ATTACHMENT E: WILDLIFE AND HABITAT STUDY REPORT

Hop Hill Solar Energy Project Wildlife and Habitat Study Report

SEPTEMBER 2022

PREPARED FOR

HOHI bn, LLC

PREPARED BY

SWCA Environmental Consultants

HOP HILL SOLAR ENERGY PROJECT
WILDLIFE AND HABITAT STUDY REPORT

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1 INTRODUCTION

HOHI bn, LLC (HOHI or Applicant), a subsidiary of BrightNight, LLC, is proposing to develop the Hop Hill Solar Energy project, a utility-scale photovoltaic solar power plant in Benton County, Washington. The siting area, which encompasses the boundary of the leased parcels for the project, covers approximately 22,020 acres and is located on rural land in unincorporated Benton County, approximately 11 miles north of the city of Prosser (Figure 1). The siting area includes a solar array siting area to the south (11,179 acres) and a transmission line corridor siting area to the north (10,841 acres) (Figure 2). The final project area subject to development within the siting area is anticipated to be approximately 5,000 acres. The siting area and vicinity are characterized by rural rangeland and agricultural lands with limited residential or commercial development. HOHI is considering various design layouts for the solar arrays within the siting area and is in the process of narrowing down the final "buildable" project area, which will be based on the results of site evaluations such as geotechnical investigations, review of sensitive natural and cultural resources, and the overall slope and aspect of the project area.

The purpose of this report is to summarize potential protected species and habitats within the siting area that could constrain development or require additional approvals, including critical areas designated under Benton County's Critical Areas Ordinance (CAO) that are relevant to wildlife (Benton County Code [BCC] Chapter 15). The objective of this report is to assist HOHI in identifying the 5,000-acre project area for proposed development by identifying where impacts may occur, where avoidance and minimization measures may be necessary, and where additional studies may be required to meet regulatory requirements.

2 METHODS

SWCA Environmental Consultants (SWCA) identified and characterized protected species, habitats, and other critical areas within the siting area through a combination of desktop analysis and field investigations, which are further described below. Prior to field surveys, a coordination meeting with Washington Department of Fish and Wildlife (WDFW) occurred in February 2022 to inform the scope of field surveys and methods used. WDFW meeting notes are included in Attachment A.

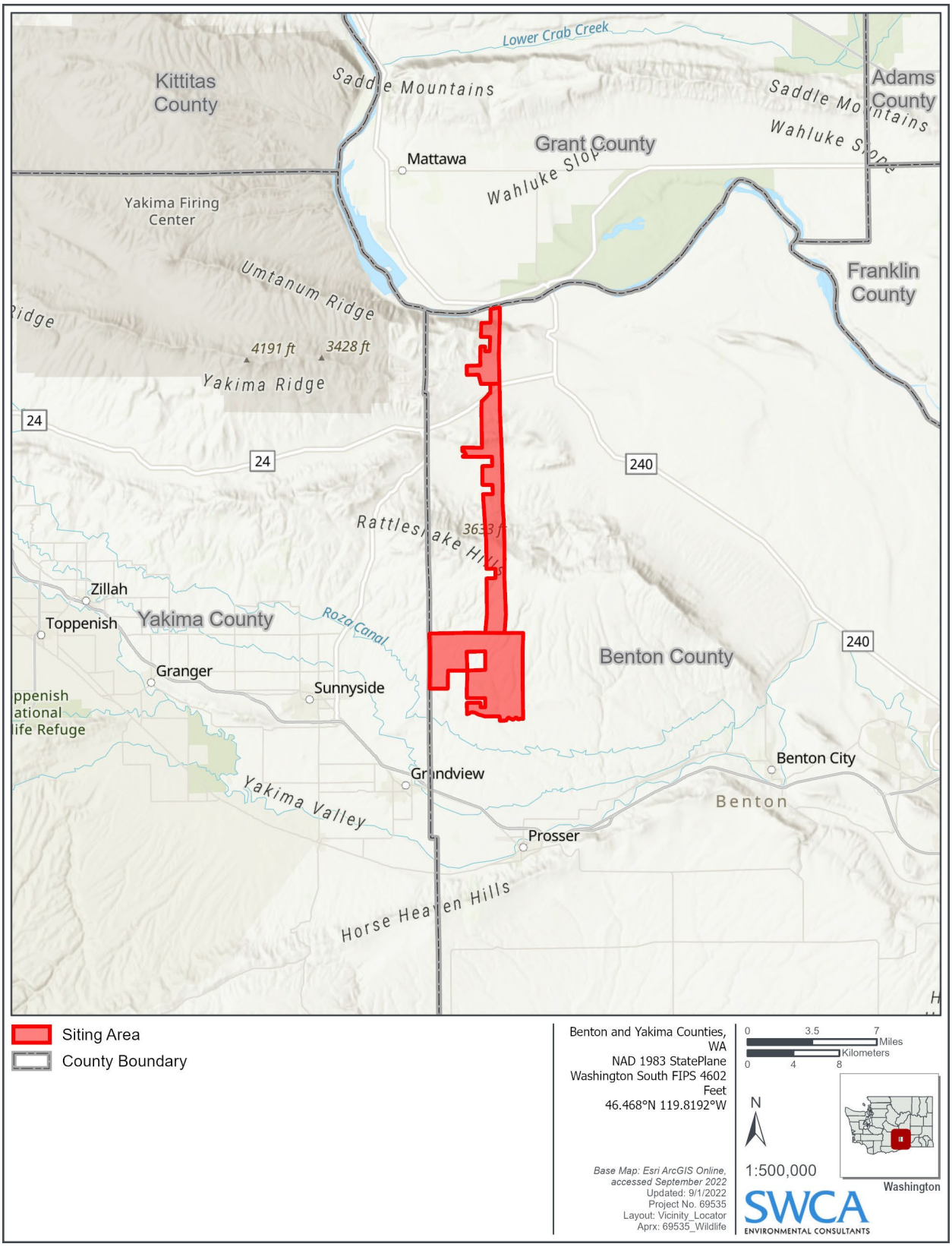

Figure 1. Siting area overview.

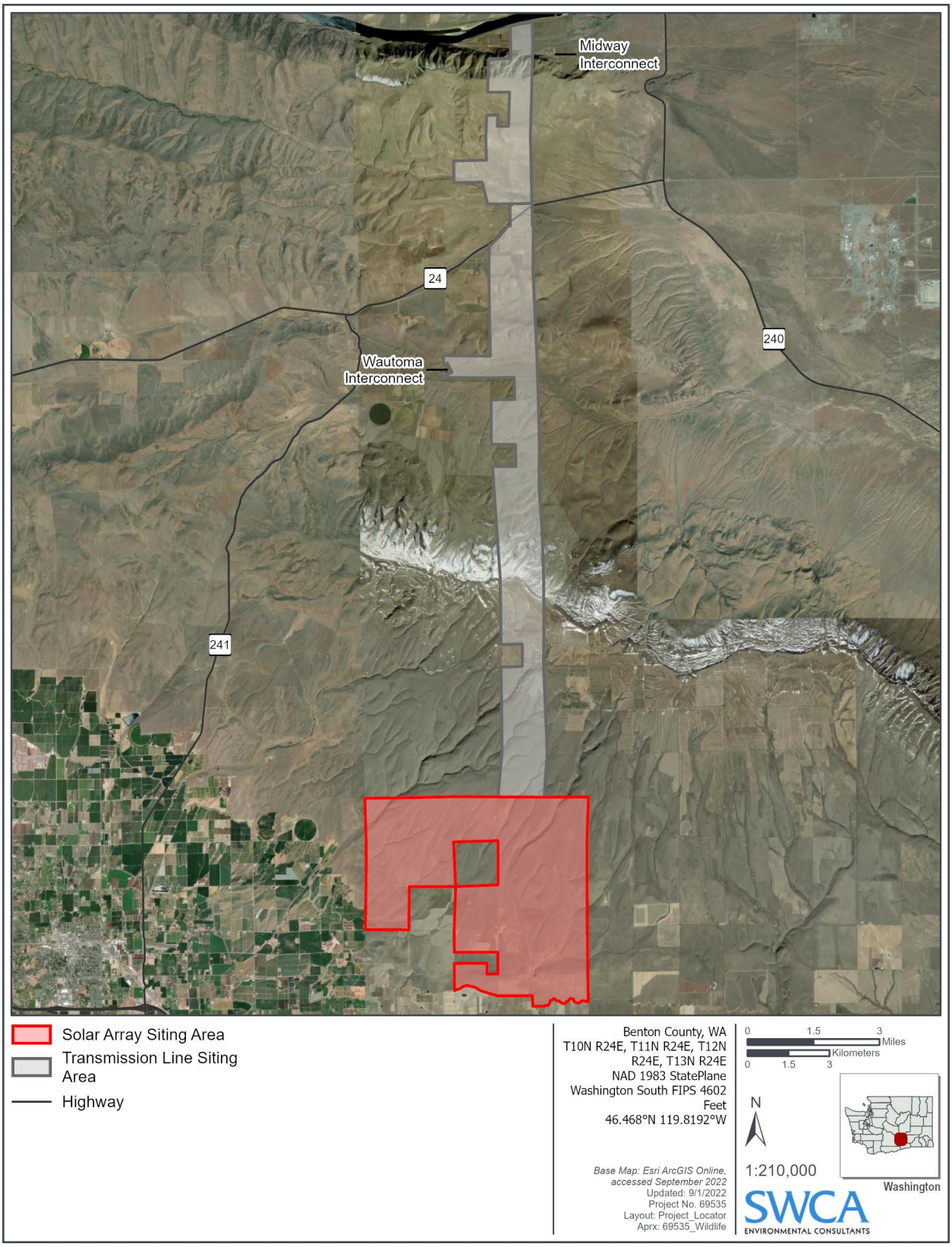

Figure 2. Solar array and transmission line siting areas.

2.1 Study Areas

The study areas used in this analysis have been tailored to accommodate specific species or habitat concerns, WDFW recommendations, and to avoid duplicative efforts in light of previously completed surveys in the siting area. In addition, per HOHI's request, the transmission line siting area was included in the desktop analysis but was excluded from field surveys and will be surveyed at a future date.

The study area for the desktop analysis of species, habitats, and critical areas encompassed the siting area, which covers approximately 22,020 acres.

The study areas for field surveys varied according to the target species and are shown on Figure 3:

- The field study area for burrowing animal target species (including Townsend's ground squirrel [*Urocitellus townsendii nancyae*], and burrowing owl [*Athene cunicularia*]) encompassed two areas totaling 4,250 acres in the western portion of the solar array siting area where high burrowing animal activity was documented during previous surveys (ERM-West, Inc. [ERM] 2021). Through coordination with WDFW, these areas were selected for protocol-level surveys for burrowing animals.
- The field study area for avian point counts encompassed the solar array siting area.
- The field study area for raptor nest surveys included the solar array siting area and a 0.5-mile buffer.

No additional field surveys were performed outside these species-specific study areas because the remaining portions of the solar array siting area have already been surveyed for special status species and habitats (including shrubsteppe habitat) (ERM 2021), and no additional survey needs were identified during coordination with WDFW in February 2022. WDFW's recommendation for delineation of shrubsteppe habitat was accomplished through desktop analysis of aerial imagery, as informed by previous habitat survey results for the solar array siting area.

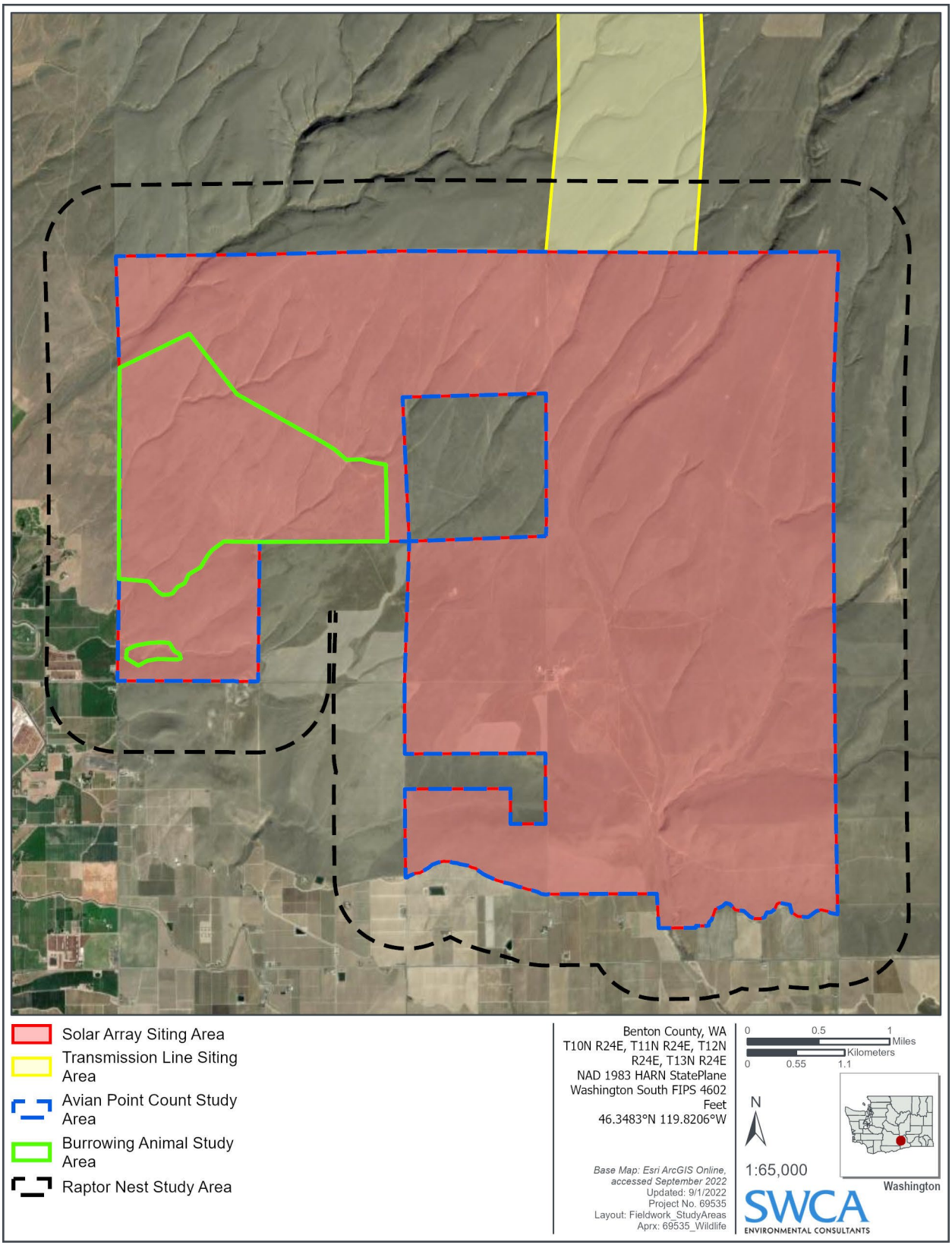

Figure 3. Field study areas.

2.2 Desktop Analysis

SWCA reviewed multiple data sources and background materials to determine the potential for protected species, habitats, and critical areas relevant to wildlife to occur within the siting area. Delineation of shrubsteppe habitat was accomplished through desktop analysis of current and historical Google Earth aerial imagery, overlaid on site-specific shrubsteppe data collected during previous site surveys within the solar array siting area (ERM 2021) or National Landcover Dataset (NLCD) landcover data within the transmission line siting area (U.S. Geological Survey [USGS] 2019). Table 1 lists all of the publicly available data sources and previously completed project reports that were reviewed during desktop analysis.

Table 1. Desktop Analysis Data Sources

Data Sources Reviewed
LANDFIRE vegetation data (LANDFIRE 2020)
USGS NLCD (USGS 2019)
Google Earth historic and current aerial imagery (2003–2022)
Hop Hill Biological Survey Report (ERM 2021)
Washington Connected Landscapes Project: Statewide Analysis (Washington Wildlife Habitat Connectivity Working Group 2010)
Washington Connected Landscapes Project: Analysis of the Columbia Plateau Ecoregion (Washington Wildlife Habitat Connectivity Working Group 2012)
Arid Lands Initiative (ALI): Spatial Conservation Priorities in the Columbia Plateau Ecoregion Report (ALI 2014) and spatial data (ALI 2014)
U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) data (USFWS 2022a)
WDFW Priority Habitats and Species (PHS) data (WDFW 2022a)
eBird occurrence data (eBird 2022a,2022b)
WDFW Species Descriptions (WDFW 2022b)
WDFW Report Wolf Observations (WDFW 2022c)
USFWS Umtanum Desert Buckwheat (*Erigonum codium*) species profile (USFWS 2022b)
Washington Department of Fish and Wildlife, Wildlife Program, Western States Wolverine Conservation Project: results of the Washington Wolverine Survey, Winter 2016–2017 (Lewis et al. 2020)
Hop Hill Biological Survey Report (ERM 2021)
USFWS National Wetlands Inventory (NWI) data (USFWS 2022c)
USGS National Hydrography Dataset (NHD) (USGS 2022)

2.3 Field Surveys

Three types of targeted field surveys were conducted as part of this reporting effort: protocol-level burrowing animal surveys, ground-based raptor nest surveys, and avian point count surveys. These targeted surveys were selected and designed to accommodate site-specific species and habitat concerns, WDFW survey recommendations, and to avoid duplicative efforts in light of previously completed surveys at the project site or forthcoming surveys that are planned to be completed in the near future. The protocols and methods used for each of these surveys are described below. The study areas used for each survey are described in Section 2.1 and shown on Figure 3.

2.3.1 Protocol-Level Burrowing Animal Surveys

Following desktop review, SWCA conducted two rounds of protocol-level surveys for burrowing animals, each completed approximately three weeks apart between April 11 and May 12, 2022. This survey schedule corresponded with the period of highest ground squirrel activity when juveniles have emerged, and alarm calls are most frequent. Spacing the surveys apart by at least two weeks ensured that ground squirrel activity would be captured despite any local variations in activity level throughout the season. The timing and methods used for these surveys are consistent with WDFW recommendations provided in February 2022 (Appendix A).

The survey protocol used for burrowing animals used a systematic transect approach with transects spaced approximately 60 m apart. Transects were searched for signs of target species (Townsend's ground squirrel and burrowing owl), including visual and audio observations, burrows, tracks, or fresh droppings. When burrows were found, they were examined for evidence of recent use by ground-squirrel or burrowing owl (i.e., appropriately sized burrow openings, scat, freshly dug, no vegetation or cobwebs, or burrows lined with livestock manure, feathers, grass, or other materials). All observations of species, burrows, or other signs of activity were recorded using a global positioning system (GPS) unit capable of submeter accuracy. During the second round of surveys, transects were placed perpendicular to those used for the initial round of surveys. Biologists documented signs of target species or other Priority Habitats and Species (PHS) along the transects, stopping periodically to listen for species calls, noting the compass direction of the vocalization and to the extent possible estimating the distance to it. Any incidental PHS or special status species observations were also recorded.

The first survey period occurred from April 11 to 13, 2022. Although the first round of surveys was performed during the typical period of high ground squirrel activity, the weather was much colder and wetter than normal for the time of year, and was also periodically windy, resulting in some interruptions to surveys. On all three days, temperatures were colder than normal for the time of year with lows ranging from 30 to 31 degrees Fahrenheit (°F) and highs ranging from 46°F to 52°F (National Weather Service [NWS] 2022a). These temperatures represent a departure of -10 to -13 degrees from normal average temperatures for this time of year (NWS 2022a). High winds occurred during portions of the first day and third day, forcing surveyors to stop surveying until winds died down or end the day early. Overnight precipitation occurred on the first and second days, resulting in some snow accumulation in the northern portion of the survey area, which partially obscured the ground. Due to this snow accumulation, approximately one-third of the study area (in southern area) was not able to be surveyed.

The second round of surveys were conducted from May 9 to 12, 2022. Weather during the second survey period was also cooler than normal with low temperatures ranging from 35°F to 39°F and high temperatures ranging from 57°F to 67°F (NWS 2022b). These temperatures represent a departure of -8 to -13 degrees from normal average temperatures for this time of year (NWS 2022b). There were no weather-related interruptions or delays to the surveys and the entire study area was surveyed.

2.3.2 Ground-Based Raptor Nest Surveys

Ground-based nesting raptor surveys were conducted from May 11 to 14, 2022, and June 28 to 29, 2022, to assess potential raptor nesting and foraging activity within 0.5 mile of the solar array siting area. Surveys focused on cliff nesting habitat identified during previous site surveys (ERM 2021), potential raptor nesting habitat identified from desktop review (e.g., forested areas with suitable trees), as well as previously documented raptor nesting areas identified by WDFW. WDFW's documented raptor nests spanned from the 1980s to 2017, with the majority near the solar array siting area being from 2003 and 2016. As requested by WDFW (see Appendix A), the raptor nest surveys also included areas of the solar

array siting area that are within 2 miles of a ferruginous hawk core nesting area located northwest of the solar array siting area to capture potential foraging areas used by those raptors.

Following the desktop evaluation, a qualified avian biologist visited all areas identified as potential nesting habitat within the study area to search for nests from the ground using high-powered binoculars or a spotting scope. Areas that were not accessible on the ground (i.e., areas outside the solar array siting area with no landowner consent) were visually inspected from afar. For each nest location in the study area, information was recorded on the date and time of observation; nest coordinates; and additional notes on primary habitat, occupancy status (if possible), nest contents (if possible), and condition. For occupied nest locations, species and observed activity was also recorded, if possible. For unoccupied nests, surveyors did not make assumptions regarding what species may have built or used the nest in the past as these determinations are difficult to make from far away, and large stick nests may be used by many species. Rather, surveyors recorded an informed opinion as to whether the nest may have been used by large raptors, such as buteos or eagles, or corvids.

2.3.3 Avian Point Counts

Avian point counts were conducted by qualified avian biologists during the nesting season from May 11 to 14, 2022, and June 28 to 29, 2022, to characterize avian use of the solar array siting area. A total of 14, 1-hour long avian point counts were conducted at locations spaced throughout the study area, and within representative habitat types. During each point count, an avian biologist would sit at a fixed location and document all avian species (including species name and number of detections per species) that were seen or heard from that location for the 1-hour duration of the count. Per WDFW's recommendations to strategically place avian point counts within burrowing animal survey areas and shrubsteppe areas (see Appendix A), avian point counts were more heavily focused in the northwestern and northeastern portions of the study area, where priority habitats and species are most concentrated.

3 RESULTS

The following sections describe the habitat, species, and critical areas relevant to wildlife that are known or suspected to occur within the siting area based on the results of the desktop analysis and field investigations.

3.1 Habitat

The EPA Level III ecoregion encompassing the siting area is the Columbia Plateau, which is typically dominated by arid sagebrush steppe and grassland (Thorson et al. 2003). The U.S. Geological Survey (USGS) NLCD (USGS 2019) and USGS LANDFIRE dataset (LANDFIRE 2020) for the siting area were both reviewed and compared to field observations from previous habitat surveys (ERM 2021) and aerial imagery to determine the dataset that most accurately represented existing habitat conditions. Although NLCD is generally mapped at a coarser scale than LANDFIRE, it aligned more closely with previous habitat survey results (ERM 2021) and aerial imagery than LANDFIRE. Therefore, NLCD data were used, in combination with previous habitat survey results (for solar array siting area only) and current and historic aerial imagery, to characterize and delineate habitat types in the siting area.

NLCD data characterize the majority of the siting area as herbaceous and shrub-scrub habitat. Habitat surveys performed by ERM in 2021 confirmed the dominant habitat types within the solar array siting area to be herbaceous grassland and shrubsteppe, consistent with the NLCD (for consistency with WDFW terminology, the NLCD shrub-scrub habitat category will hereafter be referred to as shrubsteppe habitat

as defined under WDFW's PHS list [Azzerad et al. 2011]). The majority of the solar array siting area is grazed by livestock, with some smaller areas of cultivated cropland, thus much of the natural vegetation has been disturbed and exotic cheatgrass is common throughout the site. Tall trees are negligible and only occur in one small stand in the far south of the solar array siting area near Spring Creek and in cultivated orchards in the north of the transmission line area. ERM also delineated basalt cliff habitat (averaging 30 to 100 feet in height) along Black Canyon and Spring Creeks (Figure 4) and noted the presence of some wetlands (totaling approximately 3 acres) and waters within the solar array siting area.

Aside from the 3 acres of wetlands previously detected within the solar array siting area, additional wetlands and waters are mapped within the siting area by NHD and NWI datatsets, but have not yet been field verified; therefore, the exact acreage of wetland and waters within the siting area remains unknown until formal field delineations are completed.

The extent of shrubsteppe habitat mapped in 2021 (ERM 2021) was compared to historical and current aerial imagery and then re-digitized throughout the current solar arrays siting area. Within the transmission line siting area, field verification of habitat types has not occurred; shrubsteppe was digitized using historical and current aerial imagery. The digitized shrubsteppe polygons were then combined with NLCD data (for non shrub-scrub habitat types) to produce the final habitat acreages presented in Table 2.

Habitat types that were field verified within the solar array siting area and digitized within the transmission line sting area are summarized in Table 2 and are shown in Figure 4. Some habitat types (e.g., wetlands) may be too small to appear at the scale of the figure. Primary habitat types or habitat types that would be regulated as critical areas under Benton County Code (herbaceous grassland, shrubsteppe, and wetlands and waters) are further described in the subsections below.

Table 2. Habitat Types in the Siting Area

Habitat Type	Solar Array Siting Area		Transmission Line Siting Area		Total Siting Area	
	Acres	Percent (%)	Acres	Percent (%)	Acres	Percent (%)
Herbaceous grassland	8,523	76%	6,153	57%	14,676	67%
Shrubsteppe	2,529	23%	1,783	16%	4,312	20%
Cultivated crops	70	1%	2,852	26%	2,922	13%
Developed	54	<1%	48	<1%	102	<1%
Wetland*	3	<1%	0	0%	3	<1%
Open Water	0	0%	1	<1%	1	<1%
Hay/pasture	<1	<1%	1	<1%	1	<1%
Barren land	0	0%	3	<1%	3	<1%
Total:	10,841	100%	11,179	100%	22,020	100%

Source: Habitat mapping based on NLCD data was updated with field data and aerial imagery.

* Since wetland and water habitats have not been formally delineated within the siting area, the acreage of wetlands and waters presented herein is a preliminary estimate based on determination-level surveys in the solar array siting area (ERM 2021) and desktop review of NLCD data for the transmission line siting corridor.

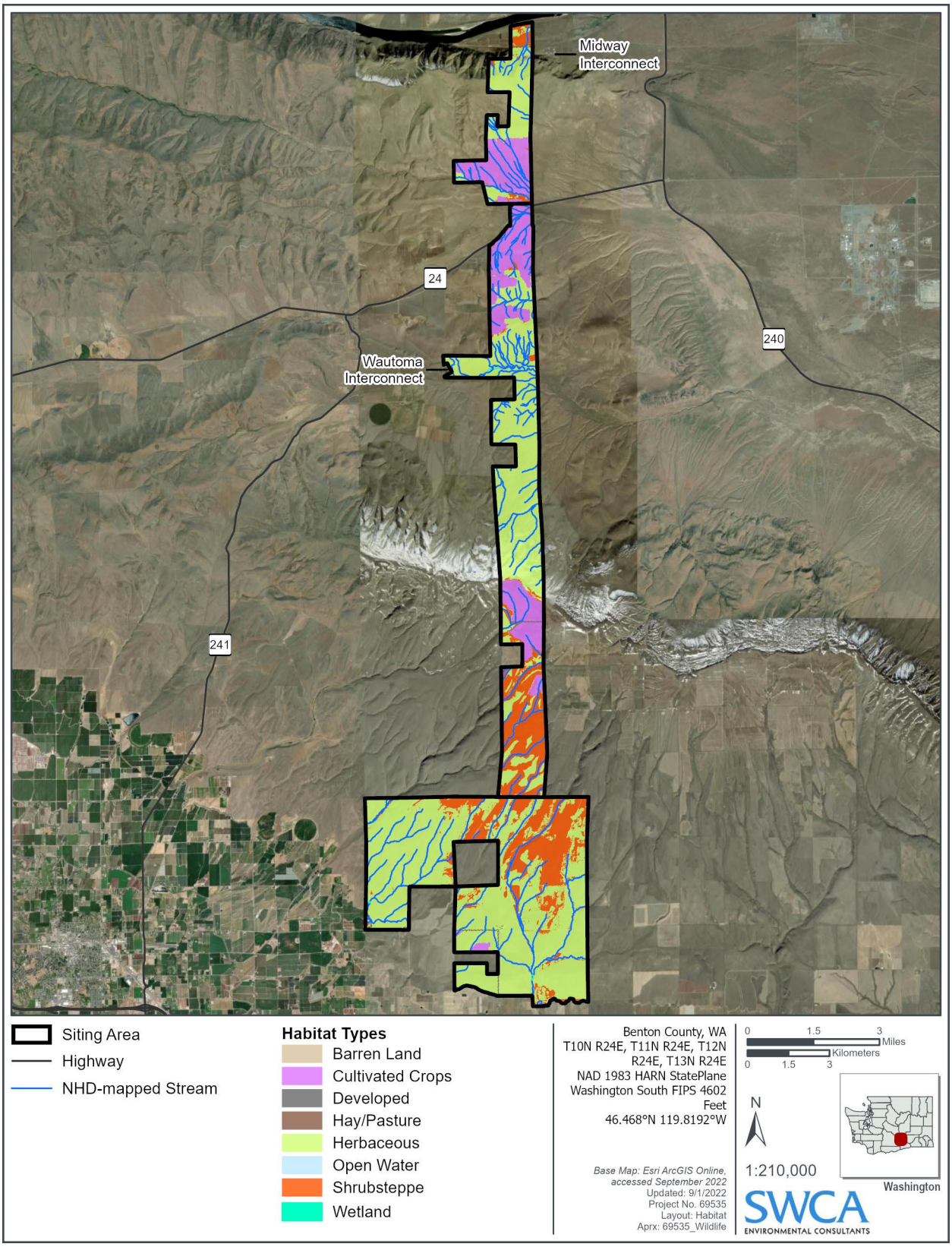

Figure 4. Habitat types in the siting area.

3.1.1 Grassland

Grassland habitat is the most predominant habitat type in both the solar array and transmission line siting areas. Grassland habitat covers approximately 14,676 acres (67%) of the siting area, including 8,523 acres (76%) of the solar array siting area and 6,153 acres (57%) of the transmission line siting area. Dominant plant species observed included downy cheatgrass (*Bromus tectorum*), redstem stork's bill (*Erodium cicutarium*), with some scattered *Lupin* sp., *Phlox* sp., *Lomatium* sp., and common larkspur (*Delphinium nuttallianum*) flowering at the time of survey. Due to past and ongoing livestock grazing, much of the natural vegetation has been disturbed and exotic cheatgrass is common throughout. A representative photograph of grassland habitat is included in Appendix B.

3.1.2 Shrubsteppe

Shrubsteppe habitat covers approximately 4,312 acres (20%) of the siting area, including 2,529 acres (23%) of the solar array siting area and 1,783 acres (16%) of the transmission line siting area. Shrubsteppe habitat is most dominant in the southern portion of the transmission line siting area and in the northeastern portion of the solar array siting area. The shrubsteppe habitat on-site was characterized in 2021 as follows:

> [D]ominant plant species included big sagebrush (*Artemisia tridentata*) and downy cheatgrass (*Bromus tectorum*); average sagebrush canopy cover is between 25 and 50 percent and average height is 1 to 3 feet. The sagebrush structure is a mixture of spreading and columnar growth forms, individuals appeared healthy, and there were signs of recruitment. Canopy cover and species richness was low in the herb layer, which could have been due to the timing of the field survey (outside of the growing season), and/or due to heavy grazing in some areas. (ERM 2021)

Representative photos of shrubsteppe habitat are included in Appendix B.

Shrubsteppe habitat is a WDFW-designated priority habitat, as well as a type of critical area under Benton County's CAO (see Section 3.3 for additional information regarding critical areas). Therefore, the project should be designed to avoid development within shrubsteppe habitat and minimize potential impacts to shrubsteppe-associated species to the maximum extent possible since unavoidable impacts would require compensatory mitigation. Avoidance, minimization, and compensatory mitigation options should be determined through coordination with WDFW.

3.1.2.1 HABITAT CONNECTIVITY

Per WDFW management recommendations for priority shrubsteppe habitat (Azzerad et al. 2011), additional reports from the Washington Wildlife Habitat Connectivity Working Group and Washington Arid Lands Initiative (ALI) were reviewed to determine if the siting area's shrubsteppe habitat has been identified as an important area for wildlife habitat connectivity in the Columbia Plateau ecoregion.

Based on review of *Washington Connected Landscapes Project: Statewide Analysis and Analysis of the Columbia Plateau Ecoregion* (Washington Wildlife Habitat Connectivity Working Group 2010, 2012), the siting area occurs within an area that is modeled as having moderate to high landscape integrity (with highest landscape integrity along the transmission line route to the north). It is partially located within a landscape integrity core area for focal species in the Columbia Plateau ecoregion (which covers most, but not all, of the siting area) (Figure 5). Landscape integrity is defined as "a relative measure of the level of human-caused change on a landscape that combines information on land conversion, human population density, and road use and density" and is a measure of landscape resistance to wildlife movement. Core areas represent contiguous areas of suitable habitat for focal species which are linked together to facilitate wildlife movement. The siting area also overlaps several focal species linkage networks that represent least-cost movement pathways for focal species between their core habitat areas. Focal species are not necessarily special status species, but were chosen to represent the diversity in Washington's species' habitat preferences, life histories, geographic ranges, and sensitivities to human barriers. Focal species networks that overlap the siting area include Townsend's ground squirrel (along transmission line only), least chipmunk, white-tailed jackrabbit, black-tailed jackrabbit, and mule deer. The siting area is not located within a core linkage zone for wildlife habitat connectivity in the Columbia Plateau ecoregion.

The ALI report (2014) identifies priority areas in the Columbia Plateau ecoregion that are priorities for restoration and protection of current habitat and species distribution. Their report identifies priority core areas (PCAs) and priority linkage areas (PLAs) for wildlife movement. Based on review of ALI modeling results, the siting area is partially located within a PCA and a PLA (Figure 5); the PLA only intersects the northernmost extent of the transmission line siting area whereas the PCA intersects the central portion of the transmission line siting area, as well as a small area in the very northwest corner of the solar array siting area.

3.1.3 Wetlands and Waters

Although formal wetland and water delineations have not yet occurred within the siting area, based on review of NHD and NWI data there is approximately 292 acres of mapped wetland and water features within the siting area (including 109 acres within solar array siting area and 183 acres within transmission line siting area) and 123 linear miles of mapped NHD streams (including 46 miles within solar array siting area and 77 miles within transmission line siting area). The majority of mapped NWI features are riverine (i.e., streams) which overlap NHD mapped intermittent stream features.

Determination-level surveys for wetlands and waters were completed for the solar array siting area between September 8 and 10, 2021 (ERM 2021). Surveys were intended to field verify the presence or absence of NWI- and NHD- mapped features. Based on results of determination-level surveys, NHD-mapped intermittent streams are present throughout the solar array siting area. The stream features observed in the solar array siting area were primarily southwest-flowing ephemeral drainages fed by precipitation runoff following a gradual reduction in elevation from north to south. One NHD-mapped intermittent stream was found to be a perennial irrigation channel in the southwest corner of the solar array siting area. Most streams are unnamed; the named streams consist of Sulphur Creek, Black Canyon Creek, Spring Creek, and Corral Creek. Black Canyon and Spring Creeks appeared to be intermittent streams.

ERM (2021) identified three wetlands within the solar array siting area totaling approximately 3 acres: a palustrine forested wetland (PFO) and two palustrine emergent wetlands (PEM). The PFO was also identified in the NWI dataset. Additional NWI wetlands are mapped along the length of the stream channels and in pockets adjacent to stream channels, and review of aerial imagery indicates that established stream channels within the solar array siting area may have suitable conditions to support

wetlands. Most channel features are located in deep gulches and valleys, and are therefore likely to be avoided by development.

Due to the preliminary nature of the September 2021 biological field survey, there may be additional wetland or water features in the solar array siting area that have not yet been documented. Formal wetland and water delineations are needed to determine the precise acreage of wetland and water habitat within the entire siting area.

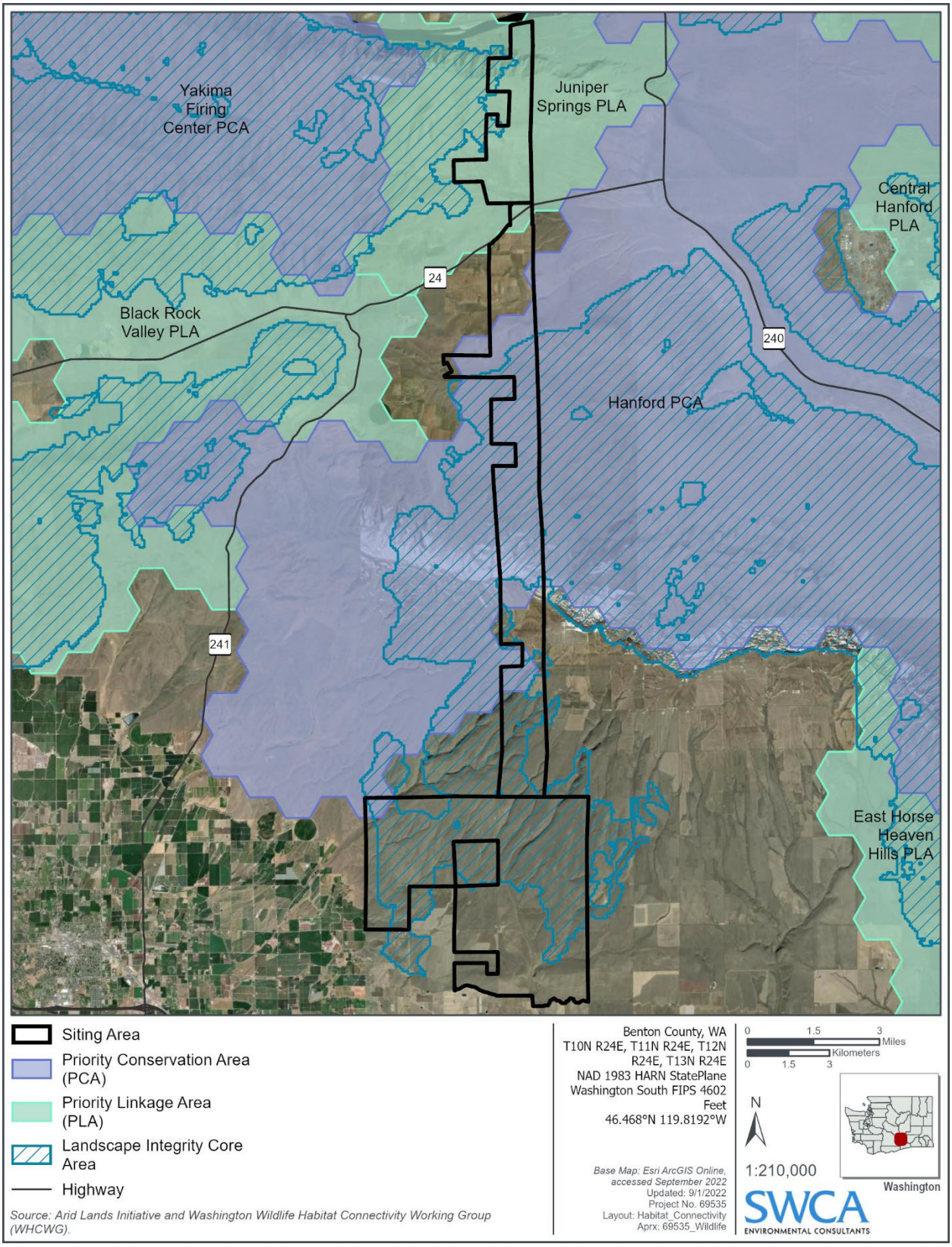

Figure 5. Habitat connectivity areas within siting area.

3.2 Special Status Species

Special status species evaluated in this report include federal and state designated endangered, threatened, or candidate species that are protected under the federal Endangered Species Act (ESA) and Washington Administrative Code (WAC) 220-610-110; WDFW designated PHS, which are protected under the County's CAO; and bald and golden eagles, which are protected under the Bald and Golden Eagle Protection Act (BGEPA). Based on review of the U.S. Fish and Wildlife Service's (USFWS's) Information for Planning and Consultation (IPaC) database (USFWS 2022a), WDFW PHS data (WDFW 2022a), and coordination with the WDFW (Appendix A), 22 species were identified that could potentially occur within or near the siting area. The potential for occurrence was then further refined based on habitat data and field surveys. Table 3 provides details regarding each species' federal or state status, preferred habitat, nearest documented occurrence to the siting area, and SWCA's determination for the potential of each species to occur within the siting area. Of the 22 total species identified, five are not likely to occur within the siting area due to a lack of suitable habitat and lack of known occurrences within the siting area. The remaining species either have the potential to occur due to the presence of suitable habitat and./or documented occurrences in the past (15 species), or are known to occur based on documented occurrences during recent field surveys (two species).

As determined through coordination with WDFW, targeted field surveys for Townsend's ground squirrel, burrowing owl, nesting raptors, and avian species were completed, and the results of those surveys are provided in the subsections below. Incidental observations of other wildlife species were also documented during field surveys and are provided in the subsections below. Field surveys for special status species with the potential to occur along the transmission line corridor only were not performed as part of this report; HOHI will arrange to have transmission line surveys performed at a later date.

Table 3. Special Status Species with Potential to Occur in the Siting Area

Species	Status or Protection	Habitat Use	Nearest Documented Occurrence	Determination of Potential to Occur in Siting Area
Birds				
Bald eagle (*Haliaeetus leucocephalus*)	BGEPA	Nests in large trees within 0.5 mile of a fish-bearing waterbody and has a home range that can extend 1 to 6 square miles from the nest.	Documented occurrence 9 miles northwest of transmission line siting area (eBird 2022a).	Unlikely to occur due to lack of suitable habitat
Burrowing owl (*Athene cunicularia*)	SC, PHS	Inhabits open grasslands and shrubsteppe in eastern Washington and the western United States.	One previously documented occurrence (date unknown) of burrowing owl in solar array siting area (WDFW 2022a). Suitable burrows observed on-site by ERM (ERM 2021).	Potential to occur due to presence of suitable habitat and previously documented occurrence
Chukar (*Alectoris chukar*)	PHS	Occurs on rocky slopes in sagebrush-grassland communities where water is available, or across barren plateaus and deserts with sparse grasses, between 4,000 and 13,000 feet of elevation.	Breeding habitat mapped by PHS along transmission line siting area (WDFW 2022a).	Potential to occur due to presence of suitable habitat
Ferruginous hawk (*Buteo regalis*)	SE, PHS	Nests in rocky outcrops on steep hillsides or canyons and hunts in open county, arid grasslands, prairies, and shrubsteppe habitats.	PHS data maps ferruginous hawk habitat within siting area (both solar array siting area and transmission line siting area) (WDFW 2022a).	Potential to occur due to presence of suitable habitat

Species	Status or Protection	Habitat Use	Nearest Documented Occurrence	Determination of Potential to Occur in Siting Area
Golden eagle (*Aquila chrysaetos)*	SC, PHS, BGEPA	Uses steep terrain, open forests of eastern Washington, shrubsteppe, canyonlands, and high-elevation alpine zones. Hunts in shrublands and grasslands. Nests on cliff ledges, rocky outcrops, large trees, or power poles/transmission towers.	Nearest PHS mapped occurrence is over 65 miles north of project (WDFW 2022a). However, closer occurrences have been documented 11 miles west of siting area (eBird 2022b)	Potential to occur due to presence of suitable habitat
Greater sage-grouse (*Centrocercus urophasianus*)	SE, PHS	Requires large areas of shrubsteppe habitat dominated by sagebrush. Winter and late brood rearing habitat can occur in degraded habitat that lacks grass and forb understory.	PHS data maps sage grouse habitat within the transmission line siting area and solar arrays siting area (WDFW 2022a).	Potential to occur due to presence of suitable habitat
Loggerhead shrike (*Lanius ludovicianus*)	SC, PHS	Breeds in open country, including shrubsteppe and grasslands with scattered tall shrubs, fence posts, utility wires, or lookout posts. Nests in dense, thorny trees, or shrubs.	PHS maps nesting habitat within the transmission line siting area (WDFW 2022a).	Potential to occur due to presence of suitable habitat
Sage thrasher (*Oreoscoptes montanus*)	SC, PHS	Breeds in shrubsteppe habitats dominated by sagebrush, primarily in arid or semi-arid situations. Usually occurs between 1300 m–2000 m above sea level.	PHS maps nesting habitat within the transmission line siting area (WDFW 2022a).	Potential to occur due to presence of suitable habitat
Prairie falcon (*Falco mexicanus*)	PHS	Breeds in arid environments of eastern Washington, nests on cliffs in steppe and shrubsteppe habitat. Winters throughout its breeding range but congregates in the central Columbia Basin.	PHS data maps several occurrences in siting area (WDFW 2022a) and prairie falcon were observed within solar array siting area during field surveys by ERM and SWCA (ERM 2021).	Known to occur as of 2022
Sagebrush sparrow (*Amphispiza nevadensis)*	SC, PHS	Breeds in shrubsteppe habitats consisting of shrubs up to about 6 feet tall, including sagebrush, saltbush, rabbitbrush, shadscale, and bitterbush. Winters in desert scrub, dry shrublands, or grasslands. Uses habitats below 5,600 feet in elevation.	Observed within solar array siting area (3 individuals) during SWCA's avian point count surveys.	Known to occur as of 2022
Yellow-billed cuckoo (*Coccyzus americanus*)	SE, FT, PHS	Uses wooded habitat with dense cover and water nearby, including woodlands with low, scrubby vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes. Strong preference for continuous riparian zones with cottonwoods and willows.	Nearest PHS mapped occurrence is approximately 36 miles southeast of the siting area (WDFW 2022a).	Unlikely to occur due to lack of suitable habitat
Mammals				
Black-tailed jackrabbit (*Lepus californicus*)	SC, PHS	Distribution concentrated in the semi-arid Columbia Plateau shrubsteppe and grassland habitats and extends south into Oregon. Areas used are dominated by sagebrush and rabbitbrush habitats, as well as areas of mixed grassland and shrubs.	PHS mapped habitat approximately 0.5 mile west of the transmission line siting area (WDFW 2022a).	Potential to occur due to presence of suitable habitat

Species	Status or Protection	Habitat Use	Nearest Documented Occurrence	Determination of Potential to Occur in Siting Area
Elk (*Cervus elaphus)*	PHS	Occurs both east and west of the Cascade Range, either in the coastal ranges of the Olympic peninsula and western slopes of the Cascade Range, or in the mountain ranges and shrubsteppe in eastern Washington.	PHS mapped habitat within siting area (both solar array siting area and transmission line siting area) (WDFW 2022a).	Potential to occur due to presence of suitable habitat
Gray wolf (*Canis lupis*)	SE, FE	Adapts to various habitats where sufficient prey is present. In the northwestern U.S., occurs in relatively flat forested areas, rolling hills, or open spaces such as river valleys and basins, away from human activity.	Nearest WDFW reported occurrence is approximately 4 miles east of transmission line siting area. Other occurrences have been reported within an approximate 20-mile radius of siting area (WDFW 2022c).	Potential to occur due to presence of suitable habitat
North American wolverine (*Gulo gulo luscus*)	SC, FPT	Occurs in boreal forest, taiga, and tundra ecosystems. In Washington, it occupies alpine and subalpine forest habitats, in the remote mountainous areas of the Cascades and in northeastern Washington.	Nearest WDFW reported occurrence is approximately 75 miles west of the siting area (Lewis et al. 2020).	Unlikely to occur due to lack of suitable habitat.
Rocky Mountain mule deer (*Odocoileus hemionus hemionus*)	PHS	Mule deer occupy many types of habitats in mountains and lowlands, including various forests and woodlands, forest edges, shrublands, grasslands with shrubs, and residential areas. Rocky mountain mule deer specifically prefer shrubsteppe habitats.	Mule deer are known to occur within the general area and characteristic mule deer scat was observed within the solar array siting area during ERM surveys (ERM 2021).	Potential to occur due to presence of suitable habitat
Townsend's ground squirrel (*Urocitellus townsendii nancyae*)	SC, PHS	Primarily occurs in native shrubsteppe, grasslands, and large patches of sagebrush at the lower edges of forest. Occupies human-modified habitats with ample soil depths to provide space for burrows, such as pastures, abandoned fields, orchards, vineyards, hop fields, canal banks, and sites adjacent to irrigated fields and springs.	Nearest PHS mapped occurrence is within a 9-mile radius of solar array siting area. Suitable burrows observed on-site by ERM (ERM 2021).	Potential to occur due to presence of suitable habitat
Other				
Desert striped whipsnake (*Coluber [Masticophis] taeniatus taeniatus*)	SC, PHS	Occurs only in shrubsteppe, primarily in the driest areas of the central Columbia Basin, below 1,500 feet elevation. Are surface active in March or April when daily temperatures become suitable.	PHS mapped habitat occurs within transmission line siting area (WDFW 2022a).	Potential to occur due to presence of suitable habitat
Bull trout (*Salvelinus confluentus*)	SC, FT, PHS	Habitat includes the bottom of deep pools in cold rivers and large tributary streams, often with temperatures below 59°F. Requires stable stream channels, clean spawning and rearing gravel, complex and diverse cover, and unblocked migratory corridors.	PHS mapped occurrences in the Columbia River, approximately 1 mile north of the transmission line siting area (WDFW 2022a).	Does not occur in siting area due to lack of large tributary streams.
Columbia clubtail (*Gomphus lynnae*)	SC	Uses slow-moving, open sandy to muddy, rivers located within sagebrush-riparian woodland.	PHS mapped occurrence approximately 1.8 miles north of the siting area (WDFW 2022a).	Unlikely to occur due to lack of suitable habitat.

Species	Status or Protection	Habitat Use	Nearest Documented Occurrence	Determination of Potential to Occur in Siting Area
Monarch butterfly (*Danaus plexippus)*	FC	Requires secure patches of milkweed for breeding, roosting sites, and migration corridors. In Washington, milkweeds and monarchs occur in weedy fields and sparsely vegetated habitats, typically near wetlands or riparian areas.	Known to occur in the general region/county.	Potential to occur due to presence of suitable habitat
Umtanum desert buckwheat (*Eriogonum codium*)	FT	Restricted to a narrow string of exposed basalt bluffs just south of the Columbia River in Benton County.	Species current range intersects northernmost extent of transmission line siting area (USFWS 2022).	Potential to occur along transmission line route due to presence of suitable habitat

Sources: WDFW (2022a), USFWS IPaC data (USFWS 2022a), WDFW coordination meeting (Appendix A), and incidental observations of species during site surveys

Note: SC=State Candidate; SE=State Endangered; ST=State Threatened; PHS=Priority Habitats and Species; BGEPA=Bald and Golden Eagle Protection Act; FT=Federally Threatened; FC=Federal Candidate; FE=Federally Endangered

*Townsend's ground squirrel is a sensitive species and PHS location data cannot be released at a finer scale than a 9-mile radius.

3.2.1 Protocol-Level Burrowing Animal Surveys

During protocol level surveys for burrowing animals, three locations with potentially active Townsend's ground squirrel burrows ranging from approximately 2 to 3 inches in diameter were detected in the survey area (Figure 6 and photographs in Appendix B). The first, located on the top of a grassland hill, had approximately 25 burrows, some with cobwebs and some that looked more freshly excavated, including one burrow with scat. The second had a similar grassland setting with four burrows. The third was located on the edge of shrubsteppe and had four burrows, one of which had freshly excavated dirt. No ground squirrels or other burrowing animals were seen or heard during the surveys. Many other mounds and old burrows of different sizes were seen during the survey, though all had signs of being inactive such as vegetation growing from the hole and cobwebs obscuring the path. None of the potentially active burrows exhibited characteristics or signs of use by other species such as burrowing owls (e.g., 4–6 inches in diameter or lined with livestock manure, feathers, grass, or other materials).

Incidental observations of other wildlife species were limited to coyote (*Canis latrans*) and vole (*Microtus* spp.). Two coyotes were seen on multiple days of survey, and coyote dens were observed toward the southwestern portion of the study area. Incidental observations of raptors and non-raptor avian species are provided in Sections 3.2.2 and 3.2.3, respectively.

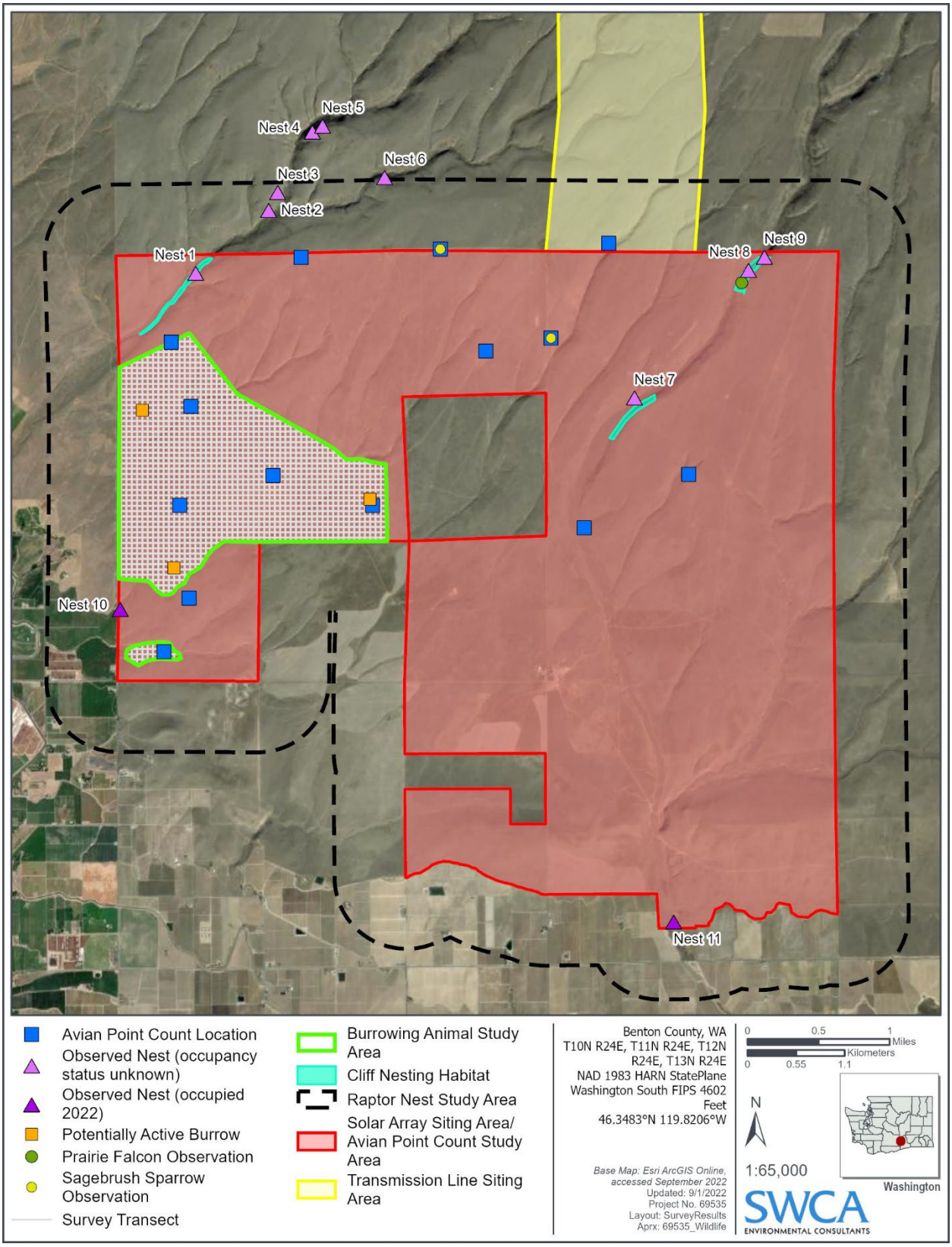

Figure 6. Special status species field survey results.

3.2.2 Ground-Based Raptor Nest Surveys

A total of 11 raptor nests were observed within the study area (Table 4; see Figure 6), consisting of two occupied nests and nine presumed unoccupied nests. Occupied nest observations included one red-tailed hawk (*Buteo jamaicensis*) nest located near the southwestern edge of the study area, and one barn owl (*Tyto alba*) nest located near the southern edge of the study area (see Figure 6). No other occupied raptor nests were observed within the study area; however, nine unoccupied nests were observed that showed varying degrees of weathering, age, and potential recent use. Due to a lack of species detections, the occupancy status or species associations for these nine nests cannot be confirmed. Nest photographs are included in Appendix B[1].

In addition, one prairie falcon (*Falco mexicanus*) was incidentally observed exhibiting nesting behavior (i.e., aggressive and distressed) during surveys in the cliff nesting habitat near the northeastern portion of study area; however, a second bird was not observed, nor was a nest.

Other raptor species that were incidentally observed flying over the study area, but were not exhibiting nesting behaviors were: night hawk (*Chordeiles minor*), Swainson's hawk (*Buteo swainsoni*), and American kestrel (*Falco sparverius*). Of all the raptor species observed, prairie falcon is the only WDFW-designated priority species.

Table 4. Raptor Nest Observations

Point ID	Date of Observation	Latitude	Longitude	Species	Description	Occupancy status
1	6/28/2022	46.373087	-119.861533	Unknown	Large, well-lined nest. Lots of fecal matter in nest, messy. Pile of partially grown raven feathers at base of cliff, possibly where a nestling was eaten. Potentially used by raptors or corvids.	Unknown
2	6/28/2022	46.379422	-119.850726	Unknown	Use this year unclear, appears old, lined with sagebrush bark. Potentially used by raptors or corvids.	Unknown
3	6/28/2022	46.381242	-119.849369	Unknown	Old, no lining, no whitewash. Potentially used by raptors or corvids in the past.	Unknown
4	6/28/2022	46.387364	-119.844186	Unknown	Lots of whitewash, no evidence of recent use. Potentially used by raptors or corvids in the past.	Unknown
5	6/28/2022	46.387965	-119.842681	Unknown	Small nest cup, lots of whitewash, appears recently used. Not big enough for a large raptor, but potentially used by small raptors or corvids in the past.	Unknown
6	6/28/2022	46.382676	-119.833614	Unknown	Old, decomposed nest. Potentially used by raptors or corvids in the past.	Unknown
7	6/29/2022	46.360024	-119.797103	Unknown	Nest located on well platform, unable to see into nest. A raven family was observed in area.	Unknown
8	6/29/2022	46.372899	-119.780156	Unknown	Unable to see into nest. Potentially used by raptors or corvids.	Unknown
9	6/29/2022	46.374224	-119.777792	Unknown	Nest in good shape, presence of grass in nest. Potentially used by raptors or corvids.	Unknown

[1] Appendix B includes photographs for all nests except nest 10 which did not get photographed.

Point ID	Date of Observation	Latitude	Longitude	Species	Description	Occupancy status
10	5/12/2022	46.338924	-119.873042	Red tailed hawk	Red-tailed hawk nest within solar arrays siting area, female flushed from nest, male perched on power line nearby.	Occupied
11	6/29/2022	46.306636	-119.79203	Barn owl	Occupied barn owl nest with fledglings, 2 adults and 2 young	Occupied

3.2.3 Avian Point Counts

A total of 14 avian point counts were conducted throughout the study area (see Figure 6). Table 5 lists avian species detected during point counts either audially or visually and the number of times each species was detected. Of the species detected, only one species (sagebrush sparrow) is a special status species (WDFW-designated priority species and a state candidate for listing in Washington). Three sagebrush sparrows were seen at two avian point count locations in the north-central portion of the study area (see Figure 6).

Table 5. Avian Species Detected in Point Counts

Species	Number of Detections
Long-billed curlew (*Numenius americanus*)	3
Western meadowlark (*Sturnella neglecta*)	16
Common raven (*Corvus corax*)	24
Horned lark (*Eremophila alpestris*)	34
Western kingbird (*Tyrannus verticalis*)	1
Cliff swallow (*Petrochelidon pyrrhonota*)	3
Brewers sparrow (*Spizella breweri*)	5
Vesper sparrow (*Pooecetes gramineus*)	4
Lark sparrow (*Chondestes grammacus*)	2
Sagebrush sparrow* (*Artemisiospiza nevadensis*)	3
White-crowned sparrow (*Zonotrichia leucophrys*)	2

*Special status species; WDFW-designated PHS species and state candidate for listing in Washington

Outside the point counts, incidental observations of non-raptor avian species included long-billed curlew and cliff swallow. Both of these species are already captured in the avian point count species list (see Table 5), and neither is a federal or state special status species.

3.3 Critical Areas Relevant to Wildlife

Benton County's CAO (BCC 15) covers five categories of critical areas: Wetlands, Critical Aquifer Recharge Areas, Frequently Flooded Areas, Geologically Hazardous Areas, and Fish and Wildlife Conservation Areas. Of these five categories, Fish and Wildlife Conservation Areas are relevant to the wildlife species and habitats addressed in this report.

Fish and Wildlife Habitat Conservation Areas are defined under BCC 15.14.010a:

1. Areas where federal or state designated endangered, threatened, and sensitive species have a primary association.

2. State priority habitats and areas associated with state priority species.

3. Habitats and species of local importance. Benton County designates the following as a habitat and species of local importance:

    a. Shrubsteppe habitat. Critical to supporting priority species in Benton County, shrubsteppe habitat as identified by the Washington State Department of Fish and Wildlife and included in the State Priority Habitats and Species List.

4. Waters of the state, as defined in RCW 90.48.020, as it now exists or may be hereinafter amended, and include lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and water courses in Washington State.

5. Naturally occurring ponds under twenty acres and their submerged aquatic beds that provide fish or wildlife habitat. These do not include ponds deliberately designed and created from dry sites such as canals, detention facilities, wastewater treatment facilities, farm ponds, temporary construction ponds (of less than three years duration) and landscape amenities. However, naturally occurring ponds may include those artificial ponds intentionally created from dry areas in order to mitigate conversion of ponds, if permitted by a regulatory authority;

6. Lakes, ponds, streams and rivers planted with native fish populations, including fish planted under the auspices of federal, state, local or tribal programs or which supports priority fish species as identified by the Washington State Department of Fish and Wildlife;

7. Washington State Wildlife Areas are defined, established, and managed by the Washington State Department of Fish and Wildlife;

8. Washington State Natural Area Preserves and Natural Resource Conservation Areas are defined, established, and managed by the DNR.

Based on the analysis of habitat and special status species presented in Sections 3.1 and 3.2, Fish and Wildlife Conservation Areas that are confirmed to be present in the siting area include priority shrubsteppe habitat which is used by, and associated with, several priority or state-listed species with known or potential occurrence in the siting area, suitable habitat for a federally threatened species (Umtanum desert buckwheat [*Erigonum codium*]), and potential waters of the state (i.e., wetlands and waters) (Figure 7).

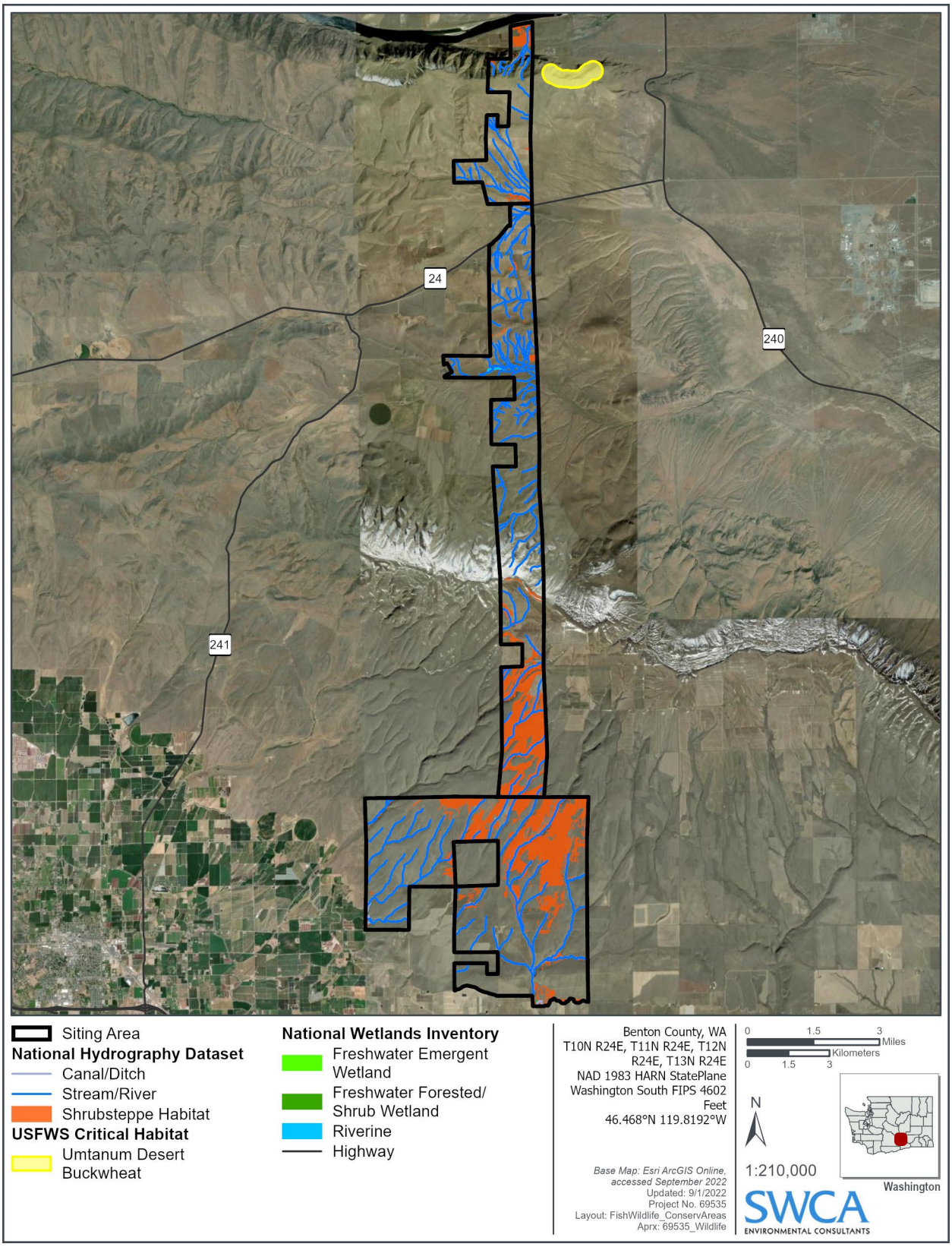

Figure 7. Fish and Wildlife Conservation Areas.

The project should be designed to incorporate WDFW-recommended surveys, avoidance measures, and design features, which are intended to avoid and minimize potential project impacts to priority species and habitats, including shrubsteppe habitat, and priority species associated with shrubsteppe habitat. If there are unavoidable impacts to priority habitats and species, compensatory mitigation may be required. Mitigation options and ratios would need to be determined through coordination with WDFW and the lead permitting agency.

Coordination with WDFW was initiated for the project in December 2021 and should be maintained throughout the permitting phase for the project. Survey results should be shared with WDFW for input and feedback. As project design progresses or changes, WDFW should be kept aware of those changes and given opportunities to provide input and feedback regarding how those changes might affect sensitive species and habitats.

The transmission line siting area contains suitable habitat for Umtanum desert buckwheat. Development activities should strive to avoid impacting this species if it is found to occur within the siting area by incorporating the results of site evaluations into the final design. Presence/absence surveys for Umtanum desert buckwheat is recommended if any ground disturbance is proposed within the species' range.

Fencing should be kept to a minimum and installed around each of the solar arrays, rather than around the entire project boundary, to allow for maximum landscape connectivity, particularly along drainages. Alternatives to chain-link fencing (e.g., permeable and semi-permeable fencing) should be considered and barbed-wire-topped chain-link fencing should be minimized to the extent possible. All these measures would further reduce the project's impacts on upland wildlife habitats and associated species.

Since wetland and water habitats have not been formally delineated within the siting area, NHD- and NWI-mapped water features were shown on Figure 7 to show the potential extent of waters of the state within the siting area. Formal wetland and water delineations are needed to confirm the boundaries of wetlands and streams within the siting area and inform the project's final layout. If confirmed, wetlands, streams, and their regulated buffers should be avoided to the maximum extent possible through micrositing of project facilities. If impacts are unavoidable, mitigation requirements under BCC 15.14.040 would apply, which require mitigation to achieve equivalent or greater biologic and hydrologic functioning for habitats that are altered. Additional mitigation requirements under BCC 15.04.050 would apply for wetlands, in particular, which require mitigation of lost wetland habitat function and values. Mitigation ratios under BCC 15.04.050 vary from 3:1 to 8:1 depending on the category of wetlands impacted.

4 CONCLUSIONS AND RECOMMENDATIONS

Based on the desktop analysis and field surveys, the major species, habitats, or other critical areas that are present within the siting area and could constrain development or require additional approvals are priority shrubsteppe habitat, suitable habitat for several priority and state-listed species, suitable habitat for a federally threatened species (Umtanum desert buckwheat), nesting raptors, wetlands and waters, and geologically hazardous areas. Recommendations for each of these resources are provided in Table 6.

Table 6. Resource Constraints and Recommendations

Resource Constraint	Additional Approvals or Permits Potentially Required	Recommendations
Priority shrubsteppe habitat	WDFW coordination / Benton County Critical Areas review	The project should be designed to avoid development within shrubsteppe habitat and to minimize potential impacts to shrubsteppe-associated species to the maximum extent possible since unavoidable impacts would require compensatory mitigation. Avoidance, minimization, and compensatory mitigation options should be determined through coordination with WDFW. Coordination with WDFW should be maintained throughout the permitting phase for the project. Survey results should be shared with WDFW for input and feedback. As project design progresses or changes, WDFW should be kept aware of those changes and given opportunities to provide input and feedback regarding how those changes might affect sensitive species and habitats. Fencing should be kept to a minimum and installed around each of the solar arrays, rather than around the entire project boundary, to allow for maximum landscape connectivity, particularly along drainages. Alternatives to chain-link fencing (e.g., permeable and semi-permeable fencing) should be considered and barbed-wire-topped chain-link fencing should be minimized to the extent possible. All these measures would further reduce the project's impacts on upland wildlife habitats and associated species.
Priority species and state-listed species	WDFW coordination / Benton County Critical Areas review	Species-specific survey needs and methods for the transmission line siting area should be determined through coordination with WDFW. Coordination with WDFW should be maintained throughout the permitting phase for the project. Survey results should be shared with WDFW for input and feedback. As project design progresses or changes, WDFW should be kept aware of those changes and given opportunities to provide input and feedback regarding how those changes might affect sensitive species.
Umtanum desert buckwheat	Benton County Critical Area review / ESA Section 7 consultation (assuming project has a federal nexus)	The transmission line siting area contains suitable habitat for Umtanum desert buckwheat. The species' range within the siting area should be avoided from development to the extent possible. Presence/absence surveys for Umtanum desert buckwheat are recommended if any ground disturbance is proposed within the species range. Surveys should occur during the species' flowering period (May through September) (USFWS 2019).
Nesting raptors	WDFW coordination / Benton County Critical Areas review	Avoidance and minimization measures for identified raptor nests and nesting habitats should be determined through coordination with WDFW. Based on initial WDFW input, avoidance of a core nesting area for ferruginous hawk located northwest of the siting area and use of a 3.2-km buffer was recommended by WDFW to capture potential areas used by those raptors for foraging. Coordination with WDFW was initiated for the project in December 2021 and should be maintained throughout the permitting phase for the project. As project design progresses or changes, WDFW should be kept aware of those changes and be given opportunities to provide input and feedback regarding how those changes might affect raptor nesting areas. Given the existing use of siting area and surrounding vicinity by nesting raptors, preconstruction raptor nesting surveys are recommended to satisfy WDFW and Migratory Bird Treaty Act requirements.

Resource Constraint	Additional Approvals or Permits Potentially Required	Recommendations
Wetlands and waters	Benton County Critical Areas review / U.S. Army Corps of Engineers (USACE) and Washington State Department of Ecology (Ecology) removal-fill permits	Formal wetland and water delineations following USACE and Ecology methodologies should be completed to confirm the extent of all wetlands or streams potentially impacted by the project's final layout. If confirmed, wetlands streams, and their regulated buffers should be avoided to the maximum extent possible through micrositing of project facilities to avoid them. If impacts to wetlands and their regulated buffers are unavoidable, mitigation requirements under BCC 15.14.030 and 15.04.050 would apply, which require restoration of lost habitat function and values to an equivalent or greater level. Mitigation ratios (BCC 15.04.050) would vary from 3:1 to 8:1 depending on the category of wetlands impacted. If temporary or permanent impacts are unavoidable, coordination with the USACE and Washington State Department of Ecology to acquire permits and develop mitigation appropriate to offset impacts would be required.

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APPENDIX A

WDFW Meeting Notes

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Meeting Notes

Attendees: Chris Wissel-Tyson – BrightNight
Margaret Nolan – BrightNight
Sara Twitchell – SWCA
Amy Berg Pickett - Sunstone
Mike Ritter – WDFW
Jason Fidorra - WDFW

Date: February 17, 2022

Subject: Hop Hill Solar Energy Project – Coordination with WDFW on required surveys and potential effects on sensitive species and habitats.

INTRODUCTIONS

- Chris and Margaret are the BrightNight team working on developing the project and other projects in the Pacific Northwest.
- Sara is the SWCA consultant PM assisting with permitting and associated surveys.
- Amy is a development consultant assisting BrightNight.
- Mike is the WDFW's lead for renewable energy developments in Washington. Jason is the regional habitat biologist. All correspondence with WDFW should include both Mike and Jason.

OVERVIEW OF BRIGHTNIGHT AND HOP HILL

- Chris provided an overview of BrightNight
- Chris and Sara provided an overview of the project and current status.
    - Up to 500 Megawatts (MW) of solar power interconnected to the Bonneville Power Administration (BPA) system at the Midway Substation with an alternative potential interconnect at the BPA Wautoma Substation.
    - Conditional Use Permit application was submitted to Benton County in December 2021, ahead of the county passing zoning ordinance removing solar energy as a conditional use on Agriculturally-zoned land. BrightNight is currently responding to a request for additional information.
    - This project will likely be required to go through the EFSEC ASC process.
    - BrightNight currently has control of approximately 12,000 acres, but the project will only require up to 3,500 acres. This give flexibility to site around sensitive resources, as needed.
    - Habitat surveys were completed by ERM in 2021

SUMMARY OF RELEVANT SURVEYS AND STUDIES

- Surveys will generally follow WDFW's protocol survey guidance.

- WDFW anticipates that the following species-specific surveys will be required:
    - Townsend's ground squirrel
        - Timing for this survey should generally occur on the earlier end of state guidance.
    - Burrowing owl
    - Nesting raptor surveys
        - Aerial surveys may be required for areas with canyons and to cover the required buffer area (likely 2 miles to assess impacts to foraging habitat).
- Additionally, habitat surveys will be required
    - Need to delineate shrub-steppe habitat.
        - Complete a list of avian species using the habitat to assess overall functionality.
        - Avian species list may best be completed by strategically places point counts completed during ground squirrel surveys.

ADDITIONAL WDFW RECOMMENDATIONS

- There is a Ferruginous hawk core nesting area near the northwest corner of the project. WDFW recommends a 3.2 km buffer from the center of the nesting area. This may require modifying the current panel layout.

- Fencing is a concern for all solar and electrical generating facilities. WDFW recommends looking into alternatives to standard chain link fencing and fencing each array individually to allow habitat connectivity. Barbed wire along the tops of chain-link fences should be avoided. Standard cattle fencing that may use barbed wire instead of chain link fencing would be preferable, if possible in some areas.

ACTION ITEMS

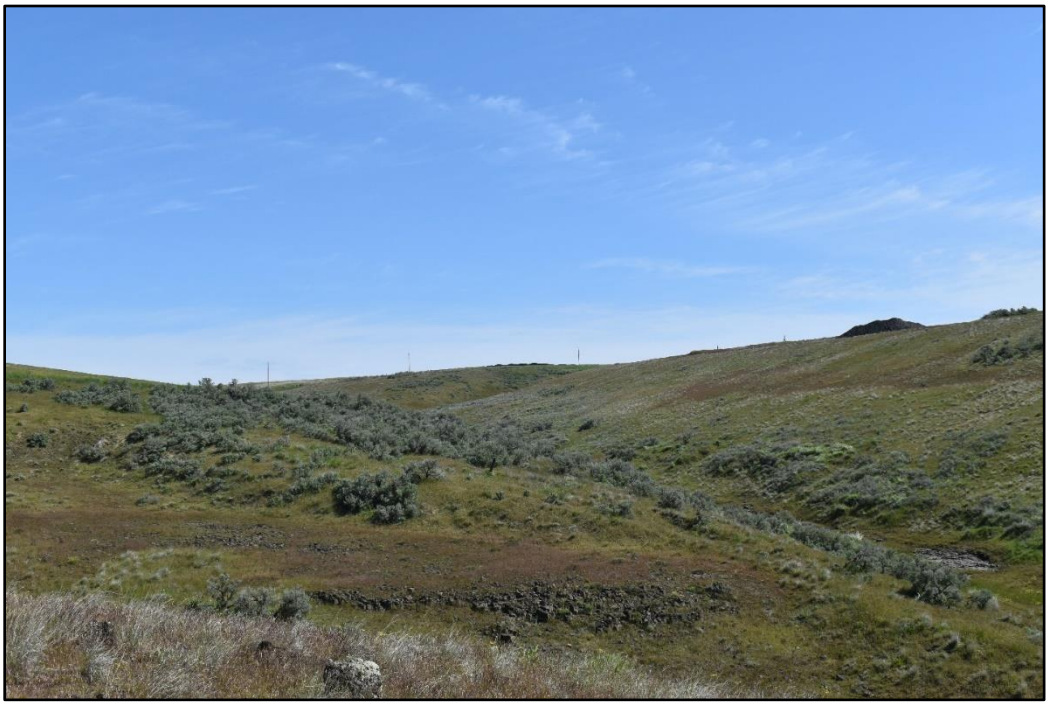
- WDFW to send shrub-steppe mitigation ratios

- BrightNight will continue to coordinate with WDFW on updated project layout.

APPENDIX B

Photo Log

Photograph 1. Representative shrubsteppe habitat in the southwest corner of the solar array siting area.



Photograph 2. Representative overview of shrubsteppe and grassland habitat, intermixed. Photograph taken in transmission line siting area during visual field surveys, June 2022.

Photograph 3. Representative overview of shrubsteppe habitat in northeastern portion of solar array siting area, June 2022.

Photograph 4. Representative grassland habitat within the solar array siting area.

Photograph 5. Possibly active burrow.

Photograph 6. Burrow with scat, notebook with scale.

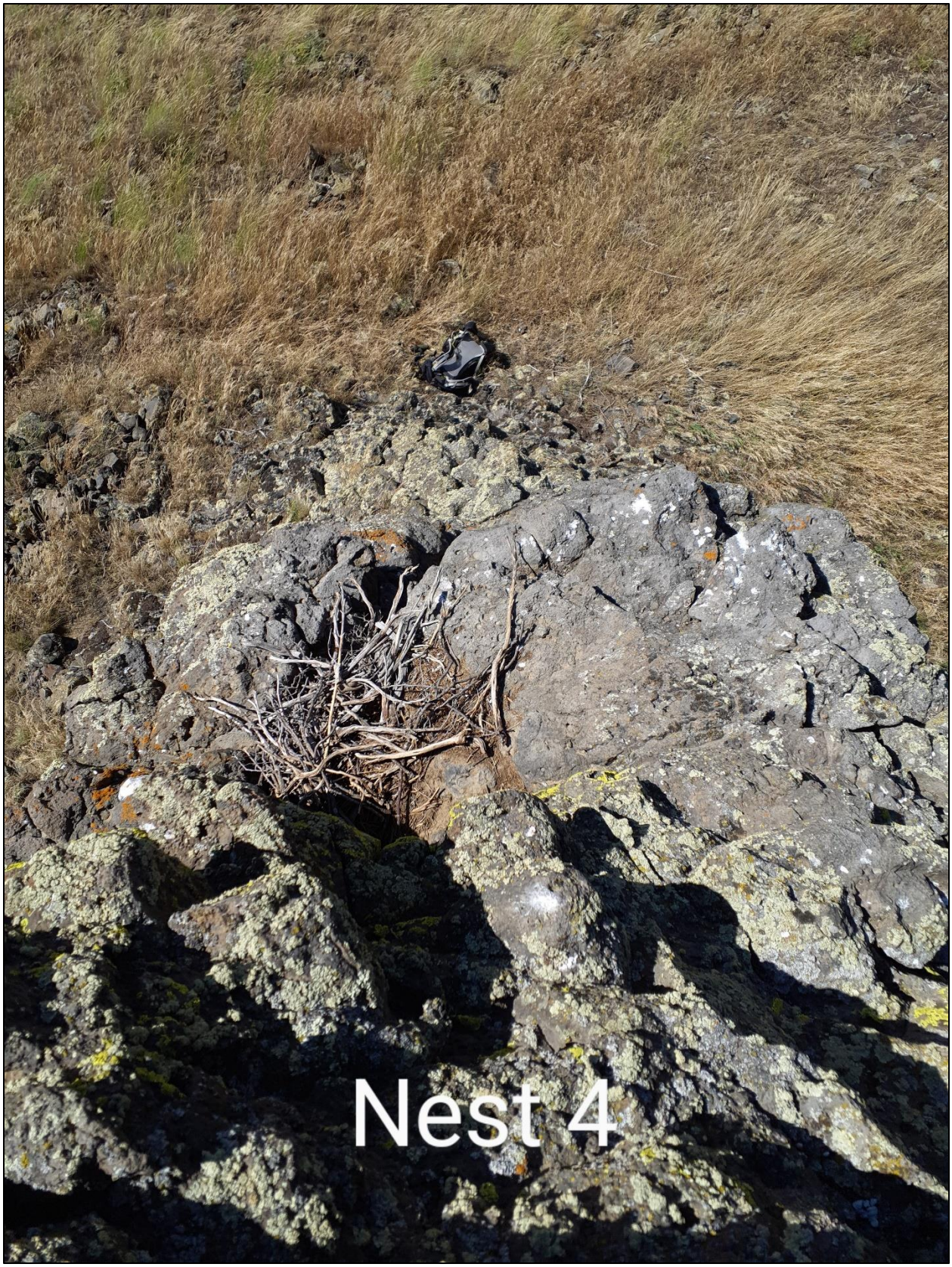
Photograph 7. Possibly active burrow.

Photograph 8. Burrow with signs of recent excavation, second burrow at upper left.

Photograph 9. Nest 1.

Photograph 10. Nest 2.

Photograph 11. Nest 3.

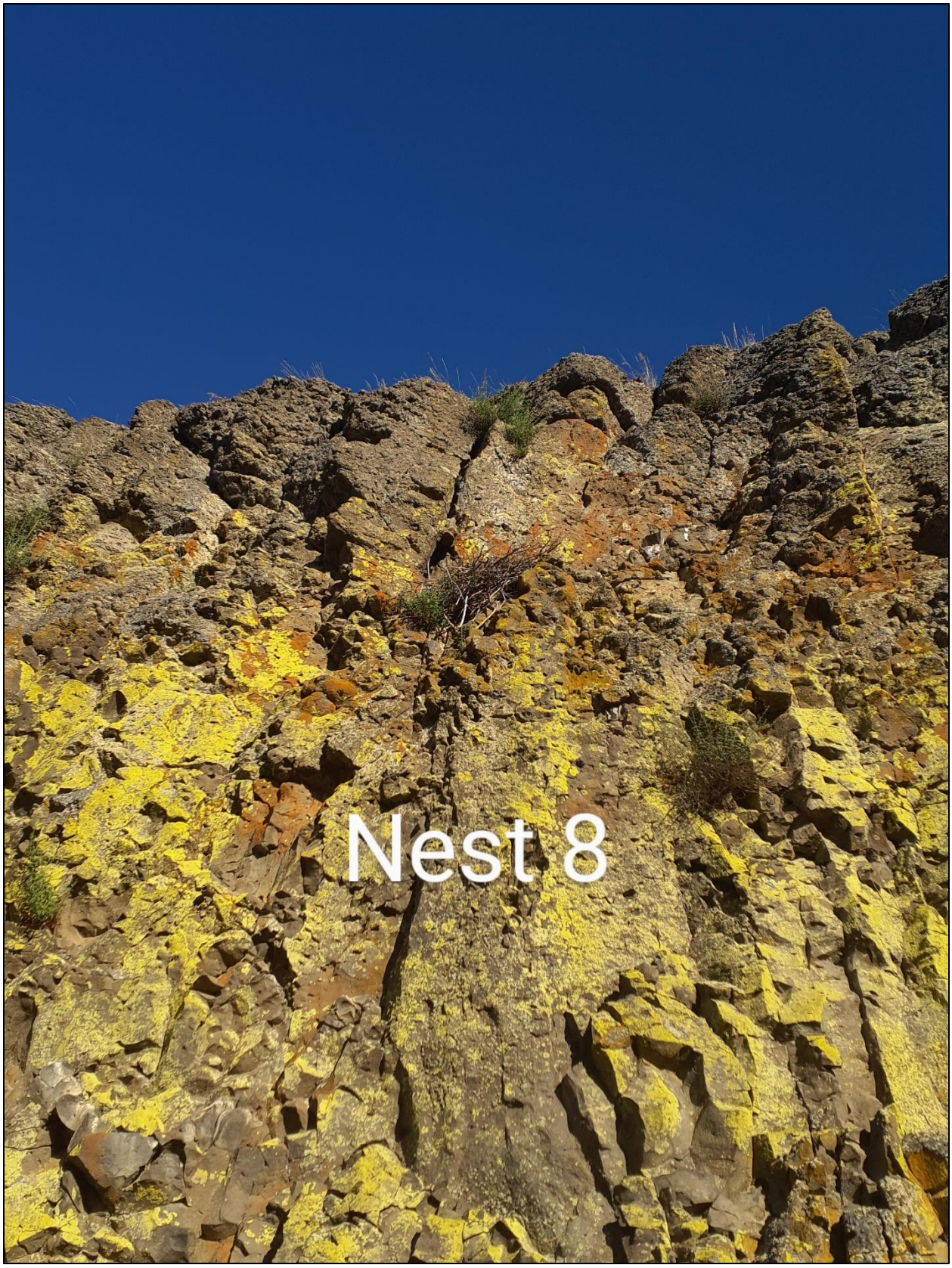


Photograph 12. Nest 4.

Photograph 13. Nest 5.

Photograph 14. Nest 6.

Photograph 11. Nest 7.



Photograph 12. Nest 8.

Photograph 17. Nest 9.

Photograph 18. Nest 11.