Long-billed Curlew (*Numenius americanus*), version 2.0. In *The Birds of North America* (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.

eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. https://ebird.org/map. Accessed October 2024.

Hill, J.M. and R.B. Renfrew. 2018. Migratory patterns and connectivity of two North American grassland bird species. *Ecology and Evolution* 9(1):680-692. https://doi.org/10.1002/ece3.4795. Accessed October 2024.

Kosciuch, K., D. Riser-Espinoza, M. Gerringer, and W. Erickson. 2020. A summary of bird mortality at photovoltaic utility scale solar facilities in the Southwestern U.S. PLoS ONE 15(4): e0232034. https://doi.org/10.1371/journal.pone.0232034. Accessed October 2024.

Kosciuch, K., D. Riser-Espinoza, K. Russell, J. Sullivan, and N. Bartok. 2022. Alberta Regional Solar Fatality Analysis. Summarized the incidence of water-associated and water obligate bird fatalities observed to date at PV solar facilities in Alberta, Canada.

NRCS (Natural Resources Conservation Service). 2024. Web Soil Survey. Available online at: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed August 2024.

ORBIC (Oregon Biodiversity Information Center). 2024. Element Occurrence Record Digital Data Set for rare, threatened, or endangered species for the state of Oregon, May 2, 2024. ORBIC, Institute for Natural Resources. Portland State University, Portland, Oregon. Accessed July 2024.

OCS (Oregon Conservation Strategy). 2016. Oregon Department of Fish and Wildlife, Salem, Oregon. http://oregonconservationstrategy.org.

ODA (Oregon Department of Agriculture). 2022. Noxious Weed Policy and Classification System. Noxious Weed Control Program. Salem, OR. https://www.oregon.gov/oda/shared/Documents/Publications/Weeds/NoxiousWeedPolicyClassification.pdf. Accessed June 2024.

ODFW (Oregon Department of Fish and Wildlife). 2008. The Mitigation Category Flow Chart. Available online at: https://www.dfw.state.or.us/habitat/mitigation/mitigation_category_flow.pdf

ODFW. 2013. Deer and Elk Winter Range for Eastern Oregon. GIS Data Files. Publish Date: 1/9/2013. https://nrimp.dfw.state.or.us/DataClearinghouse/default.aspx?p=202&XMLname=885.xml.

ODFW. 2021. Sensitive Species List. Revised October 2021. https://www.dfw.state.or.us//wildlife/diversity/species/docs/Sensitive_Species_List.pdf. Accessed September 2023.

ODFW. 2023. Priority Wildlife Connectivity Areas Web Map. Oregon Department of Fish and Wildlife. Salem, Oregon. https://experience.arcgis.com/experience/6979b6598f904951bd0af1821e1595f1/.

ODFW. 2024. Compass Online Fish and Wildlife Mapping Tool. http://dfw.state.or.us/maps/compass/. Accessed September 2024.

ODOE (Oregon Department of Energy). 2020. Montague Wind Power Facility - Final Order on Request for Amendment 5. September 25, 2020.

Orion Sherman County Wind Farm, LLC. 2005. Site Certificate Application for the Biglow Canyon Wind Farm. Submitted to the Oregon Energy Facility Siting Council. October 2005.

OSULP and INR (Oregon State University Libraries & Press and Institute for Natural Resources). 2021. Oregon Explorer. https://oe.oregonexplorer.info/wildlife/wildlifeviewer/. Accessed October 2024.

PGE (Portland General Electric Company). 2020. Avian Protection Plan. Revision 2. Prepared by PGE Environmental Services.

PGE. 2023. Biglow Canyon Wind Farm Wildlife Monitoring, Habitat Mitigation and Revegetation 2022 Monitoring Report. Prepared by PGE Environmental Services. April 2023.

Rodriguez, M., D. Riser-Espinoza, W. Erickson, and M. Tuma. 2023. Post-Construction Monitoring at the Two Creeks Solar Project. Manitowoc County, Wisconsin.

SCNWD (Sherman County Noxious Weed District). 2024. Sherman County Noxious Weeds. https://www.co.sherman.or.us/noxious-weeds-sherman-county/. Accessed June 2024.

Smallwood, S. 2022. Utility-Scale Solar Impacts to Volant Wildlife. Journal of Wildlife Management. Vol.86, Issue 4. https://doi.org/10.1002/jwmg.22216

StreamNet. 2024. Fish distribution data for All Fish Species. GIS Data. Portland (OR). https://www.streamnet.org/home/data-maps/sn-mapper/. Accessed October 2024.

USFS and BLM (U.S. Forest Service and U.S. Bureau of Land Management). 1998. Survey and Manage Survey Protocol – Vascular Plants.

USFWS (U.S. Fish and Wildlife Service). 2024. National Wetlands Inventory. Wetlands Data by State, Oregon. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/. Accessed August 2024.

USGS (U.S. Geological Survey). 2024. National Hydrography Dataset. Available online at: http://datagateway.nrcs.usda.gov/. Accessed: August 2024.

WEST (Western EcoSystems Technology, Inc.). 2005. Wildlife and Habitat Baseline Study for the Proposed Biglow Canyon Wind Power Project, Sherman County, Oregon. March 2004 - August 2005. Prepared for Orion Energy LLC., Oakland, California. Prepared October 2005.

WEST. 2009. Biglow Canyon Wind Farm Phase I Post-Construction Avian and Bat Monitoring First Annual Report Sherman County, Oregon. January 2008 – December, 2008. Prepared for Portland General Electric Company. Prepared April 2009.

WEST. 2010. Biglow Canyon Wind Farm Phase I Post-Construction Avian and Bat Monitoring Second Annual Report, Sherman County, Oregon. January 26, 2009 – December 11, 2009. Prepared for Portland General Electric Company. Prepared April 2010.

WEST. 2012a. Biglow Canyon Wind Farm – Phase III, Year 1 Avian and Bat Monitoring Report, Sherman County, Oregon. September 13, 2010 – September 9, 2011. Prepared for Portland General Electric Company. Prepared April 2012.

WEST. 2012b. Biglow Canyon Wind Farm Phase II, Amended Year 1 Post-construction Avian and Bat Monitoring Report, Sherman County, Oregon. September 10, 2009 – September 12, 2010. Prepared for Portland General Electric Company. Original report prepared January 2011. Amended June 2012.

WEST. 2012c. Biglow Canyon Wind Farm Phase II, Year 1 Post-construction Avian and Bat Monitoring Report, Sherman County, Oregon. September 13, 2010 – September 15, 2011. Prepared for Portland General Electric Company. Prepared April 2012.

WEST. 2013. Biglow Canyon Wind Farm – Phase III, Year 2 Avian and Bat Monitoring Report, Sherman County, Oregon. September 19, 2011 – September 18, 2012. Prepared for Portland General Electric Company. Prepared April 2013.

WEST. 2014. Sources of Avian Mortality and Risk Factors Based on Empirical Data from Three Photovoltaic Solar Facilities. June 2014.

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Figures

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Biglow Canyon Wind Farm Request for Amendment #4

Figure P-1
Analysis Area

SHERMAN COUNTY, OR

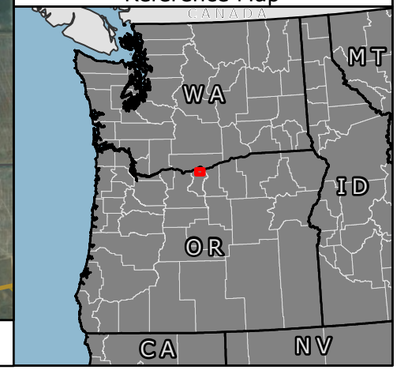
Rufus
Wasco
97
206
84
30
Gilliam County
Sherman County

- Solar Micrositing Area
- Analysis Area (0.5-mile Buffer)
- County Boundary
- City/Town
- Interstate Highway
- US Highway
- State Highway
- Local Roads
- Deer Winter Range
- Priority Wildlife Connectivity

TETRA TECH

PGE

Reference Map



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Biglow Canyon Wind Farm Request for Amendment #4

Figure P-2 Habitat Types and Subtypes

SHERMAN COUNTY, OR

- Solar Micrositing Area
- Analysis Area (0.5-mile Buffer)
- County Boundary
- City/Town
- Interstate Highway
- US Highway
- State Highway
- Local Roads

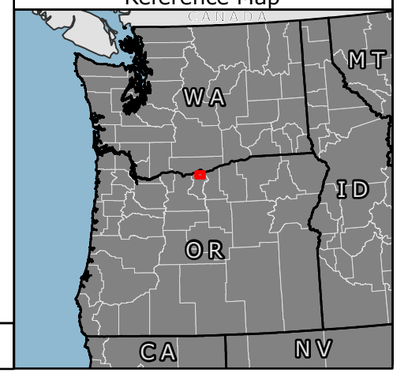
Habitat Type; Habitat Subtype

- Agriculture; Irrigated Cropland
- Agriculture; Non-Irrigated Cropland
- Developed
- Grassland-steppe; Grasslands
- Riparian; Riparian Trees
- Shrub-steppe; Sagebrush Shrub-Steppe
- Surface Water; Ephemeral Streams
- Surface Water; Intermittent Streams
- Surface Water; Ponds
- Upland; Upland Trees
- Wetland; Freshwater Emergent Wetland

TETRA TECH

PGE

Reference Map



Rufus
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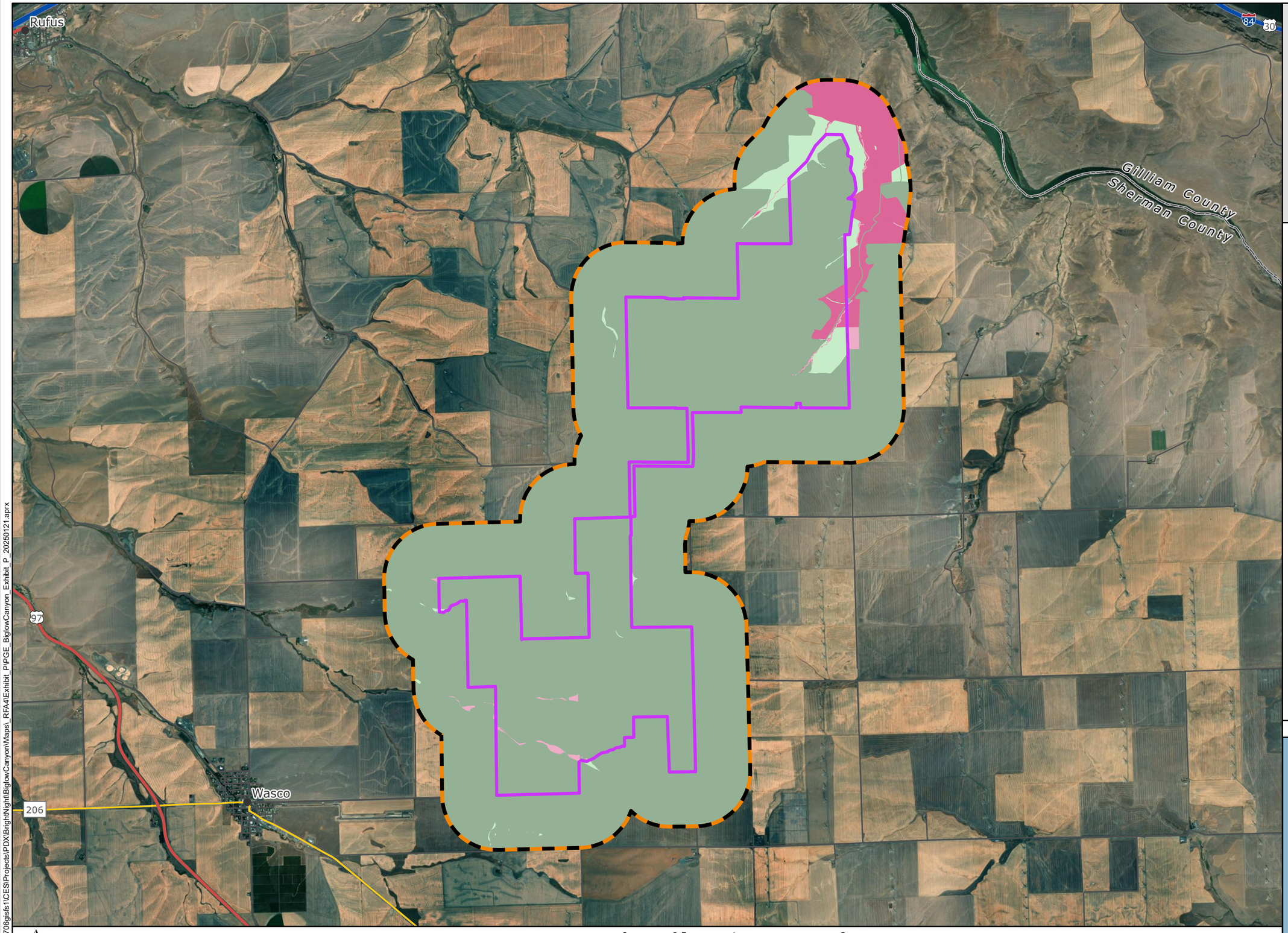
Biglow Canyon Wind Farm Request for Amendment #4

Figure P-3
Habitat Categories

SHERMAN COUNTY, OR



- Solar Micrositing Area
- Analysis Area (0.5-mile Buffer)
- County Boundary
- Interstate Highway
- US Highway
- State Highway
- Local Roads
- City/Town

Habitat Category

- 2
- 3
- 4
- 6

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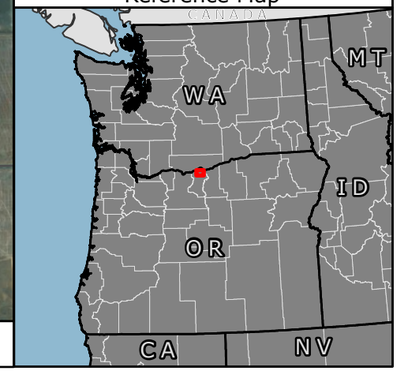
Reference Map



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Attachment P-1. Biological Survey Reports

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2024 Habitat Categorization and Special Status Wildlife Survey Report

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2024 Habitat Categorization and Special Status Wildlife Survey Report

Biglow Canyon Wind Farm
Request for Amendment 4
November 2024

Prepared for

BRIGHTNIGHT

BIGL bn, LLC

Prepared by

TETRA TECH

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Acronyms and Abbreviations

AC	alternating current
BCWF or Existing Facility	Biglow Canyon Wind Farm
BIGL	BIGL bn, LLC
Certificate Holder / PGE	Portland General Electric Company
Council / EFSC	Oregon Energy Facility Siting Council
GIS	geographic information system
IPaC	Information for Planning and Consultation
MW	megawatt
OAR	Oregon Administrative Rule
ODFW	Oregon Department of Fish and Wildlife
ORBIC	Oregon Biodiversity Information Center
RFA	Request for Amendment
Site Certificate	Site Certificate to Amendment 3
Solar Components	photovoltaic solar energy generation and battery storage
Survey Area	2024 Habitat Categorization Survey Area
Tetra Tech	Tetra Tech, Inc.
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service

1.0 Introduction

The Portland General Electric Company (PGE or Certificate Holder) is submitting a Request for Amendment (RFA) 4 to the Site Certificate on Amendment 3, issued October 31, 2008 (Site Certificate) for the Biglow Canyon Wind Farm (BCWF or Existing Facility) to add photovoltaic solar energy generation and battery storage (Solar Components) to the operating BCWF in Sherman County, OR.

BCWF, owned and operated by PGE, is located within an approved site boundary comprising approximately 25,000 acres, approximately 2.5 miles northeast of the town of Wasco in Sherman County, Oregon (Figure 1). The BCWF operates under the Site Certificate from the Oregon Energy Facility Siting Council (Council or EFSC) as administered by the Oregon Department of Energy. BCWF currently consists of 217 wind turbines, with a maximum blade tip height of 445 feet, and a peak generating capacity of 450 megawatts (MW).

In RFA 4, PGE proposes to add up to 385 MW alternating current (AC) generating capacity from photovoltaic solar arrays and 375 MW in battery storage capacity. RFA 4 seeks to expand the BCWF site boundary to include the Solar Components in portions of the existing site boundary and in the proposed expanded site boundary (together, Solar Micrositing Area or RFA 4 Site Boundary).

The Solar Micrositing Area is approximately 3,980 acres and provides a conservative estimate of the maximum area needed for development, micrositing, and temporary disturbances from the Solar Components during construction, rather than the anticipated disturbance footprint. Solar Components will include solar arrays, inverters, battery energy storage system facilities and their subcomponents (i.e., inverters), two collector substations, a total of approximately 3 miles of 230-kilovolt generation tie transmission line, medium voltage collector lines, operations and maintenance structures, site access roads, internal roads, perimeter fencing, facility entry gates, and temporary laydown areas. The maximum generating capacity from the Solar Components will be 385 MW AC and construction may take place in phases.

PGE will own and operate the Solar Components as a part of the BCWF, which, to date, have been developed by BIGL bn, LLC (BIGL). BIGL, in its capacity as the project developer, supports PGE in this RFA 4 and may construct and temporarily operate the Solar Components on behalf of PGE under a Build-Transfer Agreement. Tetra Tech Inc. (Tetra Tech) is providing support to PGE and BIGL through preparation of RFA 4.

This survey report presents the methods and results of the 2024 habitat categorization and special status wildlife surveys conducted by Tetra Tech for the Solar Micrositing Area. The objective of this survey was to map and classify habitat according to Oregon Department of Fish and Wildlife (ODFW) guidelines set forth in Oregon Administrative Rule (OAR) 635-415-0025 and identify the presence of special status wildlife species and their habitats.

2.0 Methods

Prior to conducting field surveys, Tetra Tech conducted a desktop assessment including a review of existing information regarding habitat types and special status species with the potential to occur within the Solar Micrositing Area. The term "special status species" includes federal and state endangered, threatened, proposed, and candidate fish, wildlife, and plant species, as well as state sensitive wildlife species with distribution in Sherman County. Special status species also include eagles. Attachment 1 includes a list of special status species with the potential to occur in the 2024 Habitat Categorization Survey Area (Survey Area; defined in Section 2.1 below). This report focuses on special status wildlife species; special status plant species are addressed in a separate report. Nests of raptor species not considered special status wildlife are addressed in a separate report.

Information pertaining to federally listed species was obtained from the U.S. Fish and Wildlife Service (USFWS) Information for Planning, and Consultation (IPaC; USFWS 2024) database and site-specific records of sensitive species and habitat occurrences was received from the Oregon Biodiversity Information Center (ORBIC; ORBIC 2024). Other resources consulted during the desktop assessment included the National Land Cover Database, aerial photography, the original application materials for the BCWF, the Oregon Conservation Strategy (2016), and the ODFW Compass mapping tool. The Sherman County Comprehensive Plan (Goal 5) was also reviewed to determine the potential for big game and threatened and endangered species habitat, and eagle or other sensitive bird nesting habitats to occur within the Solar Micrositing Area.

2.1 Survey Area

Figure 1 shows the Solar Micrositing Area of approximately 3,980 acres and the slightly larger Survey Area. The Survey Area covered 4,636 acres including the entire Solar Micrositing Area and some additional lands that have since been omitted from the Solar Micrositing Area. The southern portion of the Survey Area is approximately 1.5 miles east of the town of Wasco, and the northern portion of the Survey Area is approximately 1 mile southwest of the John Day River, in Sherman County, Oregon (Figure 1).

2.2 Habitat Categorization

The objective of conducting surveys was to categorize habitats per the habitat categories set forth in OAR 635-415-0025 (ODFW's Fish and Wildlife Mitigation Policy) and assign habitat subtypes consistent with the habitat subtypes developed during permitting of the BCWF.

The ODFW Fish and Wildlife Habitat Mitigation Policy provides a framework to categorize habitats based on type, quality, availability, and usefulness/importance to wildlife, and establishes mitigation goals and implementation standards for each. Table 1 defines each of the six habitat category types as presented in the ODFW Habitat and Wildlife Mitigation Policy.

Table 1. Habitat Categorization Types

Category Type	Definition[1]	Mitigation Goal
1	Irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.	The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality.
2	Essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population or unique assemblage.	The mitigation goal if impacts are unavoidable is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality.
3	Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.	The mitigation goal is no net loss of either habitat quantity or quality.
4	Important habitat for fish and wildlife species.	The mitigation goal is no net loss of either habitat quantity or quality.
5	Habitat for fish and wildlife having high potential to become either essential or important habitat.	The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality.
6	Habitat that has low potential to become essential or important habitat for fish and wildlife.	The mitigation goal is to minimize impacts.
1. Source: OAR 635-415-0025.		

Attachment 2 includes a habitat matrix that defines the habitat subtypes and the corresponding habitat categories in which each habitat subtype may fall based on proximity to wildlife resources and/or vegetation composition.

Habitat categorization surveys were conducted within the Survey Area concurrently with special status wildlife surveys. Habitat mapping was performed within a minimum of 1 acre mapping unit (except for specialized habitat such as cliffs or rock outcrops). These surveys were conducted by one field biologist familiar with vegetation of the Columbia Plateau Ecoregion and were scheduled during the growing season to aid in identification of vegetative species.

During surveys, meandering transects were walked by a biologist to categorize the composition and structure of habitat within the Survey Area by noting the dominant vegetation, presence of large trees, existing disturbance, or other habitat features such as shrub and grass composition and density. Each polygon was then assigned a habitat type, subtype, and habitat quality category that was guided by the habitat categorization for the BCWF. Habitat was classified into categories by quality per the ODFW Habitat Mitigation Policy. Spatial information was recorded on Samsung Galaxy tablets using the FieldMaps application; Attachment 3 includes the habitat form that was filled out during surveys to describe habitat category, type, and subtype. The biologist reviewed

high-resolution aerial photographs to locate and visit areas with unique vegetation or habitat features. Habitat types and categories were not assigned to wetlands or waters in the field as they were derived from data collected during wetland and water surveys.

Following the habitat categorization surveys, the digitized habitat boundaries were downloaded and processed in geographic information system (GIS) software, and the data were incorporated into spatial data. Data were then reviewed for quality control and assurance.

2.3 Special Status Wildlife

The objective of the wildlife survey was to document the presence of any special status species within the Survey Area, as well as general wildlife species that may occur. Special status species include species protected by the Endangered Species Act (7 United States Code [U.S.C.] 136), the Bald and Golden Eagle Protection Act (16 U.S.C. 668–668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and ODFW (2021b).

Wildlife surveys were conducted by a field biologist familiar with fish and wildlife species of the Columbia Plateau Region and were scheduled to begin early in the morning and continue through late afternoon to allow observations of species most active at dawn and late afternoon (e.g., mule deer [*Odocoileus hemionus*]). Additionally, survey dates were planned to coincide with the period of highest biological activity of neotropical migrant and breeding birds, foraging and breeding wildlife species, and other taxa. During surveys, the biologist walked meandering transects through non-agricultural areas within the Survey Area, searching (scanning and listening) for wildlife species and recognizable signs of wildlife (e.g., scat, tracks, burrows and nests). Agricultural areas were surveyed by visually scanning and listening for wildlife from accessible roads or bordering non-agricultural lands. During surveys, the biologist documented the location of special status species, or recognizable sign, and recorded the number of individuals and their behavior, if observed. Special habitats and unique features (i.e., cliffs, ponds, talus slopes, rock outcrops, raptor nests, and big game) were also documented if encountered.

Following field surveys, the digitized data were downloaded and processed using GIS software and reviewed for quality control and assurance.

3.0 Results

3.1 Habitat

Targeted, field-based habitat categorization surveys were performed from June 10-12, 2024, within the Survey Area concurrently with special status wildlife surveys. These surveys determined habitat types and subtypes as shown in Table 2 and displayed on Figure 2. Land use in the Survey Area consists of existing wind turbines and associated gravel turbine pads and access roads, dryland wheat fields, grassland, and ephemeral drainages (Table 2). Photos of select habitat types and subtypes are provided in Attachment 4.

Table 2. Habitat Categories, Types, and Subtypes within the Survey Area

Habitat Category	Habitat Type	Habitat Subtype	Acreage within Survey Area	Category Subtotal
Category 2	Riparian	Intermittent Streams/Riparian Trees	11.9	11.9
Category 3	Upland	Upland Trees	20.6	70.0
	Shrub-steppe	Sagebrush Shrub-steppe	49.4	
Category 4	Grassland-steppe	Grasslands	94.5	94.5
Category 6	Agriculture	Irrigated Cropland	53.1	4,459.4
		Non-irrigated Cropland	4,343.2	
	Developed		63.3	
		Total	**4,635.9**	**4,635.9**
Note: Totals may not sum exactly due to rounding.				

The most prominent habitat category in the Survey Area was Category 6, Agriculture habitat type, which included both Irrigated and Non-irrigated Croplands (4,396 acres), and Developed habitat subtypes (63 acres), totaling 96 percent of the Survey Area. The remaining 4 percent contained Category 4 Grasslands habitat subtype (95 acres), Category 3 Sagebrush Shrub-steppe (49 acres) and Upland Trees (21 acres) habitat subtypes, as well as Category 2 Intermittent and Riparian Tree habitat subtype (12 acres; Table 2; Figures 2 and 3).

3.1.1 Category 6

The Category 6 habitat is dominated by the Agriculture habitat type, which primarily contains the habitat subtype of Non-irrigated Croplands as well as one small area of Irrigated Cropland. The Non-irrigated Croplands consisted of 4,343 acres of active dryland wheat and barley fields, as well as fallow fields (Photos 1 and 3 in Attachment 4). The Irrigated Croplands consisted of one fallow and one active barley field, totaling 53 acres (Photo 4 in Attachment 4).

Additionally, approximately 63 acres of Category 6 habitat was classified as Developed, consisting of residences, farm buildings, farm equipment storage and staging areas, farming materials, corrals, turbine strings, paved and gravel county roads, pastures, abandoned buildings, a substation and transmission line, and a rock quarry (Photos 5 to 7 in Attachment 4).

3.1.2 Category 4

The Category 4 Grasslands-steppe contained one habitat subtype: Grasslands. This habitat consisted of a high percentage of non-native plant species. The dominant plants in this habitat were cereal rye (*Secale cereale*) and downy brome (*Bromus tectorum*), with some traces of native green rabbitbrush (*Chrysothamnus viscidiflorus*), balsamroot (*Asteraceae* spp.), wild buckwheat (*Eriogonum ovalifolium*), squirreltail (*Elymus elymoides*), and tall wheatgrass (*Thinopyrun elongatum*; Photos 8 and 9 in Attachment 4). Category 4 habitat is defined as "important habitat."

3.1.3 Category 3

The Category 3 habitats contained two habitat types, Shrub-steppe and Upland. Both habitat types contain one subtype each: Sagebrush Shrub-steppe and Upland Trees. The Sagebrush Shrub-steppe subtype consisted of moderately disturbed areas with a mix of natives and non-natives and a minor to moderate shrub component. This habitat was dominated by downy brome, followed by basin big sagebrush (*Artemisia tridentata)* and grey rabbitbrush (*Ericameria nauseosa*.)*.* One mapped area was dominated by an unidentified annual grass, as well as bluebunch wheatgrass (*Pseudoroegneria spicata*), mature grey rabbitbrush, six-week fescue (*Vulpia octoflora*), sedum (*Crassulaceae* spp.), bulbous bluegrass (*Poa bulbosa*), and sagebrush (*Artemisia* spp.) on the hill tops (Photos 10 and 11 in Attachment 4).

The Upland Trees subtype consisted mostly of live black locust (*Robinia pseudoacacia*) trees and snags containing an understory of downy brome, squirreltail, tall wheatgrass, sagebrush, and rabbitbrush (Photo 12 in Attachment 4).

3.1.4 Category 2

Category 2 Riparian contained a habitat subtype of Intermittent Streams/Riparian Trees and consisted of cattails (*Typhalatfolia*), reed canarygrass (*Phalaris arundinacea*), cereal rye, willow (*Salix exigua*), Russian olive (*Elaeagnus angustifolia*), cottonwood (*Populus trichocarpa.*), stinging nettle (*Urtica dioica*) and poison hemlock (*Conium maculatum*) in varying densities (Photos 16 and 17 in Attachment 4).

3.2 Special Status Wildlife Species

Concurrently with habitat surveys on June 10-12, 2024, the biologist documented the occurrence of wildlife species and maintained a running list of wildlife individuals and sign observed in the vicinity of the Solar Components (Attachment 5).

Review of IPaC and ORBIC data returned no occurrences of special status wildlife within the Survey Area. No federal or state endangered, threatened, proposed, or candidate species were observed during the survey. One Oregon special status species, a loggerhead shrike (*Lanius ludovicianus*, state-sensitive) was observed within the Survey Area (Figure 4). According to Holmes and Thibodeaux (2014), the loggerhead shrike breeds in a variety of shrubland and open woodland habitats, but relies on big sagebrush plant communities and breeds primarily in this habitat, which is threatened by high-intensity fires and conversion to agriculture.

4.0 Summary and Discussion

The habitat in the Survey Area was primarily classified as Category 6 Agriculture and Developed lands. The uncultivated and undeveloped portions of the Survey Area were classified as Category 4 Grasslands, Category 3 Sagebrush Shrub-steppe and Upland Trees habitats, or Category 2

Intermittent Streams/Riparian Trees habitat. The Category 2, 3, and 4 habitats provide essential and important wildlife habitat that are limited within the Survey Area.

The mitigation goal for Category 2 habitat, if impacts are unavoidable, is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality. The mitigation goal for Category 3 habitat is no net loss of either habitat quantity or quality. The mitigation goal for Category 4 habitat is no net loss of habitat quantity or quality and the mitigation strategy is in-kind, in-proximity mitigation. The mitigation goal for Category 6 habitat is to minimize impact and the mitigation strategy is to minimize direct habitat loss and avoid off-site impacts. Mitigation is typically not required for impacts to Category 6 habitat.

One special status species, the loggerhead shrike, was documented during surveys. This species is likely to use the Shrub-steppe habitat within the Survey Area during breeding and/or migration. No federal or state threatened, endangered, or candidate species were observed in the Survey Area.

5.0 References

Holmes, A.L., and B. Thibodeaux. 2014. Population Status, Distribution, and Nesting Success of Loggerhead Shrikes in the Boardman Conservation Area, Boardman, Oregon, 2013. Prepared for The Nature Conservancy, Portland, Oregon by Northwest Wildlife Science, LLC. Available online at: https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/oregon/deserts/cbg/wildlife/Documents/LOSH_2013_Report_Final_editted_jr.pdf. Accessed July 2024.

ODFW (Oregon Department of Fish and Wildlife). 2021a. Oregon Department of Fish and Wildlife Sensitive Species List. Available online at: https://www.dfw.state.or.us/wildlife/diversity/species/docs/Sensitive_Species_List.pdf. Accessed July 2024.

ODFW. 2021b. Threatened, Endangered and Candidate Fish and Wildlife Species, Revised October 2021. Available online at: https://www.dfw.state.or.us/wildlife/diversity/species/docs/Threatened_and_Endangered_Species.pdf. Accessed July 2024.

ORBIC (Oregon Biodiversity Information Center). 2024. Element Occurrence Record Digital Data Set for rare, threatened, or endangered species for the state of Oregon, May 2, 2024. ORBIC, Institute for Natural Resources. Portland State University, Portland, Oregon. Accessed July 2024.

USFWS (U.S. Fish and Wildlife Service). 2024. IPaC – Information for Planning and Consultation Resource List for the Project location in Sherman County, Oregon. Available online at: https://ipac.ecosphere.fws.gov/ Accessed July 2024.

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Figures

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Biglow Canyon Wind Farm Request for Amendment 4

Figure 1
Project Location

SHERMAN COUNTY, OR

- Amended Site Boundary
- Survey Area
- Proposed Transmission Interconnect
- Existing Transmission Lines (230-kV)
- Existing Biglow Canyon Substation
- Existing Biglow Canyon Wind Farm Turbine

Oregon Energy Facility Council Facilities (Operating)

- Biglow Canyon Wind Farm
- Golden Hills Wind Project
- Klondike III Wind Project

Land Status

- Bureau of Land Management
- Private

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map

HELMS SPRINGS RD
FOX RD
SCOTT CANYON RD
SHERMAN COUNTY
OREGON
John Day River
HERIN LN
HELMS CREEK RD
GERKING CANYON RD
MCNAB LN
WEIR RD
EMIGRANT SPRINGS LN
China Hollow Creek
CHINA HOLLOW RD
MEDLER LN
N KLONDIKE RD
DEHLER RD
WEBFOOT RD
OCUST GROVE LN
97
206
Wasco
Wasco State Airport
OLD WASCO-HEPPNER HWY
KLONDIKE RD
EGYPT RD
1000
1250
1500
500
750

1:55,000 WGS 1984 UTM Zone 10N

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Biglow Canyon Wind Farm Request for Amendment 4

Figure 2
Habitat Types and Subtypes within the Survey Area

SHERMAN COUNTY, OR

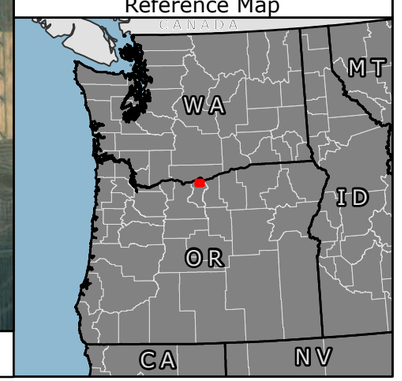
- Survey Area
- US Highway
- State Highway

Habitat Type; Subtype

- Agriculture; Non-Irrigated Cropland
- Agriculture; Irrigated Cropland
- Grassland-steppe; Grasslands
- Riparian; Intermittent Stream / Riparian Trees
- Shrub-steppe; Sagebrush Shrub-Steppe
- Upland; Upland Trees
- Developed

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map



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Biglow Canyon Wind Farm Request for Amendment 4

Figure 3
Habitat Categories within the Survey Area

SHERMAN COUNTY, OR

Survey Area
US Highway
State Highway

Habitat Category
- 2
- 3
- 4
- 6

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map

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Biglow Canyon Wind Farm Request for Amendment 4

Figure 4
Special Status Wildlife Species Observations

SHERMAN COUNTY, OR

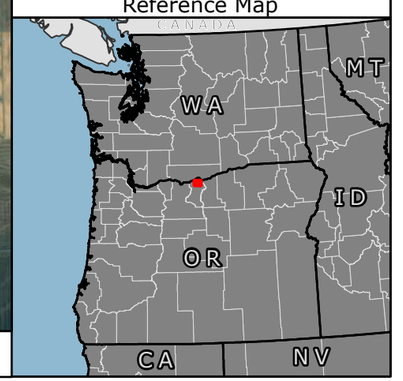
Survey Area
US Highway
State Highway

Special Status Wildlife Observation

Loggerhead Shrike

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map



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Attachment 1. Special Status Wildlife and Plant Species with Potential to Occur

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Common Name	Scientific Name	Federal Status[1]	Oregon Status[2]
Birds			
Brewer's sparrow	*Spizella breweri*	–	S, CSS
Burrowing owl (Western)	*Athene cunicularia hypugaea*	SOC	SC, CSS
Common nighthawk	*Chordeiles minor*	–	S, CSS
Ferruginous hawk	*Buteo regalis*	SOC	SC, CSS
Golden eagle	*Aquila chrysaetos*	BGEPA	–
Grasshopper sparrow	*Ammodramus savannarum*	–	S, CSS
Bald eagle	*Haliaeetus leucocephalus*	BGEPA	–
Lewis's woodpecker	*Melanerpes lewis*	BCC	SC, CSS
Loggerhead shrike	*Lanius ludovicianus*	–	S, CSS
Long-billed curlew	*Numenius americanus*	–	SC, CSS
Swainson's hawk	*Buteo swainsoni*	–	S, CSS
Reptiles			
Northern sagebrush lizard	*Sceloporus graciosus*	-	S, CSS
Western painted turtle	*Chrysemys picta bellii*	-	SC, CSS
Mammals			
Hoary bat	*Lasiurus cinereus*	-	S
Pallid bat	*Antrozous pallidus*	-	S
Silver-haired bat	*Lasionycteris noctivagans*	-	S, CSS
Spotted bat	*Euderma maculatum*	-	S, CSS
Townsend's big-eared bat	*Corynorhinus townsendii*	-	SC, CSS
Plants			
Henderson's ricegrass	*Eriocoma [Achnatherum] hendersonii*	-	C
Hepatic monkeyflower	*Erythranthe jungermannioides*	-	C
Lawrence's milkvetch	*Astragalus collinus var. laurentii*	-	T
Sessile mousetail	*Myosurus sessilis*	-	C

Sources: ODFW 2021a, ODFW 2021b, ORBIC 2024, USFWS 2024

1. Federal Status: BGEPA = Bald and Golden Eagle Protection Act, BCC = Bird of Conservation Concern, SOC = Species of Concern, C = Candidate, T = Threatened, PT = Proposed as Threatened.

2. Oregon Department of Fish and Wildlife Status in the Columbia Plateau/Columbia Basin: CSS = Conservation Strategy Species, SC = Sensitive Critical, S = Sensitive. Oregon Department of Agriculture Plant listing, T = Threatened, C = Candidate.

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Attachment 2. Habitat Types and Subtypes Occurring at the Solar Components

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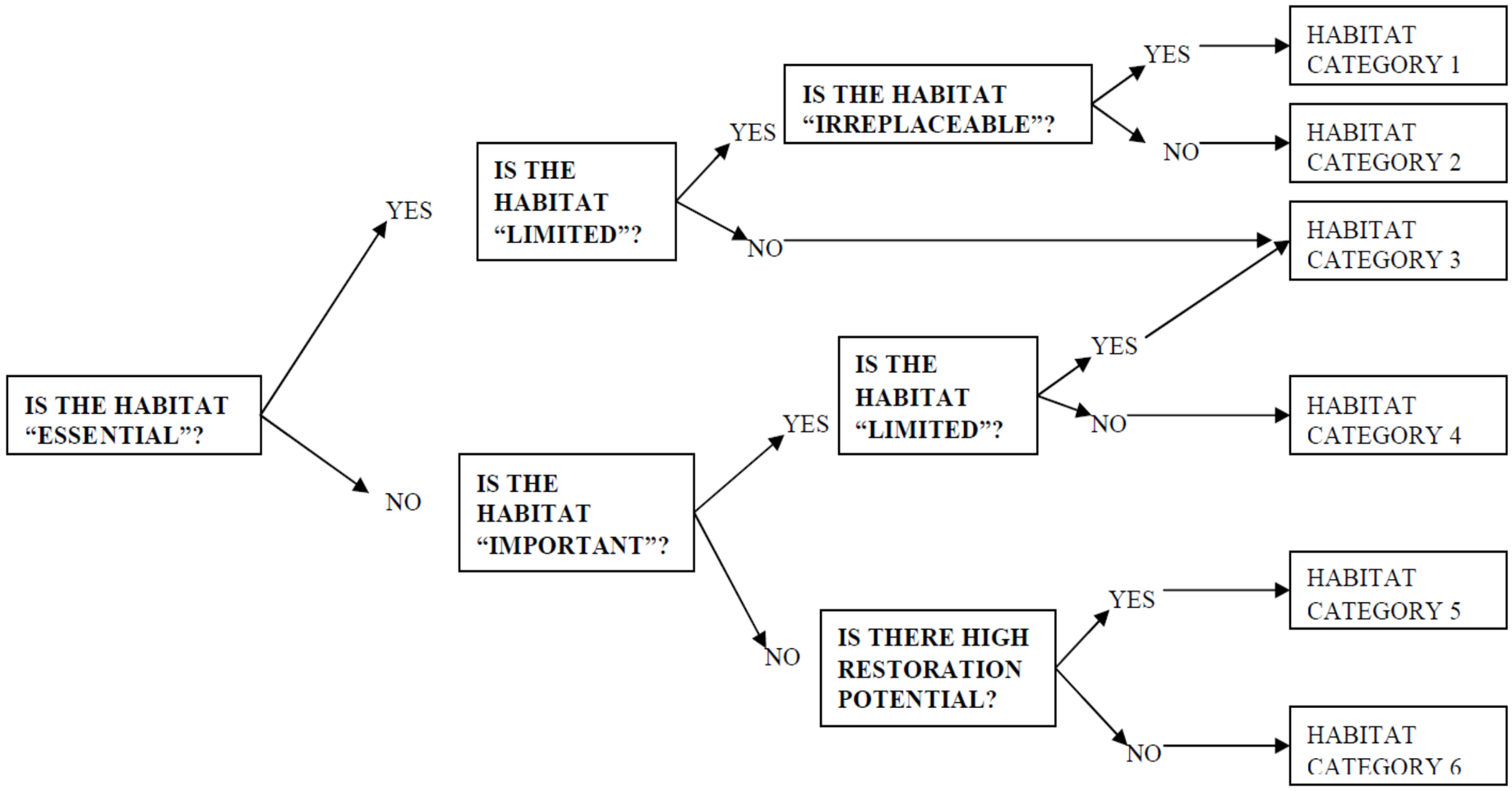
Habitat Type	Habitat Sub-type	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
Riparian	Intermittent Streams			Essential or important fish and wildlife habitat which is limited.			
	Riparian Trees		Essential and limited habitat for wildlife (documented nest/roost habitat)				
	Intermittent Streams / Riparian Trees		Essential and limited habitat for wildlife (documented nest/roost habitat)				
Surface Water	Ponds			Essential or important wildlife habitat which is limited (e.g. wetland feature).			
Upland	Upland Trees	Irreplaceable, essential habitat for a wildlife species (e.g. Swainson's hawk) and limited within a physiogeographic province (documented food/cover/nest habitat, and active nests).		Essential or important habitat for wildlife that is limited.			
Shrub-steppe	Sagebrush Shrub-Steppe		Essential and limited wildlife habitat (e.g. fairly undisturbed, old-growth shrub structure; moderate grazing).	Essential or important wildlife habitat which is limited (e.g. fairly undisturbed habitat; moderate grazing).	Important wildlife habitat (e.g. moderate-heavy grazing or weedy habitat.		
Grassland-steppe	Grasslands				Important wildlife habitat (e.g. moderate-heavy grazing or weedy habitat.		
Agriculture	Irrigated Cropland						Cultivated cropland with the artificial application of water with low potential for becoming essential or important habitat.
	Non-Irrigated Cropland						Cultivated croplands with low potential for becoming essential or important habitat.
	Conservation Reserve Program (CRP)			Croplands planted to grassland / shrub-steppe in the CRP program that provide important wildlife habitat.	Croplands planted to grassland / shrub-steppe in the CRP program that lack seral stage vegetative communities and/or are of less importance as wildlife habitat because of the land management or topographic locale.		
Developed							Low potential for becoming essential or important habitat (e.g. residences, storage bins, farm equipment storage, grain elevators, industrial/commercial facilities, gravel quarries).

		Category 2	Category 3	Category 4	Category 5
Eastside Grassland	**Native %** (***Without*** **Sage)**	> 75 %	50-75 %	15-50 %	< 15 %
	Native % (***With*** **Sage)**	50-75 %	15-50 %	< 15 %	None
	Disturbance	None – Low	Moderate	High	High - Extreme



Fish and Wildlife Habitat Mitigation - Key Definitions

Essential habitat	Any habitat condition or set of habitat conditions which, if diminished in quality or quantity, would result in depletion of a fish or wildlife species.
Limited habitat	An amount insufficient or barely sufficient to sustain fish and wildlife populations over time.
Important habitat	Any habitat recognized as a contributor to sustaining fish and wildlife populations over time.
Irreplaceable habitat	Successful in-kind habitat mitigation to replace lost habitat quantity and/or quality is not feasible within an acceptable period of time or location, or involves an unacceptable level of risk or uncertainty.
Habitat with High Restoration Potential	Previous uses or activities that have reduced habitat values need to be able to be eliminated or severely reduced.

The Fish and Wildlife Habitat Mitigation Policy establishes mitigation goals for each category of habitat and, depending upon the importance of the habitat, identifies preferred strategies to avoid or mitigate the impact of proposed actions on fish and wildlife habitat. The policy sets sideboards within which ODFW considers recommended options and alternatives for mitigation. The less important the habitat is, the more options that may be considered for mitigation.

Habitat Categories and Mitigation Strategies

Habitat Category	Definition	Example	Goal for Mitigation	Mitigation Strategy
Category 1	Irreplaceable, essential and limited habitat	Bogs and fens, certain springs and pools	No loss of habitat quantity or quality	Avoidance
Category 2	Essential and limited habitat	Salt marshes, cottonwood galleries, big game winter range, salmonid migration corridors, some spawning and rearing areas.	No net loss of habitat quantity or quality and to provide a net benefit of habitat quantity or quality	In-kind, in-proximity mitigation
Category 3	Essential habitat, or important and limited habitat	Older forested areas, reed canary grass wetland, spawning and rearing areas.	No net loss of habitat quantity or quality	In-kind, in-proximity mitigation
Category 4	Important habitat	Isolated or degraded wetlands, big game summer range, spawning, rearing and foraging areas.	No net loss of habitat quantity or quality	In-kind or out-of-kind, in-proximity or off-proximity mitigation
Category 5	Habitat having high potential to become either essential or important habitat	Restorable rye grass fields or diked or drained coastal marshes, marshes, some types of reservoirs.	Net benefit in habitat quantity or quality	Actions that improve habitat conditions
Category 6	Habitat that has low potential to become essential or important habitat	Urban areas and other areas with little or no restoration potential, artificial ponds without native species.	Minimize impacts	Minimize direct habitat loss and avoid off-site impacts

Source: OAR 635-415-0025

Attachment 3. Oregon Habitat Categorization Datasheet

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Oregon Habitat Categorization Datasheet

Data Sheet ID #: _____

Project: _____ **County:** _____ **Surveyor(s):** _____ **Date:** _____

Habitat Category: 1 / 2 / 3 / 4 / 5 / 6

Habitat Type & Subtype

Riparian	Surface Water	Upland	Shrub-steppe	Agriculture **specify crops in "Description"*
[ ] Intermittent Stream [ ] Riparian Trees [ ] Intermittent Stream / Riparian Trees [ ] _____	[ ] Ponds [ ] _____	[ ] Upland Trees [ ] _____ **Grassland-steppe** [ ] Grasslands [ ] _____	[ ] Sagebrush Shrub-steppe [ ] _____	[ ] Non-irrigated Cropland [ ] Irrigated Cropland [ ] Conservation Reserve Program (CRP) [ ] _____ **Developed** **specify features in "Description"* [ ] Developed [ ] _____

Datasheet Description: _____

_____

Additional Notes: _____

Overall Habitat Community *(Total cover amongst all strata, can equal over 100%)*

% Absolute Canopy Closure: Trees: _____ **Shrubs:** _____ **Grasses + Forbs:** _____

% Bare Ground: _____ % **Duff:** _____ % **Rock:** _____ % **Moss:** _____ **Cryptobiotic Crust:** [ ] Yes [ ] No

Species Composition (*Mark natives with *, noxious weeds with ***)

Dominant ≥20%, Subdominant 10-20% of stratum cover

TREES

Dominant: _____

_____

Subdominant: _____

_____

Trace / Other noteworthy species: _____

_____

 # Subcanopy Layers: _____ **Percent of Stratum that is Native:** _____ **Max Vegetation Height** (*ft.*): _____

Avg. DBH (*in.*): _____ **Stumps Present?** [ ] Yes [ ] No **Forest Phase**: GF / SHR / OSP / CSPS / LGSAW / OGDD

Snags Present? [ ] Yes [ ] No **Abundance:** _____/ac **Snag Stage**: 1 / 2 / 3 / 4 / 5

Notes: _____

SHRUBS

Dominant: _____

_____

Subdominant: _____

_____

Trace / Other noteworthy species: _____

_____

 # Subcanopy Layers: _____ **Percent of Stratum that is Native:** _____ **Max Vegetation Height** (*in.*): _____

Notes: _____

GRASSES + FORBS

Dominant: _____

_____

Subdominant: _____

_____

Trace / Other noteworthy species: _____

_____

Data Sheet ID #: _____

 # Subcanopy Layers: _____ Percent of Stratum that is Native: _____ Max Vegetation Height (*in.*): **_____**

Notes: _____

Other Descriptions

Check all that apply <u>within or outside but in view</u> of the habitat polygon(s).

List the approximate distance from polygon edge, and specify units (ft, m, mi), or write "in" for features within the polygon(s).

Disturbance		Sensitive Species/Habitat	Unique Features	Anticipated Recovery Timeline*
[ ] None	[ ] Row Crop _____	[ ] None	[ ] None	[ ] 0-5 years
[ ] Wind Facility _____	[ ] Farm _____	[ ] Bald Eagle _____	[ ] Caves _____	[ ] 5-30 years
[ ] Solar Facility _____	[ ] Corral _____	[ ] Golden Eagle _____	[ ] Mines / Quarries _____	[ ] >30 years
[ ] Railroad _____	[ ] Pasture _____	[ ] Raptor Nest(s) _____	[ ] Cliffs / Rimrock _____	
[ ] Dirt Road _____	[ ] Grazing _____	[ ] _____ _____	[ ] Rock Outcrop _____	**Recovery Rationale:**
[ ] Gravel Road _____	[ ] Erosion _____	[ ] _____ _____	[ ] Abandoned Buildings _____	[ ] Mature Sagebrush
[ ] Paved Road _____	[ ] Construction _____	[ ] _____ _____	[ ] Large Snag(s) _____	[ ] Mature Riparian
[ ] Highway _____	[ ] Invasive Plants _____	[ ] _____ _____	[ ] Wood Bridge(s) _____	[ ] _____
[ ] Industrial _____	[ ] Logging _____	[ ] _____ _____	[ ] Balds _____	[ ] _____
[ ] Residence _____	[ ] Thinning _____	[ ] _____ _____	[ ] Bluffs _____	[ ] _____
[ ] Campground _____	[ ] Quarry _____	[ ] _____ _____	[ ] Wetlands / Waters _____	[ ] _____
[ ] _____ _____	[ ] _____ _____	[ ] _____ _____	[ ] _____ _____	

**Anticipated recovery timeline should be estimated during surveys for the purposes of determining the need for mitigation to compensate for temporary impacts to habitat that would be long-term or difficult to restore.*

For example, disturbed annual grassland typically recovers in 2-5 years, high quality native grassland typically recovers in ~3 years, or > 5 years depending on the site (e.g., existing disturbance, precipitation, and quality of planting/seeding), rabbitbrush typically recovers <5 years, and sagebrush typically recovers in 5-30 years.

See Brown 1985 for forest recovery/phase timelines.

Additional Notes / Categorization Rationale:

Attachment 4. Select Photographs of Habitat and Wildlife

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Photo 1. Category 6: Non-irrigated cropland with active wheatfield.

Photo 3. Category 6: Non-irrigated cropland with fallow field.

Photo 4. Category 6: Irrigated cropland with fallow field.

Photo 5. Category 6: Development with farm building and equipment/materials storage area.

Photo 6. Category 6: Development with abandoned buildings.

Photo 7. Category 6: Development with substation and large transmission line.

Photo 8. Category 4: Grassland-steppe habitat dominated by cereal rye and downy brome.

Photo 9. Category 4: Grassland-steppe habitat dominated by cereal rye, downy brome, and traces of native shrubs and grasses.

Photo 10. Category 3: Moderately disturbed shrub-steppe habitat dominated by downy brome, with some rabbitbrush and sagebrush.

Photo 11. Category 3: Shrub-steppe habitat dominated by annual grasses, native grasses such as six-week fescue and some sagebrush on hill tops.

Photo 12. Category 3: Upland habitat with black locust trees and snags.

Photo 13. Category 3: Upland habitat with black locust trees and snags with raptor nest (great-horned owl).

Photo 14. Category 3: Upland habitat with black locust trees and snags without raptor nests.

Photo 15. Category 3: Upland habitat showing wildlife guzzler location.

Photo 16. Category 2: Riparian habitat with cattails, reed canarygrass, cereal rye, and other riparian vegetation.

Photo 17. Category 2: Riparian habitat within drainage.

Attachment 5. Wildlife Species Occurring in the Solar Components Vicinity

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Common Name*	Scientific Name
Birds	
American crow	*Corvus brachyrhynchos*
American goldfinch	*Spinus tristis*
Barn swallow	*Hirundo rustica*
California quail	*Callipepla californica*
Common raven	*Corvus corax*
European starling	*Sturnus vulgaris*
Great horned owl	*Bubo virginianus*
Horned lark	*Eremophila alpestris*
House wren	*Troglodytes aedon*
Loggerhead shrike*	*Lanius ludovicianus*
Mourning dove	*Zenaida macroura*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Ring-necked pheasant	*Phasianus colchicus*
Song sparrow	*Melospiza melodia*
Turkey vulture	*Cathartes aura*
Western meadowlark	*Sturnella neglecta*
Western wood pewee	*Contopus sordidulus*
Mammals	
Grey squirrel	*Sciurus carolinensis*
Mountain cottontail	*Sylvilagus nuttallii*
Mule deer	*Odocoileus hemionus*
Porcupine	*Erethizon dorsatum*
Pronghorn	*Antilocapra americana*
Invertebrates	
Damselfly	NA
Dragonfly	NA
*ODFW Sensitive Species. See Attachment 1. NA = Not Applicable, unable to identify to species level.	

2024 Botanical Survey Report

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2024 Botanical Survey Report

Biglow Canyon Wind Farm
Request for Amendment 4
November 2024

Prepared for

BIGL bn, LLC

Prepared by

TETRA TECH

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Table of Contents

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Acronyms and Abbreviations

AC	alternating current
Solar Micrositing Area	Site Boundary Subject to RFA 4
BCWF or Existing Facility	Biglow Canyon Wind Farm
BIGL	BIGL bn, LLC
Certificate Holder / PGE	Portland General Electric Company
Council	Oregon Energy Facility Siting Council
ESA	Endangered Species Act
GPS	Global Positioning System
IPaC	Information for Planning and Consultation
MW	megawatt
OAR	Oregon Administrative Rule
ODA	Oregon Department of Agriculture
ORBIC	Oregon Biodiversity Information Center
RFA	Request for Amendment
Tetra Tech	Tetra Tech, Inc.
USFWS	U.S. Fish and Wildlife Service

1.0 Introduction

The Portland General Electric Company (PGE or Certificate Holder) is submitting a Request for Amendment (RFA) 4 to the Site Certificate on Amendment 3, issued October 31, 2008 (Site Certificate) for the Biglow Canyon Wind Farm (BCWF or Existing Facility) to add photovoltaic solar energy generation and battery storage (Solar Components) to the operating BCWF in Sherman County, OR.

BCWF, owned and operated by PGE, is located within an approved site boundary comprising approximately 25,000 acres, approximately 2.5 miles northeast of the town of Wasco in Sherman County, Oregon (Figure 1). The BCWF operates under the Site Certificate from the Oregon Energy Facility Siting Council (Council or EFSC) as administered by the Oregon Department of Energy. BCWF currently consists of 217 wind turbines, with a maximum blade tip height of 445 feet, and a peak generating capacity of 450 megawatts (MW).

In RFA 4, PGE proposes to add up to 385 MW alternating current (AC) generating capacity from photovoltaic solar arrays and 375 MW in battery storage capacity. RFA 4 seeks to expand the BCWF site boundary to include the Solar Components in portions of the existing site boundary and in the proposed expanded site boundary (together, Solar Micrositing Area or RFA 4 Site Boundary).

The Solar Micrositing Area is approximately 3,980 acres and provides a conservative estimate of the maximum area needed for development, micrositing, and temporary disturbances from the Solar Components during construction, rather than the anticipated disturbance footprint. Solar Components will include solar arrays, inverters, battery energy storage system facilities and their subcomponents (i.e., inverters), two collector substations, a total of approximately 3 miles of 230-kilovolt generation tie transmission line, medium voltage collector lines, operations and maintenance structures, site access roads, internal roads, perimeter fencing, facility entry gates, and temporary laydown areas. The maximum generating capacity from the Solar Components will be 385 MW AC and construction may take place in phases.

PGE will own and operate the Solar Components as a part of the BCWF, which, to date, have been developed by BIGL bn,LLC (BIGL). BIGL, in its capacity as the project developer, supports PGE in this RFA 4 and may construct and temporarily operate the Solar Components on behalf of PGE under a Build-Transfer Agreement. Tetra Tech Inc. (Tetra Tech) is providing support to PGE and BIGL through preparation of RFA 4.

This survey report presents the methods and results of the 2024 botanical surveys conducted by Tetra Tech for the Solar Micrositing Area. The purpose of the botanical surveys was to document the presence of federally or state listed endangered, threatened, and candidate vascular plant species and state and county-designated noxious weeds within the Solar Micrositing Area. The surveys were designed in accordance with Council standards set forth in Oregon Administrative Rules (OAR) 345-021-0010 (1)(p) and (a), OAR 345-022-0070, and in coordination with the Oregon Department of Agriculture (ODA).

2.0 Methods

The background review and field survey methods described in this section were submitted to ODA for review on June 10, 2024. ODA provided concurrence with these methods on June 13, 2024, prior to Tetra Tech conducting field surveys (J. Brown, personal communication, June 13, 2024).

2.1 Survey Area

The Survey Area for the 2024 botanical surveys consisted of the 3,980-acre Solar Micrositing Area as shown on Figure 1. All areas of suitable or marginally suitable habitat within the Solar Micrositing Area (i.e., Survey Area) were surveyed during botanical surveys conducted in 2024. Only active agricultural lands and developed lands (e.g., existing roads, existing buildings) were excluded from surveys.

2.2 Background Review

2.2.1 Threatened, Endangered, and Candidate Plants

Tetra Tech conducted a review of existing information to identify federal and state endangered, threatened, proposed, and candidate plant species with the potential to occur within the vicinity of the Survey Area. Sources of information included the following:

- U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) Resource List for the Survey Area (USFWS 2024a);
- USFWS threatened, endangered, and candidate species list for Oregon (USFWS 2024b);
- Oregon Listed Plants by County (ODA 2024a);
- Oregon Biodiversity Information Center (ORBIC) 2019 Rare, Threatened and Endangered Species of Oregon (ORBIC 2019);
- ORBIC Rare, Threatened and Endangered Vascular Plant Species of Oregon (ORBIC 2023);
- ORBIC Element Occurrence Records for the vicinity of the Project (ORBIC 2024); and
- OregonFlora's Online Guide to the Vascular Plants of Oregon (OregonFlora 2024).

The initial list of potential primary target species included all vascular plant species listed as endangered, threatened, proposed, or candidate for listing by the USFWS under the federal Endangered Species Act (ESA), or by the ODA under the Oregon ESA, that occur or have potential to occur within or near the Solar Components. Based on this review, Tetra Tech determined that no federally listed, proposed, or candidate plant species have the potential to occur within or near the Proposed Facility; however, one state-listed threatened and three state candidate vascular plant species have potential to occur within or near the Solar Components (Table 1).

Table 1. Threatened, Endangered, and Candidate Vascular Plant Species with Potential to Occur at the Solar Components

Scientific Name	Common Name	State Status[1]	Habitat	Survey Period
Astragalus collinus var. *laurentii*	Lawrence's milkvetch	T	Bunchgrass prairies, roadsides; sandy or rocky soils overlying basalt on dry slopes.	Surveys should be conducted when species is fruiting; typically late May to August
Eriocoma [*Achnatherum*] *hendersonii*	Henderson's ricegrass	C	Dry, shallow rocky soils described from basalt in sagebrush or ponderosa pine. Soils are often subject to frost heave.	May to June
Erythranthe jungermannioides	Hepatic monkeyflower	C	Moist basalt crevices and seeps in vertical cliff faces and canyon walls.	May (June) to August (depending on hydrology)
Myosurus sessilis	Sessile mousetail	C	Vernal pools and alkali flats.	April to June (depending on hydrology)

Sources:, ODA 2024a, 2024b; OregonFlora 2024.

1. T = Threatened, C = Candidate for listing.

2.2.2 Noxious Weeds

Prior to field surveys, Tetra Tech reviewed lists of species designated as noxious weeds in Oregon state and Sherman County (ODA 2022; SCNWD 2024). Existing literature and other sources were also reviewed to familiarize surveyors with identification of designated noxious weeds that would potentially be encountered within the Survey Area. Sources of information reviewed included:

- OregonFlora online guide to vascular plants of Oregon (OregonFlora 2024);
- Oregon Noxious Weed Profiles (ODA 2024c); and
- Oregon WeedMapper (ODA 2024d).

2.3 Field Survey Methods

2.3.1 Threatened, Endangered, and Candidate Plants

Field surveys were conducted in early July. The survey schedule was chosen based on the recommended survey period for Lawrence's milkvetch (*Astragalus collinus* var. *laurentii*), the primary target plant species with potential to occur in the Solar Components vicinity. Surveys were conducted by a Tetra Tech senior botanist familiar with suitable habitat for and identification of Lawrence's milkvetch as well as the other target plant species listed in Table 1. Prior to conducting

field surveys, fact sheets for the target plant species were compiled. These fact sheets were used by the surveyor in the field and included the following:

- Photos of each target species and its habitat;
- Information detailing habitat associations;
- Range and flowering period;
- Identifying features; and
- Characteristics distinguishing target species from similar species within its range.

Tetra Tech conducted botanical field surveys using the Intuitive Controlled survey method, a standard and commonly accepted survey protocol (USFS and BLM 1998). This method incorporates meandering transects that traverse the survey area, and that target the full array of major vegetation types, aspects, topographical features, habitats, and substrate types. While en route, the surveyors search for target species, and when the surveyors arrive at an area of high potential habitat (that was defined in the pre-field review or encountered during the field visit), they conduct a complete survey for the target species. Complete surveys include an examination of 100 percent of the habitat.

Standard Tetra Tech survey protocol includes recording Global Positioning System (GPS) locations of any target species encountered with a tablet using ArcGIS FieldMaps software. Survey methods also include completing ORBIC siting forms for any rare plant populations observed and taking photos to serve as digital specimen vouchers to illustrate identifying characteristics, plant habits, and habitat.

Data collected for each rare plant population, if encountered, would include:

- Species phenology;
- Number of plants observed;
- Habitat information and associated species; and
- Visible threats.

During surveys, Tetra Tech maintained a running list of vascular plant species encountered and made informal collections of unknown species for later identification. Identification was verified by the use of appropriate plant keys; in particular, *Flora of the Pacific Northwest* (Hitchcock and Cronquist 2018). Nomenclature follows that used by OregonFlora (2024). The final vascular plant species list for the surveys is included as Attachment 1 of this report.

2.3.2 Noxious Weeds

Noxious weed surveys were conducted concurrently with surveys for threatened, endangered, and candidate plant species. During the surveys, surveyors documented observations of state and county-listed noxious weeds within the survey area. When a noxious weed was encountered, the

location was recorded with a GPS point and the species, estimated size of infestation (i.e., small – less than 0.1 acre, medium – 0.1 to 1 acre, or large – 1 to 5 acres), and relative abundance (i.e., sparse [only a few individuals noted or low cover of species in area], common [many individuals of the species noted in area], or very high cover [dense population of the species]) was recorded.

3.0 Results

Field surveys were conducted on July 9 and 10, 2024. During the surveys, Tetra Tech observed that vegetation within much of the Survey Area has been modified due to historic and current agricultural activity, construction and management of the existing wind energy facility, and historic and current grazing activity. Non-native, invasive grasses and forbs are common throughout the Survey Area due to these land uses. Only limited areas of native habitat types (e.g., shrub-steppe) occur within the Survey Area and even in these areas, non-native, invasive grasses and forbs, including cheatgrass (*Bromus tectorum*), bulbous bluegrass (*Poa bulbosa*), cereal rye (*Secale* cereale), and prickly lettuce (*Lactuca serriola*) were often abundant.

3.1 Threatened, Endangered, and Candidate Plants

No threatened, endangered, proposed, or candidate vascular plant species were observed within the Survey Area. In addition, no suitable habitat for Henderson's ricegrass (*Eriocoma* [*Achnatherum*] *hendersonii*), hepatic monkeyflower (*Erythranthe jungermannioides*), and sessile mousetail (*Myosurus sessilis*), and limited suitable habitat for Lawrence's milkvetch, was observed within the Survey Area. As noted above, historic and current anthropogenic activities have resulted in degradation of the limited suitable habitat for Lawrence's milkvetch within the Survey Area.

3.2 Noxious Weeds

Tetra Tech recorded 12 listed noxious weed species within the Survey Area. Table 2 lists the noxious weed species observed, their noxious weed designation, and the frequency of observations. Figure 2 displays the locations of noxious weeds observed during the field surveys.

Table 2. Noxious Weeds Observed Within the Survey Area

Scientific Name	Common Name	Status (State[1]/ Sherman County[2])	Frequency[3]
Aegilops cylindrica	Jointed goatgrass	B / C	Infrequently observed. Observations primarily in southern portion of Survey Area.
Centaurea diffusa	Diffuse knapweed	B* / B (T)	Several small to medium-sized patches observed.
Chondrilla juncea	Rush skeletonweed	B (T)* / A (T)	Frequently observed in non-cultivated portions of Survey Area.
Cirsium arvense	Canada thistle	B* / B (T)	One observation in southern portion of Survey Area.

Scientific Name	Common Name	Status (State[1]/ Sherman County[2])	Frequency[3]
Cirsium vulgare	Bull thistle	B* / C	Observed in two locations.
Convolvulus arvensis	Field bindweed	B* / B	Many small to large patches observed.
Conyza canadensis	Horseweed, marestail	Not listed / C	Commonly observed within Survey Area.
Lactuca serriola	Prickly lettuce	Not listed / C	Frequently observed within Survey Area.
Onopordum acanthium	Scotch thistle	B / B (T)	Several observations in northeastern portion of Survey Area.
Rhaponticum (*Acroptilon*) *repens*	Russian knapweed	B* / B	One observation in northeastern portion of Survey Area.
Salsola tragus	Russian thistle	Not listed / C	Frequently observed within Survey Area.
Secale cereale	Common rye, cereal rye	Not listed / C	Frequently observed within Survey Area.

1. "B" Listed weeds: Weeds of economic importance, which are regionally abundant, but which may have limited distribution in some counties. "T" Designated weeds: designated group of weed species selected from either the A or B list as a focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority. T-designated noxious weeds are determined by the Oregon State Weed Board and directs ODA to develop and implement a statewide management plan. Species marked with an (*) are targeted for biocontrol (ODA 2022).
2. "A" Class: High Priority. Any noxious weed which greatly endangers the overall economic well – being of the County and has a small enough distribution where eradication is possible. "B" Class: Moderate Priority. A noxious weed which is well established in the County and has known negative impacts, but due to its distribution, eradication is not feasible. "C" Class – Low Priority. A noxious weed which is widespread throughout the County and has known economic impacts. "T" Class – Targeted List. A noxious weed from any Class that the Weed Advisory Board wishes to focus efforts and resources on. This T class list is reviewed annually. (SCNWD 2024).
3. Patch/observation sizes are as follows : small = less than 0.1 acre, medium = 0.1 to 1.0 acre, large = greater than 1 acre.

Four noxious weed species were frequently observed in non-cultivated areas throughout the Survey Area: common rye (*Secale cereale*), prickly lettuce (*Lactuca serriola*), rush skeletonweed (*Chondrilla juncea*), and Russian thistle (*Salsola tragus*) (Figure 2). Observations of common rye typically consisted of large, dense infestations. Observations of prickly lettuce typically consisted of large, sparse to moderately dense infestations and observations of Russian thistle ranged from small, sparse to large, moderately dense infestations. Most observations of rush skeletonweed consisted of small or medium-sized sparse to moderately dense infestations, although one large infestation was also observed.

Diffuse knapweed (*Centaurea* diffusa), field bindweed (*Convolvulus arvensis*), marestail (*Conyza canadensis*) were all observed in several locations within the Survey Area. Diffuse knapweed (*Centaurea diffusa*) was primarily observed within the northeastern portion of the Survey Area, with observations ranging from small, sparse infestations to medium-sized, moderately dense infestations. Field bindweed was observed in the central and northern portion of Survey Area, with observations ranging from small, sparse infestations to moderately dense large infestations. Marestail was observed in the northern and southern portions of the Survey Area with observations ranging from sparse, medium to large, moderately dense infestations.

Jointed goatgrass (*Aegilops cylindrica*) and Scotch thistle (*Onopordum acanthium*) were each observed in four locations within the Survey Area. Three of the observations of jointed goatgrass were in the southern portion of the Survey Area and the fourth was in the central portion (Figure 2). The observation in the central portion of the Survey Area was a small, sparse infestation, whereas the observations in the southern portion consisted of medium-sized, moderately dense infestations and large, sparse infestations. All four observations of Scotch thistle were located in the northeastern portion of the Survey Area. While all four of these observations were small, they ranged in density from just a few individuals to dense cover of Scotch thistle.

The remaining three noxious weeds—bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), and Russian knapweed (*Rhaponticum* [*Acroptilon*] *repens*)—were only observed in one to three locations within the Survey Area (Table 2). Bull thistle was observed in two locations within the Survey Area. The observation in the northeast portion of the Survey Area consisted of just a few individuals in a small area, whereas the observation in the southern portion of the Survey Area consisted of a medium-size, moderately dense infestation. Canada thistle and Russian knapweed were each observed in just one location. Both observations consisted of medium-sized, moderately dense infestation. The observation of Canada thistle was observed near a pond in the southern portion of the Survey Area and the observation of Russian knapweed was located along a road in the northeastern portion of the Survey Area.

4.0 Conclusions

Tetra Tech did not observe state listed or candidate vascular plant species during botanical surveys in 2024. Tetra Tech documented 12 state and/or county designated noxious weeds within the Survey Area, 4 of which were abundant throughout the Survey Area: common rye, prickly lettuce, rush skeletonweed, and Russian thistle.

5.0 References

Hitchcock, C. L., and A. Cronquist. 2018. *Flora of the Pacific Northwest*. University of Washington Press; second edition. Seattle, WA.

ODA (Oregon Department of Agriculture). 2022. Noxious Weed Policy and Classification System. Noxious Weed Control Program. Salem, OR. Available online at: https://www.oregon.gov/oda/shared/Documents/Publications/Weeds/NoxiousWeedPolicyClassification.pdf. Accessed June 2024.

ODA.2024a. Oregon Listed Plants by County. Available online at: https://www.oregon.gov/oda/programs/PlantConservation/Pages/ListedPlants.aspx. Accessed April 2024.

ODA. 2024b. Lawrence's milkvetch (*Astragalus collinus* var. *laurentii*) Fact Sheet. Available online at: http://www.oregon.gov/ODA/shared/Documents/Publications/PlantConservation/AstragalusCollinusLaurentiiProfile.pdf. Accessed June 2024.

ODA. 2024c. Oregon Noxious Weed Profiles. Available online at: https://www.oregon.gov/oda/programs/weeds/oregonnoxiousweeds/pages/aboutoregonweeds.aspx. Accessed June 2024.

ODA. 2024d. Oregon WeedMapper. Available online at: https://www.oregon.gov/oda/programs/Weeds/Pages/WeedMapper.aspx. Accessed June 2024.

ORBIC (Oregon Biodiversity Information Center). 2019. Rare, Threatened and Endangered Species of Oregon. Institute for Natural Resources, Portland State University, Portland, Oregon. 136 pp.

ORBIC. 2023. Rare, Threatened and Endangered Vascular Plant Species of Oregon – An excerpt of the Rare, Threatened, and Endangered Species of Oregon publication. Available online at: https://inr.oregonstate.edu/orbic/rare-species/rare-species-oregon-publications. Accessed April 2024.

ORBIC. 2024. Element Occurrence Record Digital Data Set for Rare, Threatened and Endangered Species for the Biglow Solar Project in Sherman County. ORBIC, Institute for Natural Resources, Portland State University. Portland, OR. Received May 2, 2024.

OregonFlora. 2024. Comprehensive Guide to the Vascular Plants of Oregon. Oregon State University. Corvallis, OR. Available online at: https://oregonflora.org. Accessed May 2024.

SCNWD (Sherman County Noxious Weed District). 2024. Sherman County Noxious Weeds. Available online at: https://www.co.sherman.or.us/noxious-weeds-sherman-county/. Accessed June 2024.

USFS (U.S. Forest Service) and BLM (U.S. Bureau of Land Management). 1998. Survey and Manage Survey Protocol – Vascular Plants.

USFWS (U.S. Fish and Wildlife Service) 2024a. IPaC – Information for Planning and Consultation Resource List for the Project location in Wasco County, Oregon. Available online at: https://ipac.ecosphere.fws.gov/location/ECIIWBUQ5JGEJN7MSYTNJNMQ4M/resources. Accessed April 2024.

USFWS. 2024b. Federally Listed, Proposed, Candidate, Delisted Species and Species of Concern under the Jurisdiction of the Fish and Wildlife Service which May Occur in Oregon. Available online at: https://www.fws.gov/sites/default/files/documents/oregonspeciesstatelist_0.pdf. Accessed April 2024.

Figures

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Biglow Canyon Wind Farm Request for Amendment 4

Figure 1
Project Location

SHERMAN COUNTY, OR

- Solar Micrositing Area/ Survey Area
- Proposed Transmission Interconnect
- Existing Transmission Lines (230-kV)
- Existing Biglow Canyon Substation
- Existing Biglow Canyon Wind Farm Turbine

Oregon Energy Facility Council Facilities (Operating)

- Biglow Canyon Wind Farm
- Golden Hills Wind Project
- Klondike III Wind Project

Land Status

- Bureau of Land Management
- Private

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map

HELMS SPRINGS RD
FOX RD
SCOTT CANYON RD
SHERMAN COUNTY
OREGON
John Day River
HELMS CREEK RD
HERIN LN
GERKING CANYON RD
MCNAB LN
WEIR RD
EMIGRANT SPRINGS LN
China Hollow Creek
CHINA HOLLOW RD
MEDLER LN
N KLONDIKE RD
DEHLER RD
WEBFOOT RD
LOCUST GROVE LN
97
206
Wasco
Wasco State Airport
OLD WASCO-HEPPNER HWY
KLONDIKE RD
EGYPT RD
1000
1250
1500
500
750

1:55,000 WGS 1984 UTM Zone 10N 0 1 2 4 Miles NOT FOR CONSTRUCTION

\\cess706gisfs1\CES\Projects\PDX\BrightNight\BiglowCanyon\Maps\NoxiousWeedsReport_20240828\BrightNight_Biglow_NoxiousWeeds_20241212.aprx

Biglow Canyon Wind Farm Request for Amendment 4

Figure 2
Noxious Weed Observations

SHERMAN COUNTY, OR

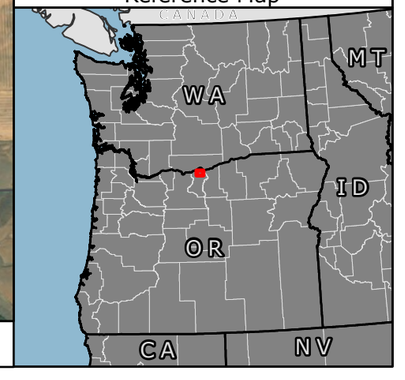
Figure 2.1
Figure 2.2
Figure 2.3
Figure 2.4
Figure 2.5
Figure 2.6

Helms Springs Rd
Fox Rd
Scott Canyon Rd
Gerking Canyon Rd
Helms Creek Rd
Herin Ln
Oehman Rd
McNab Ln
Biglow Canyon Rd
Weir Ln
Weir Rd
Emigrant Springs Ln
Gilliam County
Sherman County
Cline Hollow Rd
Medler Ln
N Klondike Rd
Raybum Rd
Dehler Ln
Dehler Rd
Beacon Rd
Beacon Ln
Webfoot Rd
97
N Sawtooth Rd
Old Hwy 97
Sherman Hwy
Celilo-Wasco Hwy
Fulton Canyon Rd
Fulton St
Hilderbrand Ln
Old Wasco-Heppner Hwy
Armsworthy St
Clark St
Wasco-Heppner Hwy
Klondike Rd
Egypt Rd
206

Map Grid
Solar Micrositing Area/ Survey Area
City/Town
US Highway
State Highway
Local Roads
County Boundary

TETRA TECH
BRIGHTNIGHT
Power when you need it

Reference Map



1:48,000
WGS 1984 UTM Zone 10N
0 1 2 4 Miles
NOT FOR CONSTRUCTION

\\ess706gisfs1\CES\Projects\PDX\BrightNight\BiglowCanyon\Maps\NoxiousWeedsReport_20240828\BrightNight_Biglow_NoxiousWeeds_20241212.aprx

Biglow Canyon Wind Farm Request for Amendment 4

Figure 2.1 Noxious Weed Observations

SHERMAN COUNTY, OR

Noxious Weed

- Common Rye (*Secale cereale*)
- Field Blindweed (*Convolvulus arvensis*)
- Prickly Lettuce (*Lactuca serriola*)
- Rush Skeletonweed (*Chondrilla juncea*)
- Russian Thistle (*Salsola tragus*)

Population Size

- <0.1 Acres
- 0.1-1 Acres
- 1-5 Acres

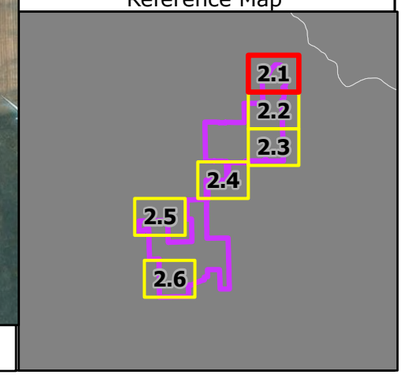
Solar Micrositing Area/ Survey Area

Local Roads

Herlin Ln

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map



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WGS 1984 UTM Zone 10N

0 0.13 0.25 0.5 Miles

NOT FOR CONSTRUCTION

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Noxious Weed
- Common Rye (*Secale cereale*)
- Field Blindweed (*Convolvulus arvensis*)
- Prickly Lettuce (*Lactuca serriola*)
- Rush Skeletonweed (*Chondrilla juncea*)

Population Size
- <0.1 Acres
- 1-5 Acres

Herin Ln

Biglow Canyon Wind Farm Request for Amendment 4

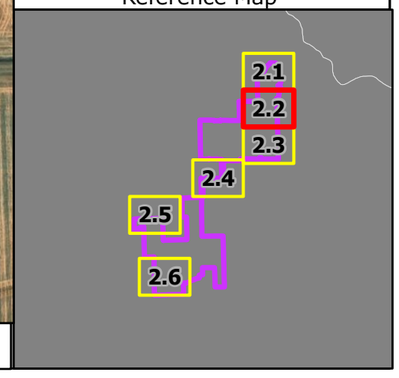
Figure 2.2 Noxious Weed Observations

SHERMAN COUNTY, OR

- Solar Micrositing Area/ Survey Area
- Local Roads

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map



1:6,000 WGS 1984 UTM Zone 10N

0 0.13 0.25 0.5 Miles

NOT FOR CONSTRUCTION

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Noxious Weed

- Bull Thistle (*Cirsium vulgare*)
- Common Rye (*Secale cereale*)
- Diffuse Knapweed (*Centaurea diffusa*)
- Field Blindweed (*Convolvulus arvensis*)
- Marestail (*Conyza canadensis*)
- Prickly Lettuce (*Lactuca serriola*)
- Rush Skeletonweed (*Chondrilla juncea*)
- Russian Knapweed (*Rhaponticum repens*)
- Russian Thistle (*Salsola tragus*)
- Scotch Thistle (*Onopordum acanthium*)

Population Size

- <0.1 Acres
- 0.1-1 Acres
- 1-5 Acres

Biglow Canyon Rd

Biglow Canyon Wind Farm Request for Amendment 4

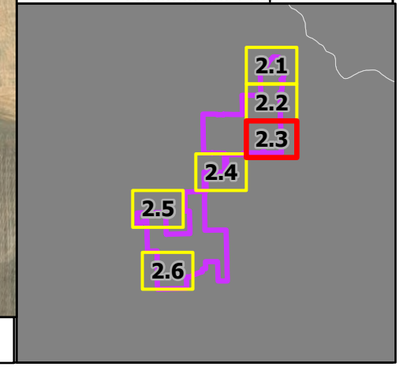
Figure 2.3 Noxious Weed Observations

SHERMAN COUNTY, OR

- Solar Micrositing Area/ Survey Area
- Local Roads

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map



1:6,000 WGS 1984 UTM Zone 10N 0 0.13 0.25 0.5 Miles

NOT FOR CONSTRUCTION

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Biglow Canyon Wind Farm Request for Amendment 4

Figure 2.4 Noxious Weed Observations

SHERMAN COUNTY, OR

Noxious Weed

- Common Rye (*Secale cereale*)
- Field Blindweed (*Convolvulus arvensis*)
- Jointed Goatgrass (*Aegilops cylindrica*)

Population Size

- <0.1 Acres
- 0.1-1 Acres

McNab Ln

Oehman Rd

Biglow Canyon Rd

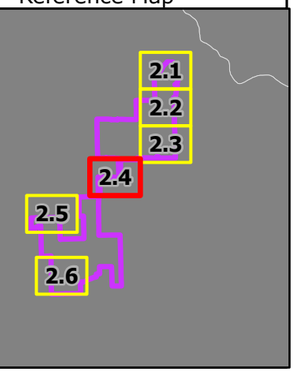
Solar Micrositing Area/ Survey Area

Local Roads

TETRA TECH

BRIGHTNIGHT
Power when you need it

Reference Map



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WGS 1984 UTM Zone 10N

0 0.13 0.25 0.5 Miles

NOT FOR CONSTRUCTION

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Noxious Weed

- Prickly Lettuce (*Lactuca serriola*)

Population Size

- 1-5 Acres

Medler Ln

Biglow Canyon Wind Farm Request for Amendment 4

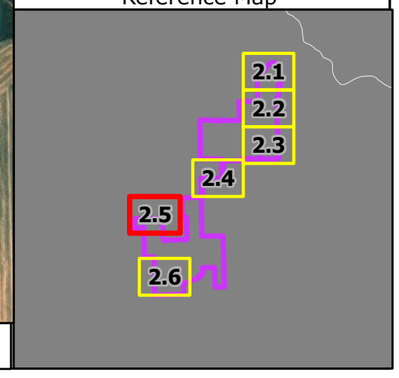
Figure 2.5 Noxious Weed Observations

SHERMAN COUNTY, OR

- Solar Micrositing Area/ Survey Area
- Local Roads

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map



1:6,000 WGS 1984 UTM Zone 10N

0 0.13 0.25 0.5 Miles

NOT FOR CONSTRUCTION

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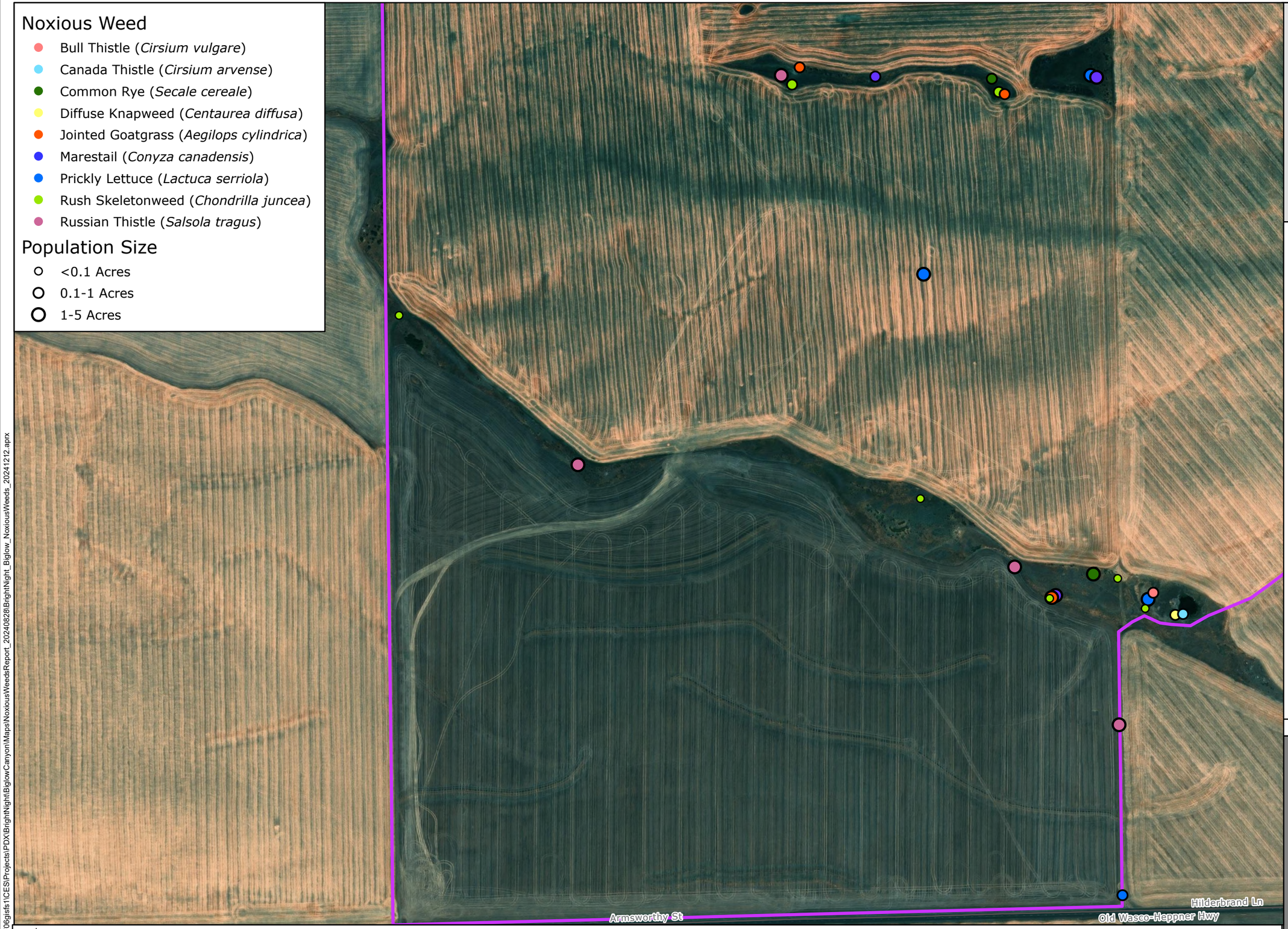
Biglow Canyon Wind Farm Request for Amendment 4

Figure 2.6 Noxious Weed Observations

SHERMAN COUNTY, OR



Noxious Weed

- Bull Thistle (*Cirsium vulgare*)
- Canada Thistle (*Cirsium arvense*)
- Common Rye (*Secale cereale*)
- Diffuse Knapweed (*Centaurea diffusa*)
- Jointed Goatgrass (*Aegilops cylindrica*)
- Marestail (*Conyza canadensis*)
- Prickly Lettuce (*Lactuca serriola*)
- Rush Skeletonweed (*Chondrilla juncea*)
- Russian Thistle (*Salsola tragus*)

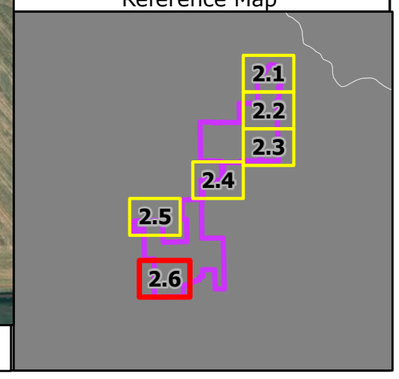
Population Size

- <0.1 Acres
- 0.1-1 Acres
- 1-5 Acres

- Solar Micrositing Area/ Survey Area
- Local Roads

TETRA TECH BRIGHTNIGHT Power when you need it

Reference Map



1:6,000 WGS 1984 UTM Zone 10N 0 0.13 0.25 0.5 Miles NOT FOR CONSTRUCTION

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Attachment 1. Vascular Plants Observed During 2024 Field Surveys

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Attachment 1. Vascular Plants Observed During 2024 Field Surveys

Scientific Name	Common Name	Native or Introduced? [1]	Synonym	Notes
Achillea millefolium	common yarrow, milfoil	N		
Aegilops cylindrica	jointed goatgrass	I		ODA Noxious Weed, B List; Sherman County Noxious Weed, B List
Agoseris grandiflora	large-flowered agoseris	N		
Agoseris heterophylla	annual agoseris	N		
Agropyron cristatum	crested wheatgrass	I		
Amaranthus albus	tumbling pigweed	I		
Amaranthus blitoides	prostrate pigweed, tumbleweed amaranth	U		
Amsinckia spp.	fiddleneck	N		
Artemisia tridentata	big sagebrush	N		
Asclepias fascicularis	narrowleaf milkweed	N		
Astragalus purshii	Pursh's milkvetch, woollypod milkvetch	N		
Balsamorhiza sagittata	arrowleaf balsamroot	N		
Bromus hordeaceus	soft chess	I	*Bromus mollis*	
Bromus diandrus	ripgut brome	I		
Bromus tectorum	cheatgrass, downy brome, downy chess	I		
Centaurea diffusa	diffuse knapweed, tumble knapweed	I		ODA and Sherman County Noxious Weed, B List
Chenopodium album	lamb's quarters, pigweed	I		
Chondrilla juncea	rush skeletonweed	I		ODA Noxious Weed, B List; Sherman County Noxious Weed, A List
Chrysothamnus viscidiflorus	green rabbitbrush, sticky-flowered rabbitbrush	N		
Cirsium arvense	Canada thistle, creeping thistle	I		ODA Noxious Weed, B List
Cirsium vulgare	bull thistle, common thistle	I		ODA and Sherman County Noxious Weed, B List
Convolvulus arvensis	field bindweed, field morning-glory	I		ODA and Sherman County Noxious Weed, B List
Conyza canadensis	Canadian fleabane, horseweed, marestail	N		Sherman County Noxious Weed, C List
Crataegus douglasii	black hawthorn, Douglas' hawthorn	N		
Crepis atrabarba	slender hawksbeard	N		
Crepis spp.	hawksbeard	N		
Descurainia sophia	flixweed, herb Sophia	I		
Draba verna	spring draba, spring whitlow grass	N		
Elaeagnus angustifolia	oleaster, Russian olive	I		
Eleocharis palustris	common spikerush, marsh spikerush, creeping spikerus	N		
Eleocharis sp.	spikerush	N		
Elymus elymoides	squirreltail	N	*Sitanion hystrix*	
Elymus trachycaulus ssp. trachycaulus	slender wheatgrass	N		
Epilobium brachycarpum	tall annual willowherb, autumn willowherb	N	*Epilobium paniculatum*	
Ericameria nauseosa	rubber rabbitbrush	N	*Chrysothamnus nauseosus*	
Erigeron filifolius	threadleaf fleabane	N		
Eriocoma thurberiana	Thurber's needlegrass	N	*Achnatherum thurberianum, Stipa thurberiana*	
Eriogonum niveum	snow buckwheat	I		
Erodium cicutarium	redstem filaree	I		

Scientific Name	Common Name	Native or Introduced? [1]	Synonym	Notes
Festuca idahoensis	Idaho fescue	N		
Galium aparine	stickywilly, cleavers, common bedstraw	N		
Gutierrezia sarothrae	broom snakeweed, matchweed	N		
Helianthus annuus	common sunflower	N		
Holosteum umbellatum	jagged chickweed	I		
Hordeum jubatum	squirreltail barley	N		
Hordeum vulgare	barley	I		
Juglans nigra	black walnut	I		
Juncus balticus	baltic rush	N	Juncus arcticus ssp. balticus	
Juncus effusus	pasture rush, soft rush	N		
Lactuca serriola	prickly lettuce	I		Sherman County Noxious Weed, C List
Lagophylla ramosissima	slender hareleaf, common rabbitleaf	N		
Lepidium perfoliatum	clasping pepperweed	I		
Leymus cinereus	Great Basin wildrye	N	*Elymus cinereus*	
Logfia arvensis	field cottonrose, field filago	I		
Lupinus leucophyllus	velvet lupine, woolly-leaved lupine	N		
Madia exigua	little tarweed, threadstem madia	N		
Madia gracilis	slender tarweed, common tarweed	N		
Matricaria discoidea	pineapple weed	I	*Matricaria matricarioides*	
Medicago sativa	alfalfa, lucerne	I		
Melilotus officinalis	yellow sweetclover	I		
Mentha canadensis	corn mint, field mint	N		
Microsteris gracilis	annual phlox, slender phlox	N	*Phlox gracilis*	
Onopordum acanthium	Scotch thistle, cotton thistle	I		ODA and Sherman County Noxious Weed, B List
Phalaris arundinacea	reed canarygrass	I		
Phragmites australis ssp. *australis*	American common reed	N		
Plantago major	common plantain	I		
Plantago patagonica	Indian wheat, woolly plantain	N		
Plectritus macrocera	longspur white plectritis	N		
Poa bulbosa	bulbous bluegrass	I		
Poa pratensis	Kentucky bluegrass	I		
Poa secunda ssp. juncifolia	alkali bluegrass, big bluegrass, Nevada bluegrass	N	*Poa ampla*	
Poa secunda ssp. secunda	Sandberg's bluegrass, Canby's bluegrass, pine bluegrass	N		
Polemonium micranthum	annual Jacob's-ladder, annual polemonium	N		
Polygonum aviculare	prostrate knotweed, doorweed, knotgrass	I		
Polypogon monspeliensis	rabbitsfoot grass, annual beardgrass	I		
Populus alba	silverleaf poplar, white poplar	I		
Populus nigra	black poplar, Lombardy poplar	I		
Prunus virginiana	western chokecherry	N		
Pseudoroengeria spicata	bluebunch wheatgrass	N	*Agropyron spicatum*	
Rhaponticum repens	Russian knapweed	I	*Acroptilon repens*	ODA and Sherman County Noxious Weed, B List
Robinia pseudoacacia	black locust	I		
Rumex crispus	curly dock	I		
Salix lasiandra	Pacific willow	N		

Scientific Name	Common Name	Native or Introduced? [1]	Synonym	Notes
Salsola tragus	prickly Russian thistle, tumbleweed	I	*Salsola kali*	Sherman County Noxious Weed, C List
Schoenoplectus acutus	hardstem bulrush, tule	N		
Secale cereale	cereal rye, commoon rye, rye	I		Sherman County Noxious Weed, C List
Sisymbrium altissimum	Jim Hill mustard, tumble mustard	I		
Solanum triflorum	cut-leaved nightshade	I		
Stephanomeria paniculata	stiff-branched wirelettuce, tufted wirelettuce	N		
Taraxacum officinale	common dandelion	I		
Thinopyrum intermedium	intermediate wheatgrass	I	*Agropyron intermedium*	
Toxicodendron diversilobum	poison oak	N		
Tragopogon dubius	yellow salsify	I		
Trifolium repens	white clover, Dutch clover	I		
Triticum aestivum	wheat	I		
Typha latifolia	broad-leaf cattail, common cattail	N		
Urtica dioica	stinging nettle	N		
Verbascum thapsus	common mullein, cowboy toilet paper	I		
Verbena bracteata	big-bracted verbenam bracted vervain	N		
Veronica americana	American brooklime	N		
Vulpia bromoides	brome fescue, rattail fescue	I	*Festuca bromoides*	
Vulpia myuros	rattail fescue, rat-tail six-weeks grass	I	*Festuca myuros*	

Nomenclature and nativitiy follows Flora of the Pacific Northwest (Hitchcock and Cronquist 2018) and OregonFlora (https://oregonflora.org/)

1. I=Introduced, N=Native, U=Uknown

2024 Raptor Nest Survey Report (CONFIDENTIAL)

This document contains confidential information and is provided under separate cover.

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Attachment P-1. Biological Survey Reports

(Confidential and provided under separate cover)

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Attachment P-2. Amended Revegetation Plan

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BIGLOW CANYON WIND FARM AND BIGLOW SOLAR: REVEGETATION PLAN [MARCH 10, 20250707]

BACKGROUND

This plan describes methods and standards for revegetating areas temporarily disturbed during the construction of the proposed Biglow Canyon Wind Farm (BCWF) and Biglow Solar (facilities), sited about 2.5 miles northeast of Wasco, Oregon.[1] The objective of this plan is to restore temporarily disturbed areas to pre-construction condition or better. The site certificate for the ~~facility~~ facilities requires restoration of these areas. In addition, this plan includes a recommended seed mix to be used within the Biglow Solar fenceline. Since all habitat within the Biglow Solar fenceline is mitigated as a permanent impact, the monitoring and success criteria outlined in this plan are not applicable to revegetation efforts within the Biglow Solar fenceline.

The ~~BCWF is~~facilities are located on privately owned agricultural land used primarily for dry wheat production and, to a lesser extent, cattle grazing. The grazed land is grassland, shrub-steppe rangeland and/or fallow wheat stubble fields. A few large tracts of land have been enrolled in the Conservation Reserve Program (CRP).

This plan specifies seed mixes, planting methods, and weed control techniques developed specifically for the ~~BCWF~~ facilities through consultations with the affected agencies (e.g., the Oregon Department of Fish and Wildlife and the Natural Resources Conservation Service), reviews of current literature, and site visits by revegetation specialists. This plan also specifies monitoring procedures to evaluate the success of revegetation efforts, including recommended remedial action should initial revegetation efforts prove unsuccessful.

REVEGETATION PROCEDURES

The following methods are to be used in areas of temporary ground and/or vegetation disturbance in cultivated areas and in the Conservation Reserve Program (CRP) grasslands and native grassland and shrub-steppe upland habitats throughout the BCWF site. Because no disturbance to wetland habitats is expected, this plan does not specify wetland revegetation methods.

Cultivated Areas

The site certificate holder shall reseed cultivated agricultural areas if requested by the landowner and/or farmer. The species composition, seed and fertilizer application rates, and application method shall be coordinated with the appropriate landowner and/or farmer.

Seed Mixture

Temporarily disturbed areas in non-cultivated areas are primarily CRP lands, with some additional grassland and shrub-steppe areas. A seed mixture was developed in consultation with Mary Beth Smith at the local Natural Resources Conservation Service office based upon anticipated high value to both big game and non-game wildlife, and the historic vegetative

[1] This plan is incorporated by reference in the site certificate for the BCWF and must be understood in that context. It is not a "stand-alone" document. This plan does not contain all mitigation required of the certificate holder.

climax community for the area (Table 1). A low-growing seed mixture was developed for use within the Biglow Solar fenceline (Table 2).

Seed Planting Methods

Planting shall occur in February through early April (after the last chance of frost because forbs are being used in the seed mixture) for disturbance that occurs during the winter and spring. Planting shall occur in October through November for disturbance that occurs after the spring seeding window. Disturbed, unseeded ground may require chemical or mechanical weed control in May or June before weeds have a chance to go to seed. In general, a weed-free seedbed shall be prepared using conventional tillage equipment, herbicide treatment, or both. Herbicide shall be sprayed to control weedy and/or noxious species, following the Oregon Department of Agriculture's Guidelines. Summer fallowing may be required.

Areas to be seeded shall be disked, as needed, ~~in early spring~~ and spot-sprayed on the ground with an herbicide. In some instances, disking the site may not be needed prior to seeding. Simply preparing a weed-free site using herbicide treatments may be all that is necessary. These areas shall then be harrowed prior to seeding. A conventional seed drill shall be used, except in areas where a rangeland drill is deemed more applicable, with a spacing less than 12 inches and at a depth of 1/8 to 1/4 inch. A packing type roller shall be used to properly compact the soil over the planted seed. The prescribed seed mixture (Table 1) shall be drilled at a rate of 12 pounds pure live seed per acre. If fallowing the area is to be used to increase soil moisture content, then the same procedure shall be followed, but without seeding. Seeding would then occur the following spring.

MONITORING ~~OF~~FOR REVEGETATION OF TEMPORARY DISTURBANCES

The site certificate holder shall direct a qualified botanist or revegetation specialist, approved by the Oregon Department of Energy (Department), to conduct monitoring of seeded grassland, shrub-steppe and CRP areas.

In the fall of the year following each seeding, and continuing annually thereafter until the vegetation success criteria have been met, the qualified investigator shall examine a representative cross-section of the revegetated sites. At each site, the investigator shall evaluate the percent cover for the following classes:

- native forbs and grasses;
- non-native forbs and grasses;
- shrubs; and
- bare ground and rock.

After the success criteria have been met, the qualified investigator shall revisit the sites at least every five years for the life of the facility to ensure that the habitat has not degraded.[2] The site certificate holder shall report the investigator's findings and recommendations regarding revegetation progress and success to the Department on an annual basis as part of the annual report ~~on BCWF~~for the facilities.

[2] As used in this plan, "life of the facility" means continuously until the facility site is restored and the site certificate is terminated in accordance with OAR 345-027-0110.

SUCCESS CRITERIA FOR REVEGETATION OF TEMPORARY DISTURBANCES

Non-cultivated areas will be deemed successfully revegetated when total canopy cover of all vegetation exceeds 30 percent[3], and at least 25 percent of the ground surface is covered by native species and species in the seed mixture.

In each monitoring report to the Department, the certificate holder shall provide an assessment of revegetation success in grassland, shrub-steppe and CRP restoration areas. The Department may require reseeding or other corrective measures in those areas that do not meet the success criteria. The Department may exclude small areas from the reseeding requirement, if erosion from construction activities is low, if total vegetative cover (of native and non-native species together) exceeds 30 percent and if weed encroachment has made native seed establishment impossible. Cultivated agricultural areas are successfully revegetated if the replanted areas achieve crop production comparable to adjacent non-disturbed cultivated areas. The certificate holder shall consult with the landowner or farmer to determine if they want revegetation and if so ~~to~~ determine whether these areas have been successfully revegetated and shall report to the Department on the success of revegetation in these areas.

AMENDMENT OF PLAN

This Revegetation Plan may be amended by agreement of the certificate holder and the Energy Facility Siting Council (Council). Such amendments may be made without amendment of the site certificate. The Council authorizes the Department to agree to amendments to this plan. The Department shall notify the Council of all amendments, and the Council retains the authority to approve, reject or modify any amendment of this plan agreed to by the Department.

Table 1. Seed mixture to be used for revegetation of temporarily disturbed areas.

Common Name	Scientific Name	Pounds of pure live seed/ Acre
Luna pubescent wheatgrass	*Thinopyrum intermedium*	1
Sherman big bluegrass	*Poa ampla*	1
Magnar basin wildrye	*Leymus cinereus*	1
Whitmar beardless wheatgrass	*Pseudoroegneria spicata* ssp. *Inermis*	2
Small burnett	*Sanguisorba minor*	0.5
Alfalfa	*Medicago sativa*	1
Sanfoin	*Psoralea onobrychis*	0.5
Sandberg bluegrass	*Poa secunda*	2
Idaho fescue	*Festuca idahoensis*	2
Basin big sagebrush	*Artemisia tridentata* ssp. *Tridentate*	1
TOTAL		12

The species and seeding rates included in this table are a recommendation. Substitutions can be made through consultation with ODOE.

[3] NRCS Draft Guidelines for CRP Stand Certification

Table 2. Seed mixture to be used for revegetation within the Biglow Solar fenceline.		
Common Name	**Scientific Name**	**Pounds of pure live seed/ Acre**
Grasses		
Squirreltail	*Elymus elymoides*	2.3
Thurber's needlegrass	*Eriocoma thurberiana*	6.8
Idaho fescue	*Festuca idahoensis*	1.5
Sandberg bluegrass	*Poa secunda* ssp. *secunda*	0.9
Forbs – choose 3 or 4 depending on seed availability		
Common yarrow	Achillea millefolium	0.1
Oregon sunshine	*Eriophyllum lanatum*	0.1
Fleabane	*Erigeron filifolius* or *E. pumilus*	0.1
Wooly plantain	*Plantago patagonica*	0.2
Clover	*Trifolium macrocephalum* or *T. repens*	0.1
TOTAL		12
The species and seeding rates included in this table are a recommendation. Substitutions can be made through consultation with ODOE.		

Attachment P-3. Biglow Solar Habitat Mitigation Plan

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Biglow Solar Project

Draft Habitat Mitigation Plan

Biglow Canyon Wind Farm
Preliminary Request for Amendment 4
February 2025

Prepared for

Portland General Electric Company

Prepared by

Tetra Tech, Inc.
1750 S Harbor Way, Suite 400
Portland, Oregon 97201

February 2025

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Table of Contents

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1.0 Introduction

The Portland General Electric Company (PGE or Certificate Holder) is submitting a Request for Amendment 4 (RFA 4) to the existing Site Certificate for the Biglow Canyon Wind Farm (BCWF or Existing Facility) to add photovoltaic solar energy generation and battery storage (Solar Components or Biglow Solar Project). Located approximately 2.5 miles northeast of Wasco in Sherman County, Oregon, BCWF currently consists of 217 wind turbines, with a peak generating capacity of 450 megawatts (MW). In RFA 4, PGE proposes to add up to 385 MW alternating current generating capacity from photovoltaic solar arrays and 375 MW in battery storage capacity.

The Solar Micrositing Area identified as part of RFA 4 is approximately 3,980 acres and provides a conservative estimate of the maximum area needed for development, micrositing, and temporary disturbances from the Solar Components during construction, rather than the anticipated disturbance footprint. The permanent disturbance area impacted by the Solar Components is 3,234 acres.

PGE will own and operate the Solar Components as a part of the BCWF (together, Facility), which, to date, have been developed by BIGL bn, LLC (BIGL). BIGL, in its capacity as the project developer, supports PGE in this RFA 4 and may construct and temporarily operate the Solar Components on behalf of PGE under a Build-Transfer Agreement.

This draft Habitat Mitigation Plan (HMP) provides two scenarios for meeting habitat mitigation needs for the Biglow Solar Project. The Certificate Holder in coordination with BIGL conducted habitat categorization surveys and other biological studies in and adjacent to the Solar Micrositing Area that informed habitat categorization in accordance with the Oregon Department of Fish and Wildlife's (ODFW) Fish and Wildlife Habitat Mitigation Policy, Oregon Administrative Rules (OAR) 635-415-0000 through 0025. Coordination with ODFW, including a site visit on January 10, 2025, provided direction and clarification on categorization of habitat within the Solar Micrositing Area.

The Certificate Holder's goal is to preserve and maintain in-kind habitat in the Columbia Basin Ecoregion to achieve a net benefit to Category 2 Priority Wildlife Connectivity Area (PWCA) habitat, and no net loss of Categories 3 and 4 through the measures described in this draft HMP.

2.0 Habitat Categories and Habitat Types

A habitat survey was conducted to verify habitat subtypes and habitat categories of all areas to be affected by the Facility. The ODFW Fish and Wildlife Habitat Mitigation Policy provides a framework to categorize habitats based on type, quality, availability, and usefulness/importance to wildlife, and establishes mitigation goals and implementation standards for each. Table 1 defines each of the six habitat category types as presented in the ODFW Habitat Mitigation Policy.

Table 1. Habitat Categorization Types

Category Type	Definition[1]	Mitigation Goal
1	Irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.	The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality.
2	Essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population or unique assemblage.	The mitigation goal if impacts are unavoidable is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality.
3	Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.	The mitigation goal is no net loss of either habitat quantity or quality.
4	Important habitat for fish and wildlife species.	The mitigation goal is no net loss of either habitat quantity or quality.
5	Habitat for fish and wildlife having high potential to become either essential or important habitat.	The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality.
6	Habitat that has low potential to become essential or important habitat for fish and wildlife.	The mitigation goal is to minimize impacts.
1. Source: OAR 635-415-0025.		

3.0 Temporary and Permanent Impacts

Impacts may be permanent or temporary. Permanent impacts are defined as those impacts that will exist for the life of the Solar Components. Temporary impacts are those impacts that will last for a time less than the life of the Solar Components. The duration of temporary impacts to habitat will vary by habitat subtype. For example, the recovery period for agricultural areas that were temporarily disturbed could be as short as 1 to 3 years, grasslands generally recover within 3 to 7 years, and shrublands may require 10 to 50 years to recover (with the longer recovery periods associated with disturbances in mature sagebrush [*Artemisia* sp.] habitats). The Certificate Holder will restore temporary impacts consistent with the Revegetation Plan (Attachment P-2).

As described in Exhibit P, there are no impacts to Category 1 habitat within the Solar Micrositing Area. Category 2 habitat occurs in the Solar Micrositing Area and will be impacted by the Proposed Facility (Table 2). Category 2 habitat within the Solar Micrositing Area is area within a ODFW-designated PWCA associated with riparian trees and sagebrush shrub-steppe. Category 3, 4, and 6 habitat will also be impacted by the Solar Components, while Category 5 habitat was not identified

in the Solar Micrositing Area. Table 2 shows the acres of permanent and temporary impacts in each habitat category by habitat subtype for the Solar Components.

Table 2. Temporary and Permanent Impacts by Habitat Category and Habitat Subtype

Habitat Category	Habitat Subtype	Impact (acres)	
		Temporary	Permanent
2	PWCA: Riparian Trees	<0.1	<0.1
	PWCA: Sagebrush Shrub-Steppe	0.3	20.7
Category 2 Subtotal		**0.3**	**20.7**
3	Upland Trees	0.1	18.6
Category 3 Subtotal		**0.1**	**18.6**
4	Grassland-steppe	0.2	4.2
	Ephemeral Streams	<0.1	<0.1
Category 4 Subtotal		**0.2**	**4.3**
6	Irrigated Cropland	0.1	52.0
	Non-Irrigated Cropland	56.7	3,132.4
	Developed	1.7	5.6
Category 6 Subtotal		**58.5**	**3,190.1**
Grand Total		**59.1**	**3,233.7**

Note: Totals in this table may not sum correctly due to rounding; "--" = no impact; <0.1 = greater than zero but less than 0.05 acres.

4.0 Methods for Calculating Mitigation

Solar Component impacts, as determined based on the Solar Micrositing Area, would result in a mitigation need of 65.0 acres, including 64.3 acres of mitigation for permanent impacts (41.4 acres of Category 2 and 22.9 acres of Category 3 and 4) and 0.7 acres of mitigation for temporary impacts (0.6 acres of Category 2 and 0.1 acres of Category 3 and 4; Table 3 and Table 4). The actual acres of temporary and permanent impacts and the associated mitigation requirements will be confirmed following construction. The Certificate Holder is not proposing compensatory mitigation under the ODFW Fish and Wildlife Habitat Mitigation Policy for impacts to Category 6 habitat.

Table 3. Calculating Mitigation for Permanent Impacts

Habitat Category	Impact Acres	Mitigation Ratio[1]	Mitigation Need	Mitigation Description
Category 2	20.7	2:1	41.4	The mitigation goal for Category 2 habitat is "no net loss" and "net benefit." Accordingly, mitigation for permanent impacts on Category 2 habitat needs to demonstrate a net benefit in quality or quantity.
Category 3 and Category 4	22.9	1:1	22.9	The mitigation goal for Category 3 and 4 habitat is "no net loss" in quantity or quality. During a site visit on January 10, 2025, ODFW recommended that impacts on Upland Tree habitat types should be mitigated within grassland or shrubland habitat types.
Category 6	3,190.1	0:1	--	The mitigation goal for impacts on Category 6 habitat is minimization; no compensatory mitigation proposed.
Grand Total	**3,233.8**	**--**	**64.3**	--

1. Acres mitigation per acres impacted.

Note: Totals in this table may not sum correctly due to rounding.

Table 4. Calculating Mitigation for Temporary Impacts

Habitat Category	Habitat Subtype	Impact Acres	Mitigation Ratio[1]	Mitigation Need	Mitigation Description
Category 2	PWCA: Riparian Trees	<0.1	2:1	<0.1	The mitigation goal for Category 2 habitat is "no net loss" and "net benefit." Accordingly, mitigation for permanent impacts on Category 2 habitat needs to demonstrate a net benefit in quality or quantity.
	PWCA: Sagebrush Shrub-steppe	0.3	2:1	0.6	
Category 3	Upland Trees	0.1	1:1	0.1	The mitigation goal for Category 3 and 4 habitat is "no net loss" in quantity or quality. The proposed mitigation ratio would result in a lesser amount of acreage of mitigation than what is impacted by the Proposed Facility. Combined with restoration of temporary disturbances, the proposed mitigation ratio is intended to account for the temporary loss of habitat functionality and meet the "no net loss" goal. Temporary disturbances to Category 4 Grassland-steppe are not mitigated beyond restoration.
Category 4	Grassland-steppe	0.2	0:1	--	
	Ephemeral Streams	<0.1	1:1	<0.1	
Category 6	Agriculture, Developed	58.5	0:1	--	The mitigation goal for impacts on Category 6 habitat is minimization; no compensatory mitigation proposed.
Grand Total		**59.1**	**--**	**0.7**	--

1. Acres mitigation per acres impacted.

Note: Totals in this table may not sum correctly due to rounding. "--" = no impact; <0.1 = greater than zero but less than 0.05 acres.

5.0 Biglow Canyon Wind Farm Habitat Mitigation Area

The Habitat Mitigation Area (HMA) is the area where the Certificate Holder is proposing to perform enhancement and preservation actions that are in addition to the revegetation of areas of temporary disturbance associated with the Biglow Solar Project. The HMA must be large enough and have the characteristics to meet the standards set in OAR 635-415-0025.

According to ODFW standards, areas appropriate for mitigation of Category 2 and Category 3 habitat impacts must provide "in-kind" mitigation which creates similar structure and function to that being disturbed, be "in-proximity" to the Solar Components and have potential for habitat enhancement. The Certificate Holder has a previously executed conservation easement for 117 acres, of which 45 acres has been accounted for under the BCWF HMA (Figure 1). Therefore, the Certificate Holder has 72 acres remaining in the previously executed conservation easement to use as an HMA to fulfill other mitigation requirements in part or whole. The Certificate Holder will use these 72 acres as mitigation for impacts from the Solar Components.

5.1 Habitat Assessment and Mitigation Accounting

The Certificate Holder identified 72 acres of suitable in-kind and in-proximity habitat on 117 acres of private land that is available for mitigation of Solar Component impacts. The BCWF HMA is located to the northeast of the BCWF, less than 0.5 mile from the John Day River and just more than 0.5 mile from the nearest wind turbine (Figure 1). The site contains an intermittent spring that forms a small tributary drainage immediately west of the Emigrant Springs tributary and watershed. Thus, the mitigation site sits immediately adjacent to both the John Day River riparian corridor and the large Emigrant Springs watershed, which provides additional forage, thermal and security cover, and water. The site is relatively remote and infrequently disturbed by humans. The existing conservation easements prohibit public access and livestock grazing. The BCWF HMA is within big game winter range and a PWCA (ODFW 2023). Both big game winter range and PWCAs are considered Category 2 habitat, so the HMA is appropriate for mitigating impacts on Category 2 PWCA habitat. The Certificate Holder will update the habitat mapping and categorization of the HMA prior to construction to ensure that the underlying vegetation conditions at the HMA are updated to properly account for Solar Component impacts.

5.2 Habitat Enhancement Actions

Based on the acres of impact and mitigation need identified in Tables 2, 3, and 4, the Certificate Holder identified 72 acres within the BCWF HMA to fulfill the mitigation need for Proposed Facility impacts, subject to confirmation of impacts following construction. Potential enhancement actions and monitoring procedures are detailed below and will be finalized prior to construction. Besides legal protection to ensure no development, potential enhancement actions for the BCWF HMA include the following.

- **Weed control.** The Certificate Holder will monitor and control or eradicate noxious weeds and invasive annual grasses in the HMA.

- **Seeding and/or planting.** Areas may be seeded and/or planted with approved native or desirable non-native plant species.
- **Shrub plantings.** Areas may be planted with native shrub species.
- **Fencing.** To prevent livestock from grazing within the 117-acre HMA, approximately 9,200 feet of new fencing following ODFW specifications was installed in 2007 following BCWF construction. In addition, fencing along the eastern and northern borders of the HMA were upgraded as necessary. Periodic inspections and annual maintenance are performed to ensure the fencing is functioning properly and effectively excluding livestock.
- **Creation of a Water Source.** A wildlife water guzzler was installed in 2007 in the northern portion of the HMA. A 500-gallon capacity cistern was installed to provide water to the guzzler using a design approved by ODFW. The guzzler is inspected and maintained at least once during the fall of each year. Incidental inspections of the guzzler are conducted at other times of the year while other activities are performed in the vicinity.

5.3 HMA Monitoring

The Certificate Holder will direct a qualified investigator (wildlife biologist, botanist, or revegetation specialist), approved by the Oregon Department of Energy (ODOE), to conduct monitoring at the HMA and the success of its protection and enhancements. Monitoring duration is for the life of the Solar Components, with annual monitoring occurring over the first 5 years. After Year 5, a long-term monitoring plan will be developed in consultation with ODOE and ODFW. The Certificate Holder will provide an annual monitoring report to ODOE and ODFW. At a minimum, annual monitoring for the first five years will include assessments of:

- Description of the amount and quality of vegetation at the HMA, including weed control activities;
- Description of the year-to-date climate data;
- Evaluation of seeding or shrub plantings against established success criteria;
- Maintenance needs of wildlife guzzler; and
- Documentation of boundary fence maintenance.

5.3.1 Weed Eradication and Control

Weed control efforts at the HMA will be considered successful when infestations are eradicated or reduced to the point where they no longer interfere with overall HMP goals. Annual inventories will be conducted on the HMA to identify new weed infestations, the status of existing infestations, and the progress of weed control efforts in eradicating or reducing infestations. Prior to conducting annual inventories, appropriate agencies will be consulted to update the list of invasive non-native plant species known or potentially occurring in the HMA, and to develop a schedule that ensures inventories occur at the appropriate time.

Weed inventories will be conducted on foot. Detailed information on weed infestations will be collected, including, but not limited to, data on species, location, growth form, infestation size, and weed cover class (an ocular estimate of the percentage of the ground covered or concealed by

weeds in a specific infestation area). In addition, the surveyor will identify potential weed control strategies for each infestation, as well as constraints that could limit the effectiveness of weed control efforts. Results from the surveys will be incorporated into a geographic information system database. Weed infestations will also be photographed during the initial inventory, and then again over time to document progress of weed control efforts.

5.3.2 Seeding and/or Shrub Planting

Revegetation success of seeded and/or planted areas (enhancement area) will be evaluated using appropriate vegetation measurement methodologies, considering the type of enhancement action completed, the pre-determined success criteria of the enhancement action, and topographical constraints. The specific measurement methodology used to measure an enhancement project will be determined in consultation with the ODOE. For instance, if success criteria are determined by percent cover of a vegetation class, vegetation ground cover may be measured along randomly located transects within the enhancement area using plot frame sampling and/or shrub canopy cover may be estimated using the line-intercept method (Bonham 1989). If the success criteria are related to density of a particular species or vegetation class, density (plant counts) may be measured within macroplots, quadrats, and/or belt transects randomly located within the enhancement area. Whatever sampling methodology is used, photo points of sampling areas will also be established. In the event that an enhancement action occurs on steep terrain where ground measurements are not possible, ocular monitoring (photo points, orthomosaics, etc.) will be used the determine success criteria. Baseline vegetation sampling and photo point documentation at enhancement areas will begin prior to an enhancement action and typically be conducted during the mid-summer season, thereafter.

5.3.3 Fencing

To ensure the effectiveness of perimeter fencing in excluding livestock from and allowing big game access to the HMA, periodic inspections and maintenance of the fence will be conducted. At least one week prior to livestock turn-out on adjacent properties, the fence will be inspected and maintained as needed. In addition, the HMA will be inspected periodically throughout the grazing season each year to ensure that the fence is properly maintained and effectively preventing entry by livestock. Ten photo points will be established at representative sites located throughout the HMA (outside the seeded areas) to qualitatively assess improvement in vegetative/habitat conditions and 'healing' at erosion sites in response to excluding livestock from the site. Photos will be taken annually, generally in middle to late summer or early fall.

5.4 HMA Success Criteria

The goal of the habitat mitigation described herein is to protect and enhance a sufficient quantity of habitat to meet ODFW Fish and Wildlife Habitat Mitigation Policy standards. Habitat enhancement actions will be implemented and progress monitored against baseline conditions to determine

success. Table 5 shows the success criteria for the habitat enhancement actions proposed in Section 5.2.

Table 5. HMA Success Criteria

Habitat Enhancement Action	Success Criteria
Weed control	Weed control is successful when weed species are eliminated or reduced to a level (based on considerations such as number, size and health of plants, and percent ground cover) that does not interfere with the goals of the HMP. To meet success criteria, seeding with seed approved by ODOE may be necessary.
Seeding and/or planting	Sites are considered successfully enhanced when the total canopy cover of all vegetation at each site exceeds 30 percent, and at least 25 percent of the total canopy cover is provided by desirable plant species. Desirable plant species consist of both native and desirable non-native species included in the approved mitigation seed mix as well as naturally occurring native species.
Shrub planting	Shrub planting success criteria related to specific construction mitigation needs will be determined prior to construction by density and/or canopy cover measurements and overall vegetation condition within permanent disturbance areas, in consultation with the ODOE.
Fencing	Fencing is successful when ODOE deems that fencing was properly constructed according to ODFW specifications and continues to be effective at excluding livestock from entering the mitigation site. This criterion includes existing fencing.
Wildlife guzzler	The water source is successful when ODOE deems that the water source continues to provide a reasonably reliable source of water for wildlife.

6.0 Alternative Habitat Mitigation Area

The Certificate Holder may choose to implement mitigation enhancement actions on a natural area at the BCWF if conditions at the BCWF HMA cannot provide for the necessary quantity or quality of mitigation required. The Certificate Holder will re-evaluate its mitigation requirements based on pre-construction design and will re-evaluate the conditions at the existing BCWF HMA prior to construction, in consultation with ODFW, to determine if the alternative HMA location should be used. If the alternative HMA location is going to be used, habitat enhancement actions, monitoring, and success criteria will be developed in consultation with ODOE and ODFW prior to construction.

7.0 Implementation Schedule

Baseline monitoring and implementation of the habitat enhancement actions will occur during the appropriate seasonal timeframe concurrently with or immediately after construction. The Certificate Holder will prepare an implementation schedule prior to construction. This

implementation schedule will be adjusted as needed based on field conditions at the time of implementation and other factors (e.g., seed availability).

8.0 Amendment of the HMP

This HMP may be amended from time to time by agreement of the Certificate Holder and the Energy Facility Siting Council (EFSC). Such amendments may be made without amendment of the site certificate. EFSC authorizes ODOE to agree to amendments to this plan. ODOE shall notify EFSC of all amendments, and EFSC retains the authority to approve, reject, or modify any amendment of this plan agreed to by ODOE.

9.0 References

Bonham, C.D. 1989. *Measurements for Terrestrial Vegetation.* John Wiley and Sons. New York, New York.

ODFW (Oregon Department of Fish and Wildlife). 2023. Priority Wildlife Connectivity Areas Web Map. Oregon Department of Fish and Wildlife. Salem, Oregon. https://experience.arcgis.com/experience/6979b6598f904951bd0af1821e1595f1/.

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Figure

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Biglow Canyon Wind Farm

Figure 1
Habitat Mitigation Area

SHERMAN COUNTY, OR

- Habitat Mitigation Area
- County Boundary
- City/Town
- Deer Winter Range

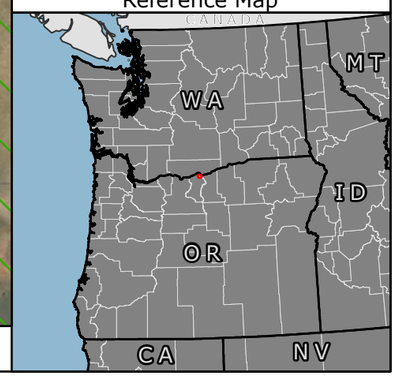
Oregon PWCA Type

- Region

TETRA TECH

PGE

Reference Map



1:10,000

WGS 1984 UTM Zone 10N

0 500 1,000 2,000 US Feet

NOT FOR CONSTRUCTION

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Attachment P-4.Biglow Solar Noxious Weed Plan

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Draft
Noxious Weed Control Plan

Biglow Canyon Wind Farm
Preliminary Request for Amendment 4
February 2025

Prepared for

Portland General Electric Company

Prepared by

Tetra Tech, Inc.

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List of Tables

Appendices

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1.0 Introduction

The Portland General Electric Company (PGE or Certificate Holder) is submitting a Request for Amendment 4 (RFA 4) to the existing Site Certificate for the Biglow Canyon Wind Farm (BCWF or Existing Facility) to add photovoltaic solar energy generation and battery storage (Solar Components). Located approximately 2.5 miles northeast of Wasco in Sherman County, Oregon, BCWF currently consists of 217 wind turbines, with a peak generating capacity of 450 megawatts (MW). In RFA 4, PGE proposes to add up to 385 MW alternating current generating capacity from photovoltaic solar arrays and 375 MW in battery storage capacity.

The Solar Micrositing Area identified as part of RFA 4 is approximately 3,980 acres and provides a conservative estimate of the maximum area needed for development, micrositing, and temporary disturbances from the Solar Components during construction, rather than the anticipated disturbance footprint. The permanent disturbance area impacted by the Solar Components is 3,234 acres.

PGE will own and operate the Solar Components as a part of the BCWF (together, Facility), which, to date, have been developed by BIGL bn, LLC (BIGL). BIGL, in its capacity as the project developer, supports PGE in this RFA 4 and may construct and temporarily operate the Solar Components on behalf of PGE under a Build-Transfer Agreement. This Draft Noxious Weed Control Plan (plan) has been prepared to comply with Oregon Administrative Rule 660-033-0130 (38)(h)(D), which states, in regard to photovoltaic solar power generation facilities, that:

> *Construction or maintenance activities will not result in the unabated introduction or spread of noxious weeds and other undesirable weed species. This provision may be satisfied by the submittal and county approval of a weed control plan prepared by an adequately qualified individual that includes a long-term maintenance agreement. The approved plan shall be attached to the decision as a condition of approval*.

Noxious weeds are non-native, aggressive plants with the potential to cause significant damage to native ecosystems and/or cause significant economic losses. Noxious weeds are opportunistic plant species that readily flourish in disturbed areas, are difficult to control, and thereby can compete with and/or prevent native plant species from re-establishing. Notably, the likelihood of introduction or explosion of noxious weeds is correlated with new disturbances in a region, such as large-scale construction projects. In addition, noxious weed species can adversely affect the structure, composition, and success of revegetation efforts associated with construction-related temporary disturbances.

The intent of this plan is to provide clear methods to prevent the introduction and spread of designated noxious weeds from the construction and operation of the Solar Components, control existing populations of noxious weeds within construction areas, and monitor the success of efforts

to prevent and control noxious weeds. The Certificate Holder and its contractors will be responsible for implementing the methods detailed in this plan.[1]

Prior to construction, the Certificate Holder shall finalize this plan by completing the following:

- Develop final noxious weed monitoring methods in consultation with the Oregon Department of Energy (ODOE) and incorporate as an amendment to this plan upon ODOE approval;
- Update Table 2 in consultation with ODOE and the Sherman County Weed Department;
- Provide records demonstrating all personnel have been trained on noxious weed control;
- Provide evidence that existing noxious weed infestations have been identified and treated in a manner consistent with Sherman County recommendations; and
- Consult with the Sherman County Weed Department on timing, method, and application rates for each identified weed species of concern.

2.0 Regulatory Framework

The Oregon Department of Agriculture (ODA) lists 46 Class A species and 98 Class B species for the state of Oregon, 47 of which are T-designated (ODA 2022; Appendix A). Sherman County specifically recognizes 51 species of noxious weeds (Appendix B; SCWD 2024). Although not all of the Sherman County listed noxious weeds noted in Appendix B occur in the vicinity of the Solar Micrositing Area, the Certificate Holder and its contractors should be aware of the entire list while monitoring and controlling weeds. Noxious weeds known to occur in the vicinity of the site boundary are discussed in Section 3.0.

2.1 State of Oregon

In Oregon, a noxious weed is defined under Oregon Revised Statutes (ORS) 569.175 as "a terrestrial, aquatic, or marine plant designated by the State Weed Board under ORS 569.615 as among those representing the greatest public menace and as a top priority for action by weed control programs." Noxious weeds have been declared by ORS 569.350 as a menace to public welfare, and control of these plants is the responsibility of private landowners and operators, as well as county, state, and federal governments.

The Oregon State Weed Board (OSWB) was created by the ODA under ORS 569.600. OSWB provides recommendations for noxious weed control at the state-level and is responsible for updating the State Noxious Weed List. The OSWB and the ODA classify noxious weeds in Oregon in accordance

[1] This plan is only applicable to the Solar Components of the BCWF; the existing Vegetation Management Plan (updated August 20, 2024) continues to apply to the wind components.

with the ODA Noxious Weed Classification System (Appendix A; ODA 2022). There are three designations under the State's system:

- **A Listed Weed:** A weed of known economic importance that occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent.
    - **Recommended Action:** Infestations are subject to eradication or intensive control when found.
- **B Listed Weed:** A weed of economic importance that is regionally abundant, but may have limited distribution in some counties.
    - **Recommended Action:** Limited to intensive control at the state, county, or regional level as determined on a site-specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.
- **T-Designated Weed:** A designated group of weed species selected from either the A or B list as a focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority. T-designated noxious weeds are determined by the OSWB, which directs ODA to develop and implement a statewide management plan.

2.2 Sherman County

Sherman County, Oregon, follows a different noxious weed list and protocol, developed by the Sherman County Weed District. Sherman County has developed six weed classes to define weeds of significance (Appendix B; SCWD 2024):

- **A Class:** High priority. Any noxious weed which greatly endangers the overall economic well-being of the County and has a small enough distribution where eradication is possible.
- **B Class:** Moderate priority. A noxious weed which is well established in the County and has known negative impacts, but due to its distribution, eradication is not feasible.
- **C Class:** Low priority. A noxious weed which is widespread throughout the County and has known economic impacts.
- **Q Class:** Questionable list. A newly detected weed which may have some importance, but more information is needed to determine its impact on agriculture. There is only one Q Class weed currently: hairy willow herb (*Epilobium hirsutum*).
- **T Class:** Targeted list. A noxious weed from any Class that the Sherman County Weed Control Board wishes to focus efforts and resources on. This list is reviewed annually.
- **W Class:** Watch list. Any noxious weed that may occur in neighboring counties, the State or similar environments as the County, and could potentially endanger the overall economic well-being of the County. Once detected, these weeds shall be moved to the appropriate list.

3.0 Noxious Weeds Identified at the Solar Components

On July 9 and 10, 2024, Tetra Tech conducted noxious weed surveys concurrently with surveys for threatened, endangered, and candidate plant species within the Solar Micrositing Area. During those surveys, 12 listed noxious weed species were documented, including 8 ODA-listed noxious weed species and 12 Sherman County listed noxious weed species. Table 1 lists the noxious weed species observed, their noxious weed designation (i.e., status), and the frequency of observations. Locations of these noxious weeds documented during surveys are included in Exhibit P, Attachment P-1 of RFA 4. Eight of the 12 noxious weed species observed were state and/or County "B" listed weeds (Table 1; ODA 2022, SCWD 2024). One species, rush skeletonweed (*Chondrilla juncea*), is an "A" Class Weed in Sherman County and a state "T"-designated weed, meaning that ODA has targeted this species for prevention and control (ODA 2022; SCWD 2024).

Cereal rye (*Secale cereale*), prickly lettuce (*Lactuca serriola*), rush skeletonweed, and Russian thistle (*Salsola tragus*) were frequently observed in non-cultivated areas within the Solar Micrositing Area. Diffuse knapweed (*Centaurea diffusa*), field bindweed (*Convolvulus arvensis*), and horseweed (*Conyza canadensis*) were all observed in several locations within the Solar Micrositing Area. Jointed goatgrass (*Aegilops cylindrica*) and Scotch thistle (*Onopordum acanthium*) were each observed in four locations within the Solar Micrositing Area. Bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), and Russian knapweed (*Rhaponticum [Acroptilon] repens*) were only observed in one to three locations within the Solar Micrositing Area.

The Certificate Holder will conduct an additional pre-construction noxious weed survey to identify the noxious weeds present within the Solar Micrositing Area at the time of construction to inform management actions. The Certificate Holder may coordinate with landowners regarding noxious weed presence. Identified noxious weed infestations will be treated prior to construction.

Table 1. Noxious Weeds Observed during Surveys in 2024

Scientific Name	Common Name	Oregon State Status[1]	Sherman County Status[1]	Frequency[2]
Aegilops cylindrica	Jointed goatgrass	B	C	Infrequently observed.
Centaurea diffusa	Diffuse knapweed	B*	B	Several small to medium-sized populations observed.
Chondrilla juncea	Rush skeletonweed	B (T)*	A (T)	Frequently observed in non-cultivated areas.
Cirsium arvense	Canada thistle	B*	B (T)	One observation made.
Cirsium vulgare	Bull thistle	B*	C	Observed in two locations.
Convolvulus arvensis	Field bindweed	B*	B	Many small to large populations observed.
Conyza canadensis	Horseweed	Not listed	C	Commonly observed.
Lactuca serriola	Prickly lettuce	Not listed	C	Frequently observed.
Onopordum acanthium	Scotch thistle	B	B (T)	Several observations made.

Scientific Name	Common Name	Oregon State Status[1]	Sherman County Status[1]	Frequency[2]
Rhaponticum (Acroptilon) repens	Russian knapweed	B*	B	One observation made.
Salsola tragus	Russian thistle	Not listed	C	Frequently observed.
Secale cereale	Cereal rye	Not listed	C	Frequently observed.

1. Definitions for state and county noxious weed status are provided in Sections 2.1 and 2.2, respectively. Species marked with a (*) are targeted for biocontrol (ODA 2022).
2. Patch/observation sizes are as follows : small = less than 0.1 acre, medium = 0.1 to 1.0 acre, large = greater than 1 acre.

In addition to noxious weeds, cheatgrass (*Bromus tectorum*), an invasive annual grass, was identified in grassland habitats within the Solar Micrositing Area. While this species is not listed as a noxious weed by the state or county, it and other invasive annual grasses can adversely impact habitat and can increase fire risk. To address these issues and maintain compliance with success criteria in Section 4.4 and OAR 660-033-0130(38)(h)(D), the Certificate Holder will monitor the spread of invasive annual grasses in addition to noxious weeds as explained in Sections 4.3 and 4.4.

4.0 Noxious Weed Management

This section of the plan describes the steps the Certificate Holder will take to prevent and control the establishment and spread of noxious weed species during both construction and operation of the Solar Components. Noxious weed control methods for the Solar Components described in this plan have been developed utilizing information from the ODA Noxious Weed Control Program and the Sherman County Weed Department.

The management of noxious weeds will be considered throughout all stages of construction and operation of the Solar Components and will include:

- **Prevention:** Implementing measures to prevent the spread of noxious weeds during construction, operation, and maintenance activities.
- **Treatment:** Treating noxious weed populations with their appropriate control methods, at appropriate time intervals.
- **Monitoring:** Assessing noxious weed changes within the Solar Micrositing Area over time and ensuring that legacy as well as new weed populations are not increasing their distributions.

The Certificate Holder's objective is to prevent the introduction of new noxious weed populations and the spread of existing noxious weed populations. The methods described below will be implemented to minimize the spread of noxious weeds during construction activities. New noxious weeds detected during post-construction revegetation will be considered a result of construction activities and will be controlled accordingly.

4.1 Prevention

Prior to the start of construction, all personnel will be trained on the importance of noxious weed control. As part of start-up activities, and to help facilitate the avoidance of existing infestations and identification of new infestations, the Certificate Holder or their construction contractor will provide information and training to all construction personnel regarding noxious weed identification and prevention strategies. Operations and maintenance personnel will be similarly informed. The importance of preventing the spread of noxious weeds in areas not currently infested and controlling the proliferation of noxious weeds already present within or near the Solar Components will be emphasized.

The Certificate Holder will implement the following best management practices (BMPs) to minimize the spread of noxious weeds during construction activities, revegetation efforts, and operation and maintenance activities. The following practices center around ensuring that noxious weed seeds or reproductive plant fragments are not unintentionally dispersed within or outside of the Solar Components boundaries by personnel or their vehicles. These practices allow for responsible movement around sites with noxious weeds already present and ensure that new populations or species are not accidentally introduced into the Solar Micrositing Area. The Certificate Holder will assess and report compliance with the BMPs as described in Section 4.3. These BMPs include, but are not limited to:

- Flagging and treating areas of noxious weed infestations prior to construction to alert construction personnel;
- Limiting vehicle access to designated routes, whether existing roads or newly constructed roads, and the outer limits of construction disturbances per the final design for the Solar Components;
- Limiting vehicle traffic in noxious weed-infested areas;
- Cleaning construction vehicles each time they enter or exit the Solar Components at a wash station located inside the Solar Components at vehicle ingress/egress points;
- Cleaning vehicles and equipment associated with ground disturbance and movement of topsoil utilizing a mobile wash station after performing work in noxious weed-infested areas and prior to performing work in non-infested areas;
- Where feasible, not moving topsoil and other soils from noxious weed infested areas outside of the infested areas and returning them to their previous location during reclamation activities;

- Treating soils from infested areas with a pre-emergent herbicide prior to initiation of revegetation efforts;
- Providing information regarding target noxious weed species at the operations and maintenance buildings;
- Treating noxious weeds via biological, mechanical, or chemical control (see Section 4.2);
- Preventing conditions favorable for noxious weed germination and spread by revegetating temporarily disturbed areas as soon as practicable;
- Monitoring areas of disturbance for noxious weeds after construction (see Section 4.3), during the normal course of revegetation maintenance of temporary workspaces, and implementing control measures as appropriate;
- Revegetating the site with appropriate, local native seed or native plants; when these are not available, non-invasive, and non-persistent non-native species may be used; and
- Ensuring that seed and straw mulch used for site rehabilitation and revegetation are certified free of noxious weed seed and propagules.

4.2 Treatment

Control of noxious weeds and other invasive weed species will be implemented through biological, mechanical, or chemical methods. The Certificate Holder will be responsible for hiring a qualified contractor, as approved by ODOE, to implement the treatment of noxious weeds. The Certificate Holder will ensure that noxious weed management actions will be conducted by specialists with the following qualifications:

- Experience in native plant, non-native and invasive plants, and noxious weed identification;
- Experience in noxious weed mapping;
- If chemical control is used, specialists must possess a Commercial or Public Pesticide Applicator License from the ODA or possess an Immediately Supervised Pesticide Trainee License and be supervised by a licensed applicator;
- Training in noxious weed management or Integrated Pest Management with an emphasis in noxious weeds;
- Experience in coordination with agencies and private landowners; and
- No recent (within one year) violations on the contractor's record.

Existing noxious weed populations will be controlled or prevented from expanding in size and density and will not be spread to new sites in compliance with the Oregon Noxious Weed Policy and Classification and OAR 660-033-0130(38)(h)(D). If it is determined that noxious weeds have invaded areas immediately adjacent to the Solar Components (e.g., areas visible just beyond the outer limits of construction disturbances associated with the Facility or along access roads) as a result of construction, the Certificate Holder will contact the landowner and seek approval to treat those noxious weed populations.

Long-term weed control methods will be described in a long-term monitoring plan as described in Section 4.3. The main factor in long-term weed control is successful revegetation with non-weedy species as described in the Draft Revegetation Plan (see Exhibit P, Attachment P-2). As noted above, short-term noxious weed control will be done through biological, mechanical, or chemical treatment. However, it will be important to ensure that the short-term treatment does not affect the establishment of the native perennial cover that will help provide the long-term control. Additionally, early detection and control of small noxious weed populations before they can expand into larger populations is extremely important for successful weed control efforts.

Noxious weed control will continue for the life of the Solar Components to meet the identified success criteria described in Section 4.3. Supplemental seeding of desirable species may be needed to meet and/or maintain compliance with success criteria. Fertilizer application will be limited in areas treated for noxious weeds, as fertilizer can stimulate the growth of noxious weeds, and the timing of revegetation activities will need to be coordinated with noxious weed treatments.

4.2.1 Biological

Biological control involves the use of prescribed insects, fungi, and livestock to control noxious weeds to achieve management objectives. Biological control methods are typically targeted to a specific species or plant to control its persistence. They are also used for maintenance in targeted areas for vegetation management control in height and density that includes mitigating fire risk and erosion. Biological control is environmentally friendly and should be the first consideration when applicable.

4.2.2 Mechanical Treatment

Mechanical treatment will be the preferred method of treatment for existing noxious weed populations where appropriate within the Solar Micrositing Area. Mechanical control methods rely on removal of plants, seed heads, and/or cutting roots with a shovel or other hand tools or equipment that can be used to remove, mow, or disc noxious weed populations. Hand removal of plants is also included under this treatment method. Mechanical methods are useful for smaller, isolated populations of noxious weeds in areas of sensitive habitats. Additionally, hand removal of small infestations can minimize soil disturbance, allowing desirable species to remain and limiting conditions favorable for noxious weeds.

Some rhizomatous plants can spread by discing or tillage. For example, rush skeletonweed, which has been identified within the Solar Micrositing Area (Section 3.0), can reproduce vegetatively from small segments of root, and discing or tilling can facilitate the spread of this species. As such, implementation of discing will be species-specific and avoided in areas where it will be counter-productive.

If discing is employed in areas that will be revegetated following construction, subsequent seeding will be conducted to re-establish desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of noxious weeds. Discing, tilling, or other mechanical treatments that disturb

the soil surface within native habitats will also be avoided in favor of herbicide application, which is an effective means of reducing the size of noxious weed populations as well as preventing the establishment of new infestations.

4.2.3 Chemical Treatment

Chemical control can effectively remove noxious weeds through use of selective herbicides. The specific herbicide used, and the timing of application will be chosen based on the specific noxious weed being treated, as appropriate herbicides differ between species and types of plants (i.e., dicots such as rush skeletonweed versus monocots such as jointed goatgrass). Recommended treatment methods, as well as the recommended timing of treatments for the 12 target noxious weeds identified within the Solar Micrositing Area, are summarized in Table 2, subject to approval by ODA prior to implementation.

Only herbicides approved by the U.S. Environmental Protection Agency (EPA) and ODA will be applied, and appropriate BMPs will be implemented during application. The status of herbicide approval (e.g., confirming herbicides are approved for use by the EPA and ODA) will be checked annually. In addition, prior to construction and every fall season during facility operation, the Certificate Holder or its contractor will consult with the Sherman County Weed District on timing, method, and application rates for each identified weed species of concern, to allow for adaptive weed management given changes in weed control effectiveness from noxious weed species tolerance to herbicide treatment over time. Results of the consultation shall be reported to ODOE within 30 days and records of implementation shall be included in the Certificate Holder's annual monitoring report. Any alternative control methods can be proposed by the Certificate Holder or its contractors, subject to approval by the Sherman County Weed District.

Herbicides will be applied to identified, treatable, noxious weed infestations. The Certificate Holder or their contractors will coordinate with the Sherman County Weed District to determine which populations are treatable and will notify landowners of proposed herbicide use on their lands prior to application. If a noxious weed population is deemed to be untreatable (e.g., too widespread and established in an area to successfully control), the Certificate Holder will implement the applicable prevention measures discussed in Section 4.1, subject to approval by ODOE and the Sherman County Weed District.

Table 2. Recommended Chemical Treatment for Target Noxious Weed Species

Scientific Name	Common Name	Chemical Treatment Method and Timing
Aegilops cylindrica	Jointed goatgrass	**Glyphosate** – Apply to actively growing plants emerged before bolt stage (i.e., stage of growth where growth is focused on seed development versus leaf development). • Rate: 0.38 to 0.75 lb ae/a[1] **Imazapic –** Apply pre-emergence in fall. Due to the residual effect of this herbicide, it will not be used in areas to be revegetated. • Rate: 0.06 to 0.19 lb/a[1]

Scientific Name	Common Name	Chemical Treatment Method and Timing
		Sulfometuron – Apply in fall or in late winter before jointed goatgrass is 3 inches tall. • Rate: 1.00 to 1.50 oz ai/a (1.33 to 2.00 oz/a)[1]
Centaurea diffusa	Diffuse knapweed	**2,4-D –** Apply post-emergence from rosette to beginning of bolting or fall rosette. Optimal at early flowering stage. • Rate: 0.95 to 1.90 lb ae/a[1] **Aminocyclopyrachlor + chlorsulfuron (Perspective) –** Apply post-emergence and pre-emergence. • Rate: 4.75 to 8.00 oz product/a[1] **Aminopyralid (Milestone) –** Apply post-emergence and pre-emergence. Effective control can also be obtained with a fall application to new regrowth. • Rate: 1.25 to 1.75 oz ae/a[1] **Clopyralid (Transline) –** Apply pre-emergence (for seedling control) or post-emergence (for seedlings and perennial plant control). Generally optimal to apply in spring, at beginning of bolting up to the bud stage. Can also apply to fall regrowth. • Rate: 4.00 to 8.00 oz ae/a[1] **Clopyralid + 2,4-D (Curtail) –** Apply pre-emergence (for seedling control) or post-emergence (for seedlings and perennial plant control). Generally optimal to apply in spring, at beginning of bolting up to the bud stage. Can also apply to fall regrowth. • Rate: 2.00 to 4.00 qt/a[1] **Dicamba (Banvel, Clarity) –** Apply post-emergence from rosette to beginning of bolting or fall rosette. Optimal at early flowering stage. • Rate: 0.50 to 1.00 lb ae/a[1] **Glyphosate (Roundup, Accord XRT II, etc.) –** Apply post-emergence to rapidly growing knapweed when most plants are at bud stage. • Rate: 3.38 lb ae/a[1] **Imazapyr (Arsenal, Habitat, Stalker, Chopper, Polaris)** – 3.00 to 4.00 pt product/ a[1] has been shown to give some level of control. **Picloram (Tordon 22K) –** Apply pre-emergence and post-emergence. Post-emergence applications are best at rosette to mid-bolting stage or fall rosette stage. Apply when plants are growing rapidly. Under favorable growing conditions, summer application can be effective if higher rates are used. • Rate: 4.00 to 8.00 oz ae/a[1]
Chondrilla juncea	Rush skeletonweed	**2,4-D or MCPA –** Apply to rosettes in the spring immediately before or during bolting. • Rate: 2.00 lb ae/a[1] **Aminocyclopyrachlor + chlorsulfuron –** Apply to actively growing plants in spring. • Rate: 1.80 to 3.20 oz/a1 aminocyclopyrachlor + 0.70 to 1.30 oz/ a[1] chlorsulfuron (4.50 to 8.00 oz/ a[1] of product) **Aminopyralid (Milestone) –** Spring or fall when rosettes are present.

Scientific Name	Common Name	Chemical Treatment Method and Timing
		• Rate: 1.75 oz ae/a (7 fluid oz/a Milestone)[1] **Clopyralid –** Apply to rosettes in fall or up to early bolting in spring. • Rate: 0.25 to 0.38 lb ae/a (0.66 to 1 pint/a)[1] **Picloram –** Apply from late fall to early spring. For best results, apply just before or during bolting. • Rate: 1.00 lb ae/a[1]
Cirsium arvense	Canada thistle	**2,4-D –** Apply post-emergence in spring at the pre-bud to early-bud stage. • Rate: 1.90 lb ae/a[1] **Aminocyclopyrachlor + chlorsulfuron (Perspective) –** Apply post-emergence before they produce seed. • Rate: 4.75 to 8.00 oz product/a[1] **Aminopyralid (Milestone) –** Apply post-emergence in spring after all plants have fully emerged until the oldest plants are in full flower stage. • Rate: 1.25 to 1.75 oz ae/a[1] **Chlorsulfuron (Telar) –** Apply post-emergence from bolting to bloom stages. Can also apply in the fall. • Rate: 0.75 to 1.00 oz ai/a[1] **Clopyralid (Transline) –** Apply post-emergence before the bud stage when most of the basal leaves have emerged. Fall applications are also effective. • Rate: 4.00 to 8.00 oz ae/a[1] **Dicamba (Banvel, Clarity) –** Apply post-emergence to rosettes. Fall applications are also effective. • Rate: 2.00 lb ae/a[1] **Glyphosate (Roundup, Accord XRT II, etc.) –** Apply post-emergence to rapidly growing thistles when most plants are past the bud stage. Fall applications must be before the first killing frost. • Rate: 2.25 lb ae/a[1] **Imazapyr (Arsenal, Habitat, Stalker, Chopper, Polaris)** – The herbicide label indicates that 4.00 to 6.00 pt product/ a[1] gives some level of control, but imazapyr is not usually the herbicide of choice for the control of Canada thistle. **Picloram (Tordon 22K) –** Best when applied post-emergence to rapidly growing thistle after most leaves emerge but before bud stage. Fall applications are also effective. • Rate: 8.00 oz ae/a[1] **Sulfometuron (Oust) –** Apply pre-emergence or early post-emergence before or during the rainy season when weeds are germinating or actively growing. • Rate: 4.50 to 6.00 oz ai/a[1]
Cirsium vulgare	Bull thistle	**2,4-D –** Apply post-emergence at rosette stage. Treat seedling rosettes in the fall. • Rate: 1.50 to 2.00 lb ae/a[1] **Aminocyclopyrachlor + chlorsulfuron (Perspective) –** Apply post-emergence and pre-emergence. • Rate: 4.75 to 8.00 oz product/a[1] **Aminopyralid (Milestone) –** Apply post-emergence in spring to early summer

Scientific Name	Common Name	Chemical Treatment Method and Timing
		when the target plants are in the rosette to bolting stage, or in fall to seedlings. • Rate: 0.75 to 1.25 oz ae/a[1] **Chlorsulfuron (Telar) –** Apply post-emergence to young rapidly growing plants. • Rate: 0.75 oz ai/a[1] **Clopyralid (Transline) –** Apply post-emergence in spring up to the bud stage. Can also apply in the fall to regrowth. • Rate: 4.00 to 8.00 oz ae/a[1] **Dicamba (Banvel, Clarity) –** Apply post-emergence to rosettes in spring. Fall applications are also effective. • Rate: 0.50 to 1.00 lb ae/a[1] **Imazapyr (Arsenal, Habitat, Stalker, Chopper, Polaris)** – Apply post-emergence at flowering. • Rate: 1.00 to 1.50 lb ae/a[1] **Metsulfuron (Escort) –** Apply post-emergence to young, rapidly growing weeds in spring before flowering, or in fall to new rosettes. • Rate: 0.90 to 1.20 oz ai/a[1] **Picloram (Tordon 22K) –** Best when applied post-emergence during active growth before bud stage. • Rate: 2.00 to 3.00 oz ae/a[1] **Triclopyr –** Apply post-emergence to rapidly growing weeds, up to bud stage. • Rate: 1.00 to 4.50 lb ae/a[1]
Convolvulus arvensis	Field bindweed	**2,4-D –** Apply post-emergence at bud stage or in fallow in mid-summer, before bindweed is under moisture stress. • Rate: 1.90 to 2.85 lb ae/a[1] **Aminocyclopyrachlor + chlorsulfuron (Perspective) –** Apply post-emergence when vegetation is fully developed. • Rate: 4.75 to 8.00 oz product/a[1] **Dicamba (Banvel, Clarity) –** Apply post-emergence when weeds are growing rapidly. Do not apply after bud break. • Rate: 0.50 to 2.00 lb ae/a[1] **Glyphosate (Roundup, Accord XRT II, etc.) –** Apply post-emergence to rapidly growing plants, up to the beginning of seed production. • Rate: 3.40 to 4.50 lb ae/a[1] **Imazapic (Plateau) –** Apply post-emergence from 25% bloom through fall to rapidly growing bindweed. • Rate: 2.00 to 3.00 oz ae/a[1] **Imazapyr (Arsenal, Habitat, Stalker, Chopper, Polaris)** – Apply pre-emergence or post-emergence when plants are growing rapidly. • Rate: 4.00 oz ae/a[1] **Metsulfuron (Escort) –** Apply post-emergence to rapidly growing bindweeds in bloom stage. • Rate: 0.60 to 1.20 oz ai/a[1]

Scientific Name	Common Name	Chemical Treatment Method and Timing
		Fluroxypyr (Vista XRT) – Apply post-emergence when the target plants are growing rapidly. • Rate: 7.70 oz ae/a[1] **Picloram (Tordon 22K) –** Apply post-emergence in the growing season when bindweed is visible. Timing is not critical, but results are most consistent if bindweed is in early bud to full bloom. • Rate: 0.50 to 1.00 lb ae/a[1] **Propoxycarbazone-sodium (Canter R+P) –** Apply post-emergence to young, rapidly growing plants. • Rate: 0.63 to 0.84 oz ai/a[1] **Triclopyr –** Apply post-emergence at bud stage or at summer fallow in mid-summer. • Rate: 1.13 to 1.50 lb ae/a[1]
Conyza canadensis	Horseweed	**2,4-D LV Ester –** Apply when horseweed is in the seedling to rosette stage of growth. • Rate: 1.00 lb ae/a[1] **Aminocyclopyrachlor + chlorsulfuron (Perspective) –** Apply to actively growing plants in spring. • Rate: 4.50 to 8.00 oz product/a[1] **Aminopyralid (Milestone) –** Apply to actively growing plants. • Rate: 4.00 to 6.00 oz ae/a[1] **Clopyralid (Transline or Stinger) –** Apply to actively growing plants up to the five-leaf stage. • Rate: 0.13 to 0.19 lb ae/a[1] **Dicamba (Clarity) –** Apply post-emergence to the seedling to rosette stage. • Rate: 0.25 lb ae/a[1] **Diflufenzopyr + dicamba (Distinct) –** Apply to the seedling to rosette stage. • Rate: 4.00 oz ae/a[1] **Flumioxazin (Chateau or Payload) –** Apply pre-emergence or post-emergence to small, actively growing horseweed. • Rate: 4.00 to 12.00 oz ae/a[1] **Glyphosate –** Apply while horseweed is actively growing and less than 12 inches tall. • Rate: 0.75 to 1.50 lb ae/a[1]
Lactuca serriola	Prickly lettuce	Rosettes of prickly lettuce can be controlled in the fall or spring by 2,4-D, Aminocyclopyrachlor + chlorsulfuron, Aminopyralid, Chlorsulfuron, Clopyralid, Dicamba, Glyphosate, Hexazinone, Imazapyr, Metsulfuron, Picloram, Rimsulfuron, and Triclopyr.
Onopordum acanthium	Scotch thistle	**2,4-D –** Apply post-emergence from rosette to beginning of bolting or fall rosette. Most effective on small rosettes. • Rate: 0.95 to 1.90 lb ae/a[1] **Aminocyclopyrachlor + chlorsulfuron (Perspective) –** Apply post-emergence

Scientific Name	Common Name	Chemical Treatment Method and Timing
		and pre-emergence. • Rate: 4.75 to 8.00 oz product/a[1] **Aminopyralid (Milestone) –** Apply post-emergence from the rosette to young bolting stage. • Rate: 1.25 to 1.75 oz ae/a[1] **Chlorsulfuron (Telar) –** Apply post-emergence from rosette to flower bud stage. • Rate: 0.75 to 1.95 oz ai/a[1] **Clopyralid (Transline) –** Apply post-emergence from the rosette to young bolting stage. • Rate: 4.00 to 8.00 oz ae/a[1] **Clopyralid + 2,4-D (Curtail) –** Apply post-emergence from the rosette to young bolting stage. • Rate: 2.00 to 4.00 qt ae/a[1] **Dicamba (Banvel, Clarity) –** Apply post-emergence from rosette to beginning of bolting or fall rosette. • Rate: 0.25 to 1.00 lb ae/a[1] **Glyphosate (Roundup, Accord XRT II, etc.) –** Apply post-emergence to rapidly growing plants, from the rosette to early bolting stage. • Rate: 1.10 to 2.25 lb ae/a[1] **Metsulfuron (Escort) –** Apply post-emergence from the rosette up until flower-bud stage. • Rate: 0.60 to 1.20 oz ai/a[1] **Picloram (Tordon 22K) –** Apply post-emergence and pre-emergence. • Rate: 2.00 to 3.00 oz ae/a[1]
Rhaponticum (*Acroptilon*) *repens*	Russian knapweed	**Aminocyclopyrachlor + chlorsulfuron (Perspective) –** Apply post-emergence, bud stage to senescence. Although above-ground stems die back in late summer and fall, the subsurface crown buds of Russian knapweed are highly susceptible to fall applications of this herbicide. Applications can be made into winter if conditions permit. • Rate: 4.75 to 8.00 oz product/a[1] **Aminopyralid (Milestone) –** Apply post-emergence, bud stage to senescence. Although above-ground stems die back in late summer and fall, the subsurface crown buds of Russian knapweed are highly susceptible to fall applications of this herbicide. Applications can be made into winter if conditions permit. • Rate: 0.75 to 1.75 oz ae/a[1] **Chlorsulfuron (Telar) –** Apply post-emergence at flower bud to flowering stage, or fall rosette stage, or winter. • Rate: 0.75 to 1.95 oz ai/a[1] **Clopyralid (Transline) –** Apply post-emergence, bud stage to senescence. Although above-ground stems die back in late summer and fall, the subsurface crown buds of Russian knapweed are highly susceptible to fall applications of this herbicide. Applications can be made into winter if conditions permit. • Rate: 4.00 to 8.00 oz ae/a[1]

Scientific Name	Common Name	Chemical Treatment Method and Timing
		Clopyralid + 2,4-D (Curtail) – Apply post-emergence, bud stage to senescence. Although above-ground stems die back in late summer and fall, the subsurface crown buds of Russian knapweed are highly susceptible to fall applications of this herbicide. Applications can be made into winter if conditions permit. • Rate: 2.00 to 4.00 qt ae/a[1] **Glyphosate (Roundup, Accord XRT II, etc.) –** Apply post-emergence to rapidly growing plants in the bud stage. • Rate: 4.50 lb ae/a[1] **Imazapic (Plateau) –** Apply late post-emergence in fall when the top 25% of the plant is necrotic, but before a hard frost. Application should be made when some green stem and foliage remains on plant. Timing should correspond to fall basal growth. • Rate: 3.00 oz ae/a[1] **Metsulfuron (Escort) –** Apply post-emergence at flower bud to flowering stage or to fall rosettes. • Rate: 0.60 to 1.20 oz ai/a[1] **Picloram (Tordon 22K) –** Apply post-emergence, bud stage to senescence. Although above-ground stems die back in late summer and fall, the subsurface crown buds of Russian knapweed are highly susceptible to fall applications of this herbicide. Applications can be made into winter if conditions permit. • Rate: 0.50 lb ae/a[1]
Salsola tragus	Russian thistle	**2,4-D –** Apply post-emergence to young plants. • Rate: 0.95 to 1.90 lb ae/a[1] **Aminocyclopyrachlor + chlorsulfuron (Perspective) –** Apply post-emergence and pre-emergence. • Rate: 4.75 to 8.00 oz product/a[1] **Aminopyralid (Milestone) –** Apply pre-emergence only. • Rate: 1.75 oz ae/a[1] **Chlorsulfuron (Telar) –** Apply pre-emergence to early post-emergence. • Rate: 0.75 to 1.50 oz ai/a[1] **Dicamba (Banvel, Clarity) –** Apply post-emergence to rapidly growing plants. More effective on smaller plants. • Rate: 0.50 to 2.00 lb ae/a[1] **Glyphosate (Roundup, Accord XRT II, etc.) –** Apply post-emergence to rapidly growing plants before seed set. • Rate: 1.10 to 1.70 lb ae/a[1] **Hexazinone (Velpar L) –** Apply pre-emergence to early post-emergence. • Rate: 1.00 to 1.50 lb ai/a[1] **Imazapic (Plateau) –** Apply in fall or spring, from pre-emergence until plants are 3 inches tall. • Rate: 2.00 to 3.00 oz ae/a[1] **Imazapyr (Arsenal, Habitat, Stalker, Chopper, Polaris)** – Apply pre-emergence or post-emergence.

Scientific Name	Common Name	Chemical Treatment Method and Timing
		• Rate: 0.50 to 0.75 lb ae/a[1] **Picloram (Tordon 22K) –** Apply post-emergence to young rapidly growing plants. • Rate: 2.00 to 3.00 oz ae/a[1] **Propoxycarbazone-sodium (Canter R+P) –** Apply post-emergence to small, rapidly growing plants. • Rate: 0.63 to 0.84 oz ai/a[1] **Sulfometuron (Oust) –** Apply pre-emergence or early post-emergence. • Rate: 1.50 to 6.00 oz ai/a[1] **Triclopyr –** Apply post-emergence to rapidly growing plants. More effective on smaller plants. • Rate: 1.00 to 2.00 lb ae/a[1]
Secale cereale	Cereal rye	Applying a non-selective herbicide such as glyphosate post-emergence can control cereal rye. Glyphosate does not provide residual weed control, so any plants that emerge after treatment will not be controlled. Other herbicides that have found to provide some control include Indaziflam, Imazapic, Clethodim, Hexazinone, Rimsulfuron, Sethoxydim, and Sulfometuron.
These are recommendations only. Applicators may deviate from these recommendations based on professional judgement. Sources: DiTomaso et al. 2013; LCNWCB 2022; Prather and Peachey 2022 1. a = acre; ae = acid equivalent; ai = active ingredient; lb= pound; oz = ounces		

4.2.3.1 Herbicide Application and Handling

Herbicide application will occur within the appropriate season and during the appropriate timeframe to achieve desired results, as approved by ODOE and the Sherman County Weed Department. Herbicide application will adhere to EPA and ODA standards. In general, application of herbicides will not occur when the following conditions exists:

- Wind velocity exceeds 15 miles per hour for granular application, or exceeds 10 miles per hour for liquid applications;
- Snow or ice covers the foliage of target species; or
- Adverse weather conditions are forecasted within the next few days.

Hand application methods (e.g., backpack spraying) may be used in roadless areas or in rough terrain. Vehicle-mounted sprayers (e.g., handgun, boom, and injector) will be used mainly in open areas that are readily accessible by vehicle. Calibration checks of equipment will be conducted prior to spraying activities, as well as periodically throughout use, to ensure that appropriate application rates are achieved.

Herbicides will be transported to the Facility daily with the following stipulations:

- Only the quantity needed for that day's work will be transported.

- Concentrate will be transported in approved containers only, and in a manner that will prevent spilling, stored separately from food, clothing, and safety equipment.
- Mixing will be done at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive species' habitat. No herbicides will be applied at these areas unless authorized by the appropriate regulatory agencies.
- All herbicide equipment and containers will be inspected daily for leaks.
- Herbicides use will be in accordance with all manufacture's label recommendations and warnings.

4.2.3.2 Herbicide Spills and Cleanups

All appropriate precautions will be taken to avoid herbicide spills. In the event of a spill, cleanup will be immediate. Contractors will keep spill kits in their vehicles and in an appropriate storage shed to allow for quick and effective response to spills. Items included in the spill kit will be:

- Protective clothing and gloves;
- Adsorptive clay, "kitty litter," or other commercial adsorbent;
- Plastic bags and a bucket;
- A shovel;
- A fiber brush and screw-in handle;
- A dustpan;
- Caution tape;
- Highway flares (use on existing hard-top roads only); and
- Detergent.

Response to an herbicide spill will vary with the size and location of the spill, but general procedures include:

- Stopping the leak;
- Containing the spilled material;
- Traffic control;
- Dressing the clean-up team in protective clothing;
- Cleaning up and removing the spilled herbicide, as well as the contaminated adsorptive material and soil; and
- Transporting the spilled herbicide and contaminated material to an authorized disposal site.

4.2.3.3 Herbicide Spill Reporting

All herbicide contractors will have readily available copies of the appropriate material safety data sheets for the herbicides used at their disposal and will keep copies of the material safety data sheets in the application vehicle. If an herbicide spill of any size occurs, the appropriate agency and

spill coordinators will be notified promptly. In case of a spill into wetlands and waterbodies, the appropriate federal, state, and county agencies will be notified immediately. All herbicide spills equal to or greater than 200 pounds or 25 gallons of pesticide residue will be reported to the Oregon Emergency Response System in accordance with applicable laws and requirements (OAR 340-142-0050). The Certificate Holder, BIGL, or the construction monitoring contractor will report all herbicide spills to ODOE by phone or email within 24 hours with follow up reporting as appropriate.

4.2.3.4 Special Considerations

Special consideration will be provided to perennial, intermittent, and ephemeral streams/draws during treatment activities. No herbicide will be sprayed where the drift can enter standing water or saturated soil. It will be the herbicide applicators' responsibility to ensure that no herbicide or drift enters standing water, regardless of the season when the herbicide is applied. Similar considerations will be made when in proximity to agricultural fields.

4.3 Monitoring

4.3.1 Construction Compliance Monitoring

The Certificate Holder or a third-party contractor will conduct compliance monitoring during the construction phase to ensure that contractors are complying with prevention BMPs outlined in Section 4.1. The construction compliance monitor will facilitate coordination meetings with Sherman County and ODOE, train all personnel to maintain tracking sheets, train all construction personnel regarding noxious weed identification and prevention strategies, conduct routine check in calls with the construction team, and document communication with landowners prior to chemical application.

If construction extends into a growing season prior to the commercial date of operations and formal post-construction weed monitoring, the compliance monitor will conduct informal but comprehensive weed surveys to inform adaptive management.

The compliance monitor will maintain records and will provide ODOE with copies of these records annually during construction.

4.3.2 Noxious Weed Monitoring

Monitoring for noxious weeds and invasive annual grasses will be conducted for the life of the Solar Components to assess weed growth and inform noxious weed control measures. Monitoring for noxious weed infestations will also enable the Certificate Holder to respond to new noxious weeds infestations in a timely manner and ensure the success of the site's revegetation. Noxious weed inspections will occur across the entire Facility through visual inspection of the site while driving or walking. These inspections will be used to inform ongoing noxious weed control efforts.

Monitoring will assess the success of noxious weed treatments and document any new noxious weed infestations observed. During the first 5 years of monitoring, results will be documented in

seasonal memos that describe observations made during each assessment. Noxious weed monitoring results will be summarized in annual monitoring reports that describe noxious weeds identified, treatments implemented, and treatment success (e.g., weed frequency trending towards reduction), recommendations to improve treatment success (if necessary), and note any new noxious weed species or emergence. Reports will be submitted to the ODOE, ODA, Oregon Department of Fish and Wildlife (ODFW), and Sherman County annually. If the Certificate Holder contracts with the Sherman County Weed District to perform weed control at the Solar Components, then no monitoring report will be provided except for a statement that the county agency performed the work.

Based on the success of control efforts after the fifth year of annual monitoring, the Certificate Holder will consult with ODOE and ODFW to design a long-term weed control plan. The Certificate Holder will maintain ongoing communication with individual landowners and the Sherman County Weed District regarding noxious weeds at the Solar Components. Landowners may also contact the Certificate Holder to report the presence of noxious weeds. The Certificate Holder will control the reported noxious weeds on a case-by-case basis and prepare a summary of measures taken for that landowner. Otherwise, during the operational period of the Solar Components, the Certificate Holder will control noxious weeds as described in the long-term weed control plan.

The following contact information for the Sherman County Weed District Supervisor will be used and updated as needed:

Rod Asher, Weed District Supervisor
66143 Lone Rock
Moro, Oregon 97039
(541) 565 – 3655

4.4 Success Criteria

Success criteria outlined below are designed to demonstrate compliance with OAR 660-033-0130(38)(h)(D) to prevent the introduction and spread of noxious weed species. In each annual monitoring report, the Certificate Holder will include an assessment of whether the Solar Components is meeting or trending toward meeting the noxious weed control success criteria. Compliance with the Facility Site Certificate will be demonstrated through documentation of meeting these success criteria for the life of the Solar Components.

- Class A and Class B noxious weed presence within the solar array fence line will not exceed 15 total populations (i.e., contiguous patches of individuals), and each respective population will not exceed 20 individuals or 20 square feet.
- Class T noxious weed presence within the solar array fence line will not exceed 5 total populations (i.e., contiguous patches of individuals), and each respective population will not exceed 20 individuals or 20 square feet.
- Invasive Annual Grasses and other Undesirable Species will not exceed more than 50 percent cover within any 1 acre area or more than 30 percent cover within the solar array fence line.

- During revegetation of temporary disturbance areas outside of the solar array fence line presence and cover of noxious weeds is 75 percent or less than that of the reference site.

5.0 Roles and Responsibilities

The Certificate Holder is the overall responsible party for construction and operation of the Solar Components and implementation of the noxious weed management activities described in this document. However, the Certificate Holder may use contractors to complete tasks associated with noxious weed management and monitoring. Example responsible parties and their roles may include the following:

5.1 Construction Compliance Monitoring Contractor

- Prior to weed treatment, facilitate coordination meetings with the county and ODOE. Obtain written approval for treatment methods including which herbicides will be used and application timing.
- Flag areas of noxious weed infestations prior to construction to alert construction personnel.
- Train all personnel on the importance of noxious weed control. Provide information and training to all construction personnel regarding noxious weed identification and prevention strategies.
- Perform site visits as needed to document compliance with BMPs.
- Report compliance to ODOE.
- Attend calls with ODOE, ODA, and Sherman County as needed.

5.2 Noxious Weed Monitoring Contractor

- Perform site visits (seasonally) to document noxious weed occurrences.
- Provide summary memo after each visit to the Certificate Holder's operations manager outlining findings and treatment recommendations.
- Communicate directly with Weed Management Contractor and provide maps and photos of noxious weed species locations to Weed Management Contractor.
- Communicate with ODA and Sherman County about noxious weed survey findings and treatment plans.
- Prepare annual reports for the Solar Components describing noxious weed monitoring findings and treatments.
- Organize and attend quarterly calls with the Certificate Holder and Weed Management Contractor.

- Attend calls with ODOE, ODA, and Sherman County as needed.

5.3 Facility Site Manager

- Communicate findings and recommendations from Monitoring Contractor to the Weed Management Contractor.
- Review monitoring reports to ensure all treatments performed by Weed Management Contractor are documented.
- Maintain landowner communications, providing guidance to Monitoring Contractor and Weed Management Contractor regarding landowner restrictions/requests for performing noxious weed monitoring and treatment on their properties.
- Attend quarterly calls with Monitoring Contractor and Weed Management Contractor.
- Attend calls with ODA and Sherman County as needed.

5.4 Weed Management Contractor

- Review Monitoring Contractor memos describing noxious weed occurrences and recommendations and plan appropriate treatment to address those issues.
- Communicate treatment plan to the Certificate Holder.
- Maintain records of when, where, and what type of noxious weed treatments are being performed and provides documentation of work being performed to the Facility Site Manager.
- Maintain all appropriate documentation of chemicals applied. Share documentation during quarterly calls with the Certificate Holder and Monitoring Contractor, and prior to monitoring report preparation. Documentation should include type and quantity of herbicides applied, dates applied, and any associated EPA/Oregon Department of Environmental Quality licensing/documentation of chemicals used.
- Attend quarterly calls with the Monitoring Contractor and the Certificate Holder.

6.0 Plan Amendment

This Plan may be amended from time to time by agreement of the Certificate Holder and the Oregon Energy Facility Siting Council (EFSC). Such amendments may be made without amendment of the site certificate. EFSC authorizes ODOE to agree to amendments to this plan. ODOE shall notify EFSC of all amendments, and EFSC retains the authority to approve, reject, or modify any amendment of this plan agreed to by ODOE. This Plan may also be amended periodically as the Certificate Holder continues to evaluate and modify, as needed, agricultural dual use activities at the Solar Components.

7.0 References

DiTomaso, J.M., G.B. Kyser, S. R. Oneto, R. G. Wilson, S.B. Orloff, L.W. Anderson, S.D. Wright, J.A. Roncoroni, T.L. Miller, T. S. Prather, C. Ransom, K.G. Beck, C. Duncan, K.A. Wilson, and J. J. Mann. 2013. *Weed Control in Natural Areas in the Western United States.* Weed Research and Information Center, University of California. 544 pp.

LCNWCB (Lincoln County Noxious Weed Control Board). 2022. Cereal Rye: Options for Control. Available online at: https://www.nwcb.wa.gov/images/weeds/CEREAL-RYE-BROCHURE_Lincoln.pdf. Accessed December 2024.

ODA (Oregon Department of Agriculture). 2022. Noxious Weed Policy and Classification System. Noxious Weed Control Program, Oregon Department of Agriculture. Salem, OR. Available online at: https://www.oregon.gov/oda/Documents/Publications/Weeds/NoxiousWeedPolicyClassification.pdf. Accessed December 2024.

Prather, T., and E. Peachey. 2022. Section Y - Control of Problem Weeds. Pacific Northwest Weed Management Handbook. Oregon State University. Corvallis, OR. Available online at: https://pnwhandbooks.org/weed. Accessed December 2024.

SCWD (Sherman County Weed Department). 2024. Sherman County Noxious Weed List. Available online at: https://storage.googleapis.com/proudcity/shermancountyor/2017/11/Noxious-Weed-List2024.pdf. Accessed December 2024.

Appendix A: Oregon State Noxious Weed List

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OREGON
DEPARTMENT OF
AGRICULTURE

Noxious Weed Policy and Classification System 2022

Noxious Weed Control Program

Address: 635 Capitol Street NE, Salem, Oregon 97301

Phone: (503) 986-4621 **Fax:** (503) 986-4786

www.oregon.gov/ODA/programs/Weeds/Pages/AboutWeeds.aspx

Mission Statement

To protect Oregon's natural resources and agricultural economy from the invasion and proliferation of invasive noxious weeds.

Program Overview

The Oregon Department of Agriculture (ODA) Noxious Weed Control Program provides statewide leadership for coordination and management of state listed noxious weeds. The state program focuses on noxious weed control efforts by implementing early detection and rapid response projects for new invasive noxious weeds, implementing biological control, implementing statewide inventory and survey, assisting the public and cooperators through technology transfer and noxious weed education, maintaining noxious weed data and maps for priority listed noxious weeds, and assisting land managers and cooperators with integrated weed management projects. The Noxious Weed Control Program also supports the Oregon State Weed Board (OSWB) with administration of the OSWB Grant Program, developing statewide management objectives, developing weed risk assessments, and maintaining the state noxious weed list.

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Program Manager
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(503) 986-4621

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Noxious Weed Control Policy and Classification System

Definition

"Noxious weed" means a terrestrial, aquatic or marine plant designated by the Oregon State Weed Board under ORS 569.615 as among those representing the greatest public menace and as a top priority for action by weed control programs.

Noxious weeds have become so thoroughly established and are spreading so rapidly on private, state, county, and federally owned lands, that they have been declared by ORS 569.350 to be a menace to public welfare. Steps leading to eradication, where possible, and intensive control are necessary. It is further recognized that the responsibility for eradication and intensive control rests not only on the private landowner and operator, but also on the county, state, and federal governments.

Weed Control Policy

Therefore, it shall be the policy of ODA to:

1. Assess non-native plants through risk assessment processes and make recommendations to the Oregon State Weed Board for potential listing.
2. Rate and classify weeds at the state level.
3. Prevent the establishment and spread of listed noxious weeds.
4. Encourage and implement the control or containment of infestations of listed noxious weed species and, if possible, eradicate them.
5. Develop and manage a biological weed control program.
6. Increase awareness of potential economic losses and other undesirable effects of existing and newly invading noxious weeds, and to act as a resource center for the dissemination of information.
7. Encourage and assist in the organization and operation of noxious weed control programs with government agencies and other weed management entities.
8. Develop partnerships with county weed control districts, universities, and other cooperators in the development of control methods.
9. Conduct statewide noxious weed surveys and weed control efficacy studies.

Weed Classification System

The purpose of this Classification System is to:

1. Act as the ODA's official guideline for prioritizing and implementing noxious weed control projects.
2. Assist the ODA in the distribution of available funds through the Oregon State Weed Board to assist county weed programs, cooperative weed management groups, private landowners, and other weed management entities.
3. Serve as a model for private and public sectors in developing noxious weed classification systems that aid in setting effective noxious weed control strategies.

Criteria for Determining Economic and Environmental Significance

Detrimental Effects

1. A plant species that causes or has the potential to cause severe negative impacts to Oregon's agricultural economy and natural resources.
2. A plant species that has the potential to or does endanger native flora and fauna by its encroachment into forest, range, aquatic and conservation areas.
3. A plant species that has the potential or does hamper the full utilization and enjoyment of recreational areas.
4. A plant species that is poisonous, injurious, or otherwise harmful to humans and/or animals.

Plant Reproduction

1. A plant that reproduces by seed capable of being dispersed over wide areas or that is long-lived, or produced in large numbers.
2. A plant species that reproduces and spreads by tubers, creeping roots, stolons, rhizomes, or other natural vegetative means.

Distribution

1. A weed of known economic importance which occurs in Oregon in small enough infestations to make eradication/containment possible; or not known to occur, but its presence in neighboring states makes future occurrence seem imminent.
2. A weed of economic or ecological importance and of limited distribution in Oregon.
3. A weed that has not infested the full extent of its potential habitat in Oregon.

Difficulty of Control

A plant species that is not easily controlled with current management practices such as chemical, cultural, biological, and physical methods.

Noxious Weed Control Classification Definitions

Noxious weeds, for the purpose of this system, shall be listed as either A or B, and may also be designated as T, which are priority targets for control, as directed by the Oregon State Weed Board.

- **A Listed Weed**:
  A weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent (Table I).
  Recommended action: Infestations are subject to eradication or intensive control when and where found.
- **B Listed Weed**:
  A weed of economic importance which is regionally abundant, but which may have limited distribution in some counties (Table II).
  Recommended action: Limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.
- **T-Designated Weed (T)**:
  A designated group of weed species selected from either the A or B list as a focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority. T-designated noxious weeds are determined by the Oregon State Weed Board and directs ODA to develop and implement a statewide management plan.

Weed Biological Control

Oregon implements biological control, or “biocontrol” as part of its integrated pest management approach to managing noxious weeds. This is the practice of using host-specific natural enemies such as insects or pathogens to control noxious weeds. The Oregon Department of Agriculture Noxious Weed Program has adopted the International Code of Best Practices for biological control of weeds. Only safe, effective, and federally- approved natural enemies will be used for biocontrol.

Table I: A Listed Weeds

Common Name	Scientific Name
African rue (T)	*Peganum harmala*
Camelthorn	*Alhagi pseudalhagi*
Cape-ivy (T)*	*Delairea odorata*
Coltsfoot	*Tussilago farfara*
Common frogbit	*Hydrocharis morsus-ranae*
Cordgrass	
Common	*Spartina anglica*
Dense-flowered (T)	*Spartina densiflora*
Saltmeadow (T)	*Spartina patens*
Smooth (T)	*Spartina alterniflora*
Delta arrowhead (T)	*Sagittaria platyphyla*
European water chestnut	*Trapa natans*
Flowering rush (T)	*Butomus umbellatus*
Garden yellow loosestrife (T)	*Lysimachia vulgaris*
Giant hogweed (T)	*Heracleum mantegazzianum*
Goatgrass	
Barbed (T)	*Aegilops triuncialis*
Ovate	*Aegilops ovata*
Goatsrue (T)	*Galega officinalis*
Hawkweed	
King-devil*	*Hieracium piloselloides*
Mouse-ear (T)*	*Hieracium pilosella*
Orange (T)*	*Hieracium aurantiacum*
Yellow (T)	*Hieracium floribundum*
Hoary alyssum (T)	*Berteroa incana*
Hydrilla	*Hydrilla verticillata*
Japanese dodder	*Cuscuta japonica*
Kudzu (T)	*Pueraria lobata*
Matgrass (T)	*Nardus stricta*
Oblong spurge (T)	*Euphorbia oblongata*
Paterson's curse (T)	*Echium plantagineum*
Purple nutsedge	*Cyperus rotundus*
Ravennagrass (T)	*Saccharum ravennae*
Silverleaf nightshade	*Solanum elaeagnifolium*
Squarrose knapweed (T)	*Centaurea virgata*

(T) T-Designated Weed (See page 4)

(Continued) **Table I: A Listed Weeds**

Common Name	Scientific Name
Starthistle	
Iberian (T)	*Centaurea iberica*
Purple (T)	*Centaurea calcitrapa*
Syrian bean-caper	*Zygophyllum fabago*
Thistle	
Plumeless (T)	*Carduus acanthoides*
Smooth distaff	*Carthamus baeticus*
Taurian (T)	*Onopordum tauricum*
Turkish (T)	*Carduus cinereus*
Welted (curly plumeless) (T)	*Carduus crispus*
Woolly distaff (T)	*Carthamus lanatus*
Water soldiers	*Stratiotes aloides*
West Indian spongeplant	*Limnobium laevigatum*
White bryonia	*Bryonia alba*
Yellow floating heart (T)	*Nymphoides peltata*
Yellowtuft (T)	*Alyssum murale, A. corsicum*

(T) T-Designated Weed (See page 4)

Table II: B Listed Weeds

Common Name	Scientific Name
Armenian (Himalayan) blackberry	*Rubus armeniacus (R. procerus, R. discolor)*
Biddy-biddy	*Acaena novae-zelandiae*
Broom	
French*	*Genista monspessulana*
Portuguese (T)	*Cytisus striatus*
Scotch*	*Cytisus scoparius*
Spanish	*Spartium junceum*
Buffalobur	*Solanum rostratum*
Butterfly bush	*Buddleja davidii (B. variabilis)*
Common bugloss (T)	*Anchusa officinalis*
Common crupina*	*Crupina vulgaris*
Common reed	*Phragmities australis ssp. australis*
Common viper's bugloss	*Echium vulgare*
Creeping yellow cress	*Rorippa sylvestris*
Cutleaf teasel	*Dipsacus laciniatus*
Dodder	
Smoothseed alfalfa	*Cuscuta approximata*
Five-angled	*Cuscuta pentagona*
Bigseed	*Cuscuta indecora*
Dyer's woad	*Isatis tinctoria*
English hawthorn	*Crataegus monogyna*
Eurasian watermilfoil*	*Myriophyllum spicatum*
False brome	*Brachypodium sylvaticum*
Field bindweed*	*Convolvulus arvensis*
Garlic mustard (T)	*Alliaria petiolata*
Geranium	
Herb Robert	*Geranium robertianum*
Shiny leaf	*Geranium lucidum*
Giant reed (T)*	*Arundo donax*
Gorse* (T)	*Ulex europaeus*
Halogeton	*Halogeton glomeratus*
Houndstongue	*Cynoglossum officinale*

* Biocontrol (See page 4) (T) T-Designated Weed (See page 4)

(Continued) Table II: B Listed Weeds

Common Name	Scientific Name
Indigo bush	*Amorpha fruticosa*
Ivy	
Atlantic	*Hedera hibernica*
English	*Hedera helix*
Johnsongrass	*Sorghum halepense*
Jointed goatgrass	*Aegilops cylindrica*
Jubata grass	*Cortaderia jubata*
Knapweed	
Diffuse*	*Centaurea diffusa*
Meadow*	*Centaurea pratensis*
Russian*	*Acroptilon repens*
Spotted* (T)	*Centaurea stoebe (C. maculosa)*
Knotweed	
Bohemian*	*Fallopia x bohemica*
Giant*	*Fallopia sachalinensis (Polygonum)*
Himalayan	*Polygonum polystachyum*
Japanese*	*Fallopia japonica (Polygonum)*
Kochia	*Kochia scoparia*
Lesser celandine	*Ranunculus ficaria*
Meadow hawkweed (T)	*Pilosella caespitosum (Hieracium)*
Mediterranean sage*	*Salvia aethiopis*
Medusahead rye	*Taeniatherum caput-medusae*
Old man's beard	*Clematis vitalba*
Parrot feather	*Myriophyllum aquaticum*
Perennial peavine	*Lathyrus latifolius*
Perennial pepperweed (T)	*Lepidium latifolium*
Pheasant's eye	*Adonis aestivalis*
Pine echium	*Echium pininana*
Poison hemlock*	*Conium maculatum*
Policeman's helmet	*Impatiens glandulifera*
Primrose-willow	
Large-flower (T)	*Ludwigia grandiflora*
Water primrose (T)	*Ludwigia hexapetala*
Floating (T)	*Ludwigia peploides*

*Biocontrol (See page 4) (T) T-Designated Weed (See page 4)

(Continued) Table II: B Listed Weeds

Common Name	Scientific Name
Punctureveine*	*Tribulus terrestris*
Purple loosestrife*	*Lythrum salicaria*
Ragweed	*Ambrosia artemisiifolia*
Ribbongrass (T)	*Phalaris arundinacea var. Picta*
Rose	
Dog	*Rosa canina*
Sweetbriar	*Rosa rubiginosa*
Rush skeletonweed* (T)	*Chondrilla juncea*
Saltcedar* (T)	*Tamarix ramosissima*
Small broomrape	*Orabanche minor*
South American waterweed	*Egeria densa (Elodea)*
Spanish heath	*Erica lusitanica*
Spikeweed	*Hemizonia pungens*
Spiny cocklebur	*Xanthium spinosum*
Spurge laurel	*Daphne laureola*
Spurge	
Leafy* (T)	*Euphorbia esula*
Myrtle	*Euphorbia myrsinites*
St. Johnswort*	*Hypericum perforatum*
Sulfur cinquefoil	*Potentilla recta*
Swainsonpea	*Sphaerophysa salsula*
Tansy ragwort* (T)	*Senecio jacobaea (Jacobaea vulgaris)*
Thistle	
Bull*	*Cirsium vulgare*
Canada*	*Cirsium arvense*
Italian*	*Carduus pycnocephalus*
Milk*	*Silybum marianum*
Musk*	*Carduus nutans*
Scotch	*Onopordum acanthium*
Slender-flowered*	*Carduus tenuiflorus*
Toadflax	
Dalmatian* (T)	*Linaria dalmatica*
Yellow*	*Linaria vulgaris*
Tree of heaven	*Ailanthus altissima*

*Biocontrol (See page 4) (T) T-Designated Weed (See page 4)

(Continued) Table II: B Listed Weeds

Common Name	Scientific Name
Velvetleaf	*Abutilon theophrasti*
Ventenata grass	*Ventenata dubia*
Whitetop	
Hairy	*Lepidium pubescens*
Lens-podded	*Lepidium chalepensis*
Whitetop (hoary cress)*	*Lepidium draba*
Yellow archangel	*Lamiastrum galeobdolon*
Yellow flag iris	*Iris pseudacorus*
Yellow nutsedge	*Cyperus esculentus*
Yellow starthistle*	*Centaurea solstitialis*

*Biocontrol (See page 4) (T) T-Designated Weed (See page 4)

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Appendix B: Sherman County Noxious Weed List

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Sherman County Noxious Weed List
Updated 06-05-2024

"A" Class – **HIGH PRIORITY.** Any noxious weed which greatly endangers the overall economic well – being of the County and has a small enough distribution where eradication is possible.

		State Listing
Houndstounge	*Cynoglossum officinale L.*	B
Jimsonweed	*Datura stramonium*	--
Kochia	*Kochia scoparia*	B
Leafy Spurge	*Euphorbia esula*	B/T #
Rush Skeletonweed	*Chondrilla juncea*	B/T #
Spikeweed	*Hemizonia pungens*	B
Spotted Knapweed	*Centaurea stoebe*	B#
Yellow Flag Iris	*Iris pseudacorus*	A
Yellow Starthistle*	*Centaurea solstitialis*	B #

*"A" Class south of the Biggs – Rufus frontage Road, outside the orchards and residential areas, West of Scott Canyon Road to the Deschutes River.
# Indicates weeds targeted for biocontrol.

"B" Class – **MODERATE PRIORITY.** A noxious weed which is well established in the County and has known negative impacts, but due to its distribution, eradication is not feasible.

		State Listing
Canada Thistle	*Cirsium arvense*	B #
Dalmation Toadflax	*Linaria genistifolia-dalmatica*	B/T #
Diffuse Knapweed	*Centaurea diffusa*	B/T#
Field Bindweed (Morningglory)	*Convolvulus arvensis*	B/T #
Perennial Sowthistle	*Sonchus arvensis*	
Russian Knapweed	*Acroptilon repens*	B #
Scotch Thistle	*Onopordum acanthium*	B
Scouring Rush	*Equisetum laevigatum*	
Showy Milkweed	*Asclepias speciose*	
White Top (Hoary Cress)	*Cardaria draba*	B
Wild Oat	*Avena fayua*	
Yellow Starthistle**	*Centaurea solstitialis*	B #

** "B" Class east of Scott Canyon to the John Day River.

"C" CLASS – **LOW PRIORITY.** A noxious weed which is wide spread throughout the County and has known economic impacts.

		State Listing
Bull Thistle	*Cirsium vulgare*	B #
Common Rye	*Secale cereale*	
Field Dodder	*Cuscuta campestris*	B
Jointed Goatgrass	*Aegilops cylindrical*	B
Klamath Weed (St. Johnswort)	*Hypericum perforatum*	B #
Little Bur (Bur Buttercup)	*Ranunculus testiculatus*	
Marestail	*Contza Canadensis*	
Medusahead Rye	*Taeniatherum caput-medusae*	B
Perennial Pepperweed	*Lepidium latifolium*	B/T
Poison Hemlock	*Conium macalatum*	B
Prickly Lettuce	*Lactuca serriola*	
Puncturevine	*Triulus terrestris*	B #
Quackgrass	*Elytrigia repens*	
Russian Thistle	*Salsola iberica*	
Spiny Cockelbur	*Xanthium spinosum*	B
Waterhemlock, Western	*Cicuta douglasii*	
Wavyleaf Thistle	*Cirsium undulatum*	

# Indicates weeds targeted for biocontrol.

"T" CLASS - **TARGETED LIST.** A noxious weed from any Class that the Weed Advisory Board wishes to focus efforts and resources on. This List will be reviewed annually.

Canada Thistle
Dalmation Toadflax
Jimsonweed
Knapweed Complex
Kochia
Leafy Spurge
Rush Skeletonweed
Scotch Thistle
Spikeweed
White top
Yellow Starthistle

"Q" CLASS - **QUESTIONABLE LIST.** A newly detected weed which may have some importance, but more information is needed to determine its impact on agriculture.

Hairy Willow-Herb	*Epilobium hirsutum*

"W" CLASS - **WATCH LIST.** Any noxious weed that may occur in neighboring counties, the State or similar environments as the County, and could potentially endanger the overall economic well – being of the County. Once detected, these weeds shall be moved to the appropriate List.

		State Listing
Blessed Milkthistle	*Silybum marianum*	B #
Camelthorn	*Alhagi pseudalhagi*	A
Common Crupina	*Crupina vulgaris*	B
Gorse	*Ulex europaeus*	B/T #
Halogeton	*Halogeton glomeratus*	B
Iberian Starthistle	*Centaurea iberica*	A/T
Italian Thistle	*Carduus pycnocephalus*	B
Mediterranean sage	*Salvia aethiopis*	B
Musk Thistle	*Carduus nutans*	B #
Scotch Broom	*Cytisus scoparius*	B #
Tansy Ragwort	*Senecio jacobaea*	B/T #
Wild – Prosso Millet	*Panicum miliaceum*	

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Attachment P-5. Amended Wildlife and Habitat Monitoring and Mitigation Plan

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BIGLOW CANYON WIND FARM AND BIGLOW SOLAR: WILDLIFE MONITORING AND MITIGATION PLAN
[MAY 10, 20254]

This plan describes wildlife monitoring that the certificate holder shall conduct during operation of the Biglow Canyon Wind Farm (BCWF) and Biglow Solar (facilities).[1] The monitoring objectives are to determine whether operation of the ~~facility~~ BCWF causes significant fatalities of birds and bats and to determine whether the ~~facility~~ BCWF results in a loss of habitat quality. The BCWF facility consists of up to 225 wind turbines with a maximum generating capacity of 450 MW, up to 10 permanent meteorological towers and other related or supporting facilities as described in the site certificate. The BCWF will be built in phases. In Request for Amendment (RFA) 4, the certificate holder proposes to add up to 385 MW of photovoltaic solar energy generation and battery storage (Biglow Solar) to the BCWF.

The certificate holder shall use experienced personnel to manage the monitoring required under this plan and properly trained personnel to conduct the monitoring, subject to approval by the Oregon Department of Energy (Department) as to professional qualifications. For all components of this plan except the Raptor Nesting Surveys and the Wildlife Incident Response and Handling System, the certificate holder shall direct a qualified independent third-party biological monitor, as approved by the Department, to perform monitoring tasks.

The Wildlife Monitoring and Mitigation Plan for the ~~BCWF~~ facilities has the following components:

1) Fatality Monitoring Program (BCWF only) including:
    a) Removal Trials
    b) Searcher Efficiency Trials
    c) Fatality Monitoring Search Protocol
    d) Statistical Analysis
2) Raptor Nesting Surveys (BCWF and Biglow Solar);
3) Avian Use and Behavior Surveys (BCWF only); and
4) Wildlife Incident Response and Handling System (BCWF and Biglow Solar)

Following is a discussion of the components of the monitoring plan, statistical analysis methods for fatality data, data reporting and potential mitigation.

The selection of the mitigation actions that the certificate holder may be required to implement under this plan should allow for flexibility in creating appropriate responses to monitoring results that cannot be known in advance. If the Department determines that mitigation is needed, the certificate holder shall propose appropriate mitigation actions to the Department and shall carry out mitigation actions approved by the Department, subject to review by the Oregon Energy Facility Council (Council).

[1] This plan is incorporated by reference in the site certificate for the BCWF and must be understood in that context. It is not a "stand-alone" document. This plan does not contain all mitigation required of the certificate holder.

1. Fatality Monitoring (BCWF only)

(a) Definitions and Methods

Seasons

This plan uses the following dates for defining seasons:

Season	Dates
Spring Migration	March 16 to May 15
Summer/Breeding	May 16 to August 15
Fall Migration	August 16 to October 31
Winter	November 1 to March 15

Search Plots

The certificate holder shall conduct fatality monitoring within search plots. The certificate holder, in consultation with the Oregon Department of Fish and Wildlife (ODFW), shall select search plots based on the following sampling scheme, consistent with the sample size requirements for that phase of the facility, as outlined below: On each of the nine turbine strings that extend toward the John Day River, the certificate holder shall include in search plots the two turbines closest to the river for each phase in which these turbines are built. In addition, the certificate holder shall include, for each phase, representative turbines distributed throughout the site, consistent with the sample size described below. Each search plot will contain one turbine. Search plots will be square or circular. Circular search plots will be centered on the turbine location and will have a radius equal to the maximum blade tip height of the turbine contained within the plot. "Maximum blade tip height" is the turbine hub-height plus one-half the rotor diameter. Square search plots will be of sufficient size to contain a circular search plot as described above.

The certificate holder shall provide maps of the search plots to the Department and ODFW before beginning fatality monitoring at the facility. The certificate holder will use the same search plots for each search conducted during each monitoring year. During the second monitoring year, the same end-of-row turbines nearest the John Day River will be sampled, but the other search plots will be selected from the turbines not sampled during the first monitoring year.

Sample Size

The sample size for fatality monitoring is the number of turbines searched per monitoring year. The facility will be built in phases. For the first phase of development (in which 76 turbines will be built), the certificate holder shall conduct fatality monitoring during the first two monitoring years in search plots that include 50 turbines.

The sample size for future phases of the facility, if they are built, will include search plots for a minimum of 40 percent of the wind turbines in that phase but not fewer than 50 turbines, unless the entire phase is fewer than 50 turbines, in which event all turbines will be sampled. The sample size might be larger if, under Section 1(g) of this plan, mitigation is required based on the results of fatality monitoring of the first phase.

If no mitigation is required under Section 1(g) of this plan based on the results of fatality monitoring of the first phase, then the sample size for monitoring future phases of the facility may be reduced appropriately if the Department concurs.

If mitigation is required under Section 1(g) of this plan based on the results of fatality monitoring of the first phase, then the certificate holder shall propose an appropriate sample size for monitoring the next phase of the facility. The need for, and scope of, fatality monitoring for subsequent phases are subject to the approval of the Department.

Scheduling and Sampling Frequency

Fatality monitoring will begin upon the commencement of commercial operation of the facility. Fatality monitoring for each subsequent phase will begin upon commercial operation of that phase.

For each phase, the first fatality monitoring year will commence on the first day of the month following the commercial operation date of that phase of the facility and will conclude twelve months later (for example, if commercial operation begins in October of 2007, the monitoring year will commence on November 1, 2007, and conclude on October 31, 2008). Subsequent monitoring years of that phase will follow the same schedule (for example, the second monitoring year would begin November 1, 2008) unless the second fatality-monitoring year is postponed with the concurrence of the Department.

In each monitoring year, the certificate holder shall conduct fatality-monitoring searches at the rates of frequency shown below. Over the course of one monitoring year, the certificate holder would conduct 16 searches[2], as follows:

Season	**Frequency**
Spring Migration	2 searches per month (4 searches)
Summer/Breeding	1 search per month (3 searches)
Fall Migration	2 searches per month (5 searches)
Winter	1 search per month (4 searches)

Duration of Fatality Monitoring

Fatality monitoring of the first phase of the facility will be complete after two monitoring years, except as follows: A worst-case analysis will be used to resolve any uncertainty in the results of the two years of monitoring data for purposes of determining the mitigation requirements for the facility. If the first two years of monitoring data indicate the potential for unexpected impacts of a type that cannot be resolved appropriately by worst-case analysis and appropriate mitigation, additional, targeted monitoring may be conducted for the first phase of the facility for up to an additional two years before determining the mitigation requirements for the facility, or, alternatively, sample sizes larger than those outlined above will be used in monitoring of subsequent phases of development of the facility.

[2] Fewer than 16 searches may be conducted if searches are not possible due to safety reasons or severe weather.

Meteorological Towers

The facility will most likely use non-guyed meteorological towers. Non-guyed towers are known to cause little if any bird and bat mortality. Therefore, monitoring will not occur at non-guyed meteorological towers. If the meteorological towers are guyed, the certificate holder shall search all towers on the same monitoring schedule as fatality monitoring. The certificate holder will use circular search plots. The radius of the circular search plots will extend a minimum of 5 meters beyond the most distant guy wire anchor point.

(b) Removal Trials

The objective of the removal trials is to estimate the length of time avian and bat carcasses remain in the search area. Carcass removal studies will be conducted during each season in the vicinity of the search plots. Estimates of carcass removal rates will be used to adjust carcass counts for removal bias. "Carcass removal" is the disappearance of a carcass from the search area due to predation, scavenging or other means such as farming activity. Removal rates will be estimated by size class, habitat and season.

During the first phase, the certificate holder shall conduct carcass removal trials within each of the seasons defined above during the years in which fatality monitoring occurs. During the first year in which fatality monitoring occurs, trials will occur in at least eight different calendar weeks in a year, with at least one calendar week between starting dates. Trials will be spread throughout the year to incorporate the effects of varying weather, farming practices and scavenger densities. At least two trials will be started in each season. Each trial will use at least 20 carcasses. For each trial, at least 5 small bird carcasses and at least 5 large bird carcasses will be distributed in cultivated agriculture habitat and at least 3 small bird carcasses and at least 3 large bird carcasses will be distributed in non-cultivated habitat (grassland/shrub-steppe and CRP). In a year, about 100 carcasses will be placed in cultivated agriculture and about 60 in non-cultivated grassland/shrub-steppe and CRP for a total of about 160 trial carcasses. The number of removal trials may be reduced to one per season (80 trial carcasses) during the second year of fatality monitoring, subject to approval by the Department, if the certificate holder can demonstrate that the calculation of fatality rates will continue to have statistical validity with the reduced sample size.

The need for, and scope of, removal trials for subsequent phases may be modified based on the variability of results of removal trials for the first phase, subject to the approval of the Department.

The "small bird" size class will use carcasses of house sparrows, starlings, commercially available game bird chicks or legally obtained native birds to simulate passerines. The "large bird" size class will use carcasses of raptors provided by agencies, commercially available adult game birds or cryptically colored chickens to simulate raptors, game birds and waterfowl. If fresh bat carcasses are available, they may also be used.

To avoid confusion with turbine-related fatalities, planted carcasses will not be placed in fatality monitoring search plots. Planted carcasses will be placed in the vicinity of search plots but not so near as to attract scavengers to the search plots. The planted carcasses will be located randomly within the carcass removal trial plots.

Carcasses will be placed in a variety of postures to simulate a range of conditions. For example, birds will be: 1) placed in an exposed posture (e.g., thrown over the shoulder), 2)

hidden to simulate a crippled bird (e.g., placed beneath a shrub or tuft of grass) and, 3) partially hidden. Trial carcasses will be marked discreetly for recognition by searchers and other personnel. Trial carcasses will be left at the location until the end of the carcass removal trial.

It is expected that carcasses will be checked as follows, although actual intervals may vary. Carcasses will be checked for a period of 40 days to determine removal rates. They will be checked about every day for the first 4 days, and then on day 7, day 10, day 14, day 20, day 30 and day 40. This schedule may vary depending on weather and coordination with the other survey work. At the end of the 40-day period, the trial carcasses and scattered feathers will be removed.

(c) Searcher Efficiency Trials

The objective of searcher efficiency trials is to estimate the percentage of bird and bat fatalities that searchers are able to find. The certificate holder shall conduct searcher efficiency trials on the fatality monitoring search plots in both grassland/shrub-steppe and cultivated agriculture habitat types. Searcher efficiency will be estimated by size class, habitat type and season. Estimates of searcher efficiency will be used to adjust carcass counts for detection bias.

During the first phase, searcher efficiency trials will be conducted in each season as defined above, during the years in which the fatality monitoring occurs. Trials will be spread throughout the year to incorporate the effects of varying weather, farming practices and scavenger densities. At least two trials will be conducted in each season. Each trial will use about 20 carcasses, although the number will be variable so that the searcher will not know the total number of trial carcasses being used in any trial. For each trial, both small bird and large bird carcasses will be used in about equal numbers. “Small bird” and “large bird” size classes and carcass selection are as described above for the removal trials. A greater proportion of the trial carcasses will be distributed in cultivated agriculture habitat than in non-cultivated habitat (grassland/shrub steppe and CRP). In a year, about 100 carcasses will be placed in cultivated agriculture and about 60 in non-cultivated grassland/shrub steppe and CRP for a total of about 160 trial carcasses. The number of searcher efficiency trials may be reduced to one per season (80 trial carcasses) during the second year of fatality monitoring, subject to approval by the Department, if the certificate holder can demonstrate that the calculation of fatality rates will continue to have statistical validity with the reduced sample size.

The need for, and scope of, searcher efficiency trials for subsequent phases may be modified based on the variability of results of searcher efficiency trials for the first phase, subject to the approval of the Department.

Personnel conducting searches will not know in advance when trials are conducted; nor will they know the location of the trial carcasses. If suitable trial carcasses are available, trials during the fall season will include several small brown birds to simulate bat carcasses. Legally obtained bat carcasses will be used if available.

On the day of a standardized fatality monitoring search (described below) but before the beginning of the search, efficiency trial carcasses will be placed at random locations within areas to be searched. If scavengers appear attracted by placement of carcasses, the carcasses will be distributed before dawn.

Searcher efficiency trials will be spread over the entire season to incorporate effects of varying weather and vegetation growth. Carcasses will be placed in a variety of postures to

simulate a range of conditions. For example, birds will be: 1) placed in an exposed posture (thrown over the shoulder), 2) hidden to simulate a crippled bird and 3) partially hidden.

Each non-domestic carcass will be discreetly marked so that it can be identified as an efficiency trial carcass after it is found. The number and location of the efficiency trial carcasses found during the carcass search will be recorded. The number of efficiency trial carcasses available for detection during each trial will be determined immediately after the trial by the person responsible for distributing the carcasses.

If new searchers are brought into the search team, additional detection trials will be conducted to ensure that detection rates incorporate searcher differences.

(d) Coordination with the Klondike III Wind Project

The proposed Klondike III Wind Project lies to the south of the BCWF on similar terrain and habitat. The Council has approved site certificates for both facilities and requires similar wildlife monitoring. Subject to the approval of both certificate holders and the Department, the number of trials at each site and the number of trial carcasses used at each site can be reduced by combining the removal data and efficiency data from both facilities, if the certificate holder can demonstrate that the calculation of fatality rates will continue to have statistical validity for both facilities and that combining the data will not affect any other requirements of the monitoring plans for either facility.

(e) Fatality Monitoring Search Protocol

The objective of fatality monitoring is to estimate the number of bird and bat fatalities that are attributable to facility operation and associated variances. The certificate holder shall conduct fatality monitoring using standardized carcass searches.

The certificate holder shall use a worst-case analysis to resolve any uncertainty in the results and to determine whether the data indicate that additional mitigation should be considered. The Department may require additional, targeted monitoring if the data indicate the potential for significant impacts that cannot be addressed by worst-case analysis and appropriate mitigation.

The certificate holder shall estimate the number of avian and bat fatalities attributable to operation of the facility based on the number of avian and bat fatalities found at the facility site. All carcasses located within areas surveyed, regardless of species, will be recorded and, if possible, a cause of death determined based on blind necropsy results. If a different cause of death is not apparent, the fatality will be attributed to facility operation. The total number of avian and bat carcasses will be estimated by adjusting for removal and searcher efficiency bias.

Personnel trained in proper search techniques ("the searchers") will conduct the carcass searches by walking parallel transects within the search plots.[3] Transects will be initially set at 6 meters apart in the area to be searched. A searcher will walk at a rate of about 45 to 60 meters per minute along each transect searching both sides out to three meters for casualties. Search area and speed may be adjusted by habitat type after evaluation of the first searcher efficiency trial.

[3] Where search plots are adjacent, the search area may be rectangular.

The searchers will record the condition of each carcass found, using the following condition categories:

- Intact – a carcass that is completely intact, is not badly decomposed and shows no sign of being fed upon by a predator or scavenger
- Scavenged – an entire carcass that shows signs of being fed upon by a predator or scavenger, or portions of a carcass in one location (e.g., wings, skeletal remains, legs, pieces of skin, etc.)
- Feather Spot – 10 or more feathers at one location indicating predation or scavenging or 2 or more primary feathers

All carcasses (avian and bat) found during the standardized carcass searches will be photographed as found, recorded and labeled with a unique number. Distance from observer to the carcass will be measured (to the nearest 0.25 meters), as will the perpendicular distance from the transect line to the carcass. Each carcass will be bagged and frozen for future reference and possible necropsy. A copy of the data sheet for each carcass will be kept with the carcass at all times. For each carcass found, searchers will record species, sex and age when possible, date and time collected, location, condition (e.g., intact, scavenged, feather spot) and any comments that may indicate cause of death. Searchers will map the find on a detailed map of the search area showing the location of the wind turbines and associated facilities such as power lines. The certificate holder shall coordinate collection of state endangered, threatened, sensitive or other state protected species with ODFW. The certificate holder shall coordinate collection of federally-listed endangered or threatened species and Migratory Bird Treaty Act protected avian species with the U.S. Fish and Wildlife Service (USFWS). The certificate holder shall obtain appropriate collection permits from ODFW and USFWS.

The searchers might discover carcasses incidental to formal carcass searches (e.g., while driving within the project area). For each incidentally discovered carcass, the searcher shall identify, photograph, record data and collect the carcass as would be done for carcasses within the formal search sample during scheduled searches

If the incidentally discovered carcass is found within a formal search plot, the fatality data will be included in the calculation of fatality rates. If the incidentally discovered carcass is found outside a formal search plot, the data will be reported separately.

The certificate holder shall coordinate collection of incidentally discovered state endangered, threatened, sensitive or other state protected species with ODFW. The certificate holder shall coordinate collection of incidentally discovered federally-listed endangered or threatened species and Migratory Bird Treaty Act protected avian species with the USFWS.

The certificate holder shall develop and follow a protocol for handing injured birds. Any injured native birds found on the facility site will be carefully captured by a trained project biologist or technician and transported to Jean Cypher (wildlife rehabilitator) in The Dalles, the Blue Mountain Wildlife Rehabilitation Center in Pendleton or the Audubon Bird Care Center in Portland in a timely fashion.[4] The certificate holder shall pay costs, if any are charged, for time

[4] The people and centers listed here may be changed with Department approval.

and expenses related to care and rehabilitation of injured native birds found on the site, unless the cause of injury is clearly demonstrated to be unrelated to the facility operations.

(f) Statistical Methods for Fatality Estimates

The estimate of the total number of wind facility-related fatalities is based on:

(1) The observed number of carcasses found during standardized searches during the two monitoring years for which the cause of death is attributed to the facility.[5]

(2) Searcher efficiency expressed as the proportion of planted carcasses found by searchers.

(3) Non-removal rates expressed as the estimated average probability a carcass is expected to remain in the study area and be available for detection by the searchers during the entire survey period.

Definition of Variables

The following variables are used in the equations below:

c_i	the number of carcasses detected at plot *i* for the study period of interest (e.g., one year) for which the cause of death is either unknown or is attributed to the facility
n	the number of search plots
k	the number of turbines searched (includes the turbines centered within each search plot and a proportion of the number of turbines adjacent to search plots to account for the effect of adjacent turbines on the 90-meter search plot buffer area)
$\bar{c}$	the average number of carcasses observed per turbine per year
s	the number of carcasses used in removal trials
s_c	the number of carcasses in removal trials that remain in the study area after 40 days
se	standard error (square of the sample variance of the mean)
t_i	the time (days) a carcass remains in the study area before it is removed
$\bar{t}$	the average time (days) a carcass remains in the study area before it is removed
d	the total number of carcasses placed in searcher efficiency trials
p	the estimated proportion of detectable carcasses found by searchers
I	the average interval between searches in days
$\hat{\pi}$	the estimated probability that a carcass is both available to be found during a search and is found
m_t	the estimated annual average number of fatalities per turbine per year, adjusted for removal and observer detection bias

[5] If a different cause of death is not apparent, the fatality will be attributed to facility operation.

C nameplate energy output of turbine in megawatts (MW)

Observed Number of Carcasses

The estimated average number of carcasses ($\bar{c}$) observed per turbine per year is:

$$\bar{c} = \frac{\sum_{i=1}^{n} c_i}{k}. \quad (1)$$

Estimation of Carcass Removal

Estimates of carcass removal are used to adjust carcass counts for removal bias. Mean carcass removal time ($\bar{t}$) is the average length of time a carcass remains at the site before it is removed:

$$\bar{t} = \frac{\sum_{i=1}^{s} t_i}{s - s_c}. \quad (2)$$

This estimator is the maximum likelihood estimator assuming the removal times follow an exponential distribution and there is right-censoring of data. Any trial carcasses still remaining at 40 days are collected, yielding censored observations at 40 days. If all trial carcasses are removed before the end of the trial, then s_c is 0, and $\bar{t}$ is just the arithmetic average of the removal times. Removal rates will be estimated by carcass size (small and large) and season.

Estimation of Observer Detection Rates

Observer detection rates (i.e., searcher efficiency rates) are expressed as *p,* the proportion of trial carcasses that are detected by searchers. Observer detection rates will be estimated by carcass size and season.

Estimation of Facility-Related Fatality Rates

The estimated per turbine annual fatality rate (m_t) is calculated by:

$$m_t = \frac{\bar{c}}{\hat{\pi}}, \quad (3)$$

where $\hat{\pi}$ includes adjustments for both carcass removal (from scavenging and other means) and observer detection bias assuming that the carcass removal times t_i follow an exponential distribution unless a different assumption about carcass removal is made with the approval of the Department. Under these assumptions, this detection probability is estimated by:

$$\hat{\pi} = \frac{\bar{t} \cdot p}{I} \cdot \left[\frac{\exp\left(I/\bar{t}\right) - 1}{\exp\left(I/\bar{t}\right) - 1 + p} \right]. \quad (4)$$

The estimated per MW annual fatality rate (m) is calculated by:

$$m = \frac{m_t}{C}. \quad (5)$$

The certificate holder shall calculate fatality estimates for: (1) all birds, (2) small birds, (3) large birds, (4) raptors, (5) target grassland birds, (6) nocturnal avian migrants, 7) avian State Sensitive Species listed under OAR 635-100-0040, and 8) bats. The final reported estimates of *m*, associated standard errors and 90% confidence intervals will be calculated using bootstrapping (Manly 1997). Bootstrapping is a computer simulation technique that is useful for calculating point estimates, variances and confidence intervals for complicated test statistics. For each iteration of the bootstrap, the plots will be sampled with replacement, trial carcasses will be sampled with replacement and $\bar{c}$, $\bar{t}$, p, $\hat{\pi}$ and m will be calculated. A total of 5,000 bootstrap iterations will be used. The reported estimates will be the means of the 5,000 bootstrap estimates. The standard deviation of the bootstrap estimates is the estimated standard error. The lower 5th and upper 95th percentiles of the 5000 bootstrap estimates are estimates of the lower limit and upper limit of 90% confidence intervals.

Nocturnal Migrant and Bat Fatalities

Differences in observed nocturnal avian migrant and bat fatality rates for lit turbines, unlit turbines that are adjacent to lit turbines, and unlit turbines that are not adjacent to lit turbines will be compared graphically and statistically.

(g) Mitigation

Mitigation may be appropriate if analysis of the fatality data collected after two monitoring years shows fatality rates for avian species that exceed a threshold of concern. For the purpose of determining whether a threshold has been exceeded, the certificate holder shall calculate the average annual fatality rates for the species groups after the initial two years of monitoring. Based on current knowledge of the species that are likely to use the habitat in the area of the facility, the following thresholds apply to the BCWF:

Species Group	**Threshold of Concern** (fatalities per MW)
Raptors (All eagles, hawks, falcons and owls, including burrowing owls.)	0.09
Raptor species of special concern (Swainson's hawk, ferruginous hawk, peregrine falcon, golden eagle, bald eagle, burrowing owl and any federal threatened or endangered raptor species.)	0.06
Target grassland birds (All native bird species that rely on grassland habitat and are either resident species, occurring year round, or species that nest in the area, excluding horned lark, burrowing owl and northern harrier.)	0.59
State sensitive avian species listed under OAR 635-100-0040 (Excluding raptors listed above.)	0.20
Bat species as a group	2.50
Guyed Meteorological Tower Mortality	
Raptor T&E species and raptor species of special concern, as a group (Swainson's hawk, ferruginous hawk, golden eagle and burrowing owl; bald eagle, peregrine falcon, and any other federal threatened or endangered raptor species)	0.20/ guyed tower
Avian State Sensitive Species listed under OAR 635-100-0040 (Excluding raptors)	0.20/ guyed tower

In addition, mitigation may be appropriate if fatality rates for individual species (especially State Sensitive Species) are higher than expected and at a level of biological concern.

If the data show that a threshold of concern for a species group has been exceeded or that the fatality rate for any individual species is at a level of biological concern, mitigation shall be required if the Department determines that mitigation is appropriate based on analysis of the data and any other significant information available at the time. If mitigation is appropriate, the certificate holder, in consultation with ODFW, shall propose mitigation measures designed to benefit the affected species. This may take into consideration whether mitigation required or provided for other impacts, such as raptor nesting or grassland bird displacement, would also benefit the affected species.

The certificate holder shall implement mitigation as approved by the Council. The Department may recommend additional, targeted data collection if the need for mitigation is unclear based on the information available at the time. The certificate holder shall implement such data collection as approved by the Council.

Mitigation shall be designed to benefit the affected species group. Mitigation may include, but is not limited to, protection of nesting habitat for the affected group of native species through a conservation easement or similar agreement. Tracts of land that are intact and functional for wildlife are preferable to degraded habitat areas. Preference should be given to protection of land that would otherwise be subject to development or use that would diminish the wildlife value of the land. In addition, mitigation measures might include: enhancement of the protected tract by weed removal and control; increasing the diversity of native grasses and forbs; planting sagebrush or other shrubs; constructing and maintaining artificial nest structures for raptors; reducing cattle grazing; improving wildfire response; and local research that would aid in understanding more about the species and conservation needs.

If the threshold for bats species as a group is exceeded, the certificate holder shall contribute to Bat Conservation International or to a Pacific Northwest bat conservation group ($10,000 per year for three years) to fund new or ongoing research in the Pacific Northwest to better understand impacts to the bat species impacted by the facility and to develop possible ways to reduce impacts to the affected species.

In addition, mitigation may be appropriate if fatality rates for a State Sensitive bat species listed under OAR 635-100-0040 are higher than expected and at a level of concern. If the data show that a threshold of concern for a species group has been exceeded or that the fatality rate for any individual species is at a level of concern, mitigation shall be required if the Department determines that mitigation is appropriate based on analysis of the data and any other significant information available at the time. If mitigation is appropriate, the certificate holder, in consultation with ODFW, shall propose mitigation measures designed to benefit the affected species. The certificate holder shall implement mitigation as approved by the Council.

2. Raptor Nest Surveys (BCWF and Biglow Solar)

The objectives of raptor nest surveys are to estimate the size of the local breeding populations of tree or other above-ground-nesting raptor species in the vicinity of the facility and to determine whether operation of the facility results in a reduction of nesting activity or nesting success in the local populations of the following raptor species: Swainson's hawk, ferruginous hawk and golden eagle. The certificate holder shall direct a qualified biologist, approved by the Department, to conduct the raptor nest surveys. The Department has approved the qualifications of the four biologists identified in the Final Order on Amendment #2. The certificate holder may

select other qualified biologists to conduct the raptor nest surveys, subject to Department approval.

(a) Survey Protocol

For the species listed above, aerial and ground surveys will be used to gather nest success data on active nests, nests with young and young fledged. The certificate holder will share the data with state and federal biologists. The certificate holder shall conduct two years of post-construction raptor nest surveys for each phase of construction and long-term raptor nest surveys for the completed facility during the sensitive nesting and breeding season. One year of post-construction surveys will be done in the first nesting season after construction of the phase is completed. The second year of post-construction surveys will be done after construction of the phase is completed at a time recommended by the certificate holder and approved by the Department. Long-term surveys will be conducted starting in the fifth year following completion of the last post-construction survey and each five years thereafter for the life of the facility. The certificate holder may collaborate with other certificate holders in the vicinity of the facility in the development of useful information about future impacts on raptor nesting activity and nesting success.

Prior to the raptor nesting surveys, the certificate holder shall review the locations of known raptor nests based on the ~~BCWF~~ facilities and Klondike Wind Project pre-construction surveys as well as any nest survey data collected after construction. All known nest sites and any new nests observed within the ~~BCWF site~~facilities and within two miles of the ~~BCWF site~~facilities will be given identification numbers. Nest locations will be recorded on U.S. Geological Survey 7.5-minute quadrangle maps. Global positioning system coordinates will be recorded for each nest and integrated with the baseline database. Locations of inactive nests will also be recorded as they may become occupied during future years.

During each raptor nesting monitoring year, the certificate holder shall conduct a minimum of one helicopter survey in ~~late~~ May ~~or early June~~ within the ~~BCWF site~~facilities and a 2-mile ~~zone around the turbines~~buffer to determine nest occupancy. Determining nest occupancy will likely require two visits to each nest: The second visit may be done by air or by ground, as appropriate. For occupied nests of the species identified above, the certificate holder shall determine nesting success by a minimum of one ground visit to determine species, number of young and nesting success. "Nesting success" means that the young have successfully fledged (the young are independent of the core nest site). Nests that cannot be monitored due to the landowner denying access will be checked from a distance where feasible.

(b) Mitigation

The certificate holder shall analyze the raptor nesting data collected after two monitoring years to determine whether a reduction in either nesting success or nest use has occurred in the vicinity of the ~~BCWF~~facilities. If the analysis indicates a reduction in nesting success by Swainson's hawk, ferruginous hawk or golden eagle within two miles of the facilit~~y~~ies (including the area within the ~~BCWF site~~facilities), then the certificate holder shall propose appropriate mitigation and shall implement mitigation as approved by the Council. At a minimum, if the analysis shows that any of these species has abandoned a nest territory within the ~~facility site~~facilities or within ½ mile of the ~~facility site~~facilities, or has not fledged any young over the two-year period within the ~~facility site~~facilities or within ½ mile of the ~~facility site~~facilities, the certificate holder shall assume the abandonment or unsuccessful fledging is the

result of the facility unless another cause can be demonstrated convincingly. If the ~~BCWF facility~~facilities and the Klondike III facility are both required to provide mitigation for the same nest, the two certificate holders shall coordinate the required mitigation with the approval of the Department.

Given the very low buteo nesting densities in the area, statistical power to detect a relationship between distance from a wind turbine and nesting parameters (*e.g.*, number of fledglings per reproductive pair) will be very low. Therefore, impacts may have to be judged based on trends in the data, results from other wind energy facility monitoring studies and literature on what is known regarding the populations in the region.

If the analysis shows that mitigation is appropriate, the certificate holder shall propose mitigation for the affected species in consultation with the Department and ODFW, and shall implement mitigation as approved by the Council. Mitigation should be designed to benefit the affected species or contribute to overall scientific knowledge and understanding of what causes nest abandonment or nest failure. Mitigation may be designed to proceed in phases over several years. It may include, but is not limited to, additional raptor nest monitoring, protection of natural nest sites from human disturbance or cattle activity (preferably within the general area of the facility), or participation in research projects designed to improve scientific understanding of the needs of the affected species. Mitigation may take into consideration whether mitigation required or provided for other impacts, such as fatality impacts or grassland bird displacement, would also benefit the raptor species whose nesting success was adversely affected.

3. Avian Use and Behavior Surveys (BCWF only)

The certificate holder shall conduct a before/after avian behavior and monitoring study to determine whether operation of the BCWF reduces bird use and abundance in the area (often referred to as displacement). The results of this study will aid in estimating indirect avian impacts of the BCWF and guide potential mitigation.

The before/after study will use two of the observation stations that were used during the baseline study (H and I) and two new survey stations (A5 and A6).[6] Avian use and behavior will be monitored at these four stations 6 times each month from November 2005 – August 15, 2006 (pre-construction period) and 6 times each month during two post-construction monitoring years (after construction of wind turbines located near these survey stations).[7]

These four stations are located in the northeastern portion of the BCWF area near the John Day River canyon. The areas surrounding these survey stations were subject to numerous micrositing decisions during facility layout. Primary micrositing decisions included shortening and re-orientating turbine corridors to avoid native habitat, maintaining a minimum one-mile distance from the centerline of the John Day River, and avoiding locating turbines on steep slopes.

Each survey will consist of one 30-minute observation period at each of these four stations using the same protocol that was used for baseline data collection. In particular, raptor

[6] The observation stations are identified in a report by Western EcoSystems Technology, Inc., "John Day Avian Studies for the Biglow Canyon Wind Farm Project, February 2007."
[7] Fewer than 6 monitoring sessions may be conducted if necessary due to safety reasons or severe weather.

and waterfowl use estimates and behavior relative to turbine locations and flight path maps will be compared between the pre- and post-construction periods to provide information on raptor and waterfowl displacement and to estimate indirect impacts on raptors and waterfowl. The phrase "behavior relative to turbine locations" is intended to address observations of behavior that is different near turbines compared to behavior away from turbines.

In addition to surveys at these four stations, searchers will also record bird species observed and their behavior relative to turbine locations before or after each standardized carcass search (as described in Section 1(e) above). Observations will be recorded during 5-minute surveys at each turbine sampled during the fatality monitoring program, using standard variable circular plot point count survey methods. Collection and recording of these additional observations of live birds will be carried out in a manner that does not distract searchers from carrying out the standardized carcass searches.

All of these avian use and behavior data, as well as raptor and waterfowl mortality observed at the turbines near these stations, will be used to understand direct and indirect impacts of the BCWF facility on raptors, waterfowl and other avian species. The certificate holder shall include an analysis of this data in the reports described in Section 5.

4. Biglow Wildlife Incident Response and Handling System (BCWF and Biglow Solar)

The Wildlife Incident Response and Handling System is a monitoring program set up for responding to and handling avian and bat casualties found by construction and maintenance personnel during construction and operation of the ~~facility~~facilities. This monitoring program includes the initial response, the handling and the reporting of bird and bat carcasses discovered incidental to construction and maintenance operations ("incidental finds"). Construction and maintenance personnel will be trained in the methods needed to carry out this program.

All carcasses discovered by construction or maintenance personnel will be reported, documented, and handled in accordance with PGE's current USFWS Special Use Utility (SPUT) permit and ODFW's current Scientific Take Permit for the Biglow ~~sites~~facilities. ~~photographed, recorded and collected.~~

If construction or maintenance personnel find carcasses within the plots for protocol searches, they will notify a qualified biologist, as approved by the Department, who will collect the carcasses. The fatality data will be included in the calculation of fatality rates.

If construction or maintenance personnel discover incidental finds that are not within plots for fatality monitoring protocol searches, they will notify a qualified biologist, as approved by the Department, and the carcass will be collected ~~by a carcass-handling permittee (a person who is listed on state and federal scientific or salvage collection permits).)~~in accordance with PGE's current federal and state permits (SPUT, Scientific Take, etc.). Data for these incidental finds will be reported separately from standardized fatality monitoring data.

The certificate holder shall coordinate collection of state endangered, threatened, sensitive or other state protected species with ODFW. The certificate holder shall coordinate collection of federally-listed endangered or threatened species and Migratory Bird Treaty Act protected avian species with the USFWS.

5. Data Reporting

The certificate holder will report the monitoring data and analysis to the Department. Monitoring data include fatality monitoring program data, raptor nest survey data, avian use and behavior survey data and data on incidental finds by fatality searchers and BCWF personnel. The report may be included in the annual report required under OAR 345-026-0080 or may be submitted as a separate document at the same time the annual report is submitted. In addition, the certificate holder shall provide to the Department any data or record generated in carrying out this monitoring plan upon request by the Department.

The certificate holder shall immediately notify USFWS and ODFW, respectively, in the event that any federal or state endangered or threatened species are killed or injured on the facility site.

The public will have an opportunity to receive information about monitoring results and to offer comment. Within 30 days after receiving the annual report of monitoring results, the Department will make the report available to the public on its website and will specify a time in which the public may submit comments to the Department.[8]

6. Amendment of the Plan

This Wildlife Monitoring and Mitigation Plan may be amended from time to time by agreement of the certificate holder and the Council. Such amendments may be made without amendment of the site certificate. The Council authorizes the Department to agree to amendments to this plan and to mitigation actions that may be required under this plan. The Department shall notify the Council of all amendments and mitigation actions, and the Council retains the authority to approve, reject or modify any amendment of this plan or mitigation action agreed to by the Department.

[8] The certificate holder may establish a Technical Advisor Committee (TAC) but is not required to do so. If the certificate holder establishes a TAC, the TAC may offer comments to the Council about the results of the monitoring required under this plan.