# **APPENDIX E**

Biological Resources: Humboldt Wind Energy Project Eagle and Raptor Aerial Nest Survey Report, Humboldt County, California, Spring 2018



Humboldt Wind Energy Project

Eagle and Raptor Aerial Nest Survey Report

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## Acronyms and Abbreviations

CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
DOI	U.S. Department of the Interior
Ft	foot/feet
gen-tie	generation transmission line
HRC	Humboldt Redwood Company
МВТА	Migratory Bird Treaty Act
Mi	mile
USFWS	U.S. Fish and Wildlife Service

### Note:

Often, agency suggestions and guidelines are provided in US units of measure (e.g., acres [ac] feet [ft], or miles [mi]), and in other instances, agency guidance is provided in metric (aka SI, or System International) units (e.g., meters [m] or kilometers [km]). To convert an otherwise readily recognized agency standard (e.g., 10 mi or 1 km) to the other system may result in confusion. Accordingly, we provide measures in either system, using the original agency suggestion unchanged, and provide conversion to the other standard only when it makes sense to do so.

## **Executive Summary**

Humboldt Wind, LLC plans to permit, build, and operate a wind energy project in Humboldt County, California. As one part of the studies to support review of the project pursuant to state and federal regulations, Stantec Consulting Services Inc. conducted aerial surveys for nesting bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). We established a 10-mile survey radius around all planned wind turbines and some additional areas, such that the survey area enclosed the generation transmission route and point of interconnection. We conducted two rounds of aerial surveys during the 2018 nesting season: March 27, 28, and 29, and May 1, 2, and 3. Three biologists (excluding the pilot) experienced in raptor nesting biology and conducting aerial surveys for nesting raptors conducted the surveys from a Bell L-4 "Long Ranger" helicopter. We detected no bald eagle nests or golden eagle nests within the 10-mile survey area, although both species of eagles were observed, as were other raptors (e.g., red-tailed hawks [*Buteo jamaicensis*] and ospreys [*Pandion haliaetus*]) and their active nests. These survey results will serve as a basis for understanding possible project-related impacts, and may be used to support other permitting considerations, possibly including take permitting pursuant to the Bald and Golden Eagle Protection Act.

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## **1.0 INTRODUCTION**

Humboldt Wind, LLC (Humboldt Wind) is planning to construct and operate the Humboldt Wind Energy Project (project) in south-central Humboldt County, California (Figure 1). The proposed project consists of up to 60 wind turbines and associated facilities including meteorological towers, electrical collection system, access roads, construction staging areas, a substation, an operations and maintenance facility, up to a 25-mile (mi) generation transmission line (gen-tie) and its point of interconnection at the existing Pacific Gas & Electric Bridgeville Substation. The project would have a nameplate generating capacity of up to 155 megawatts. Proposed turbine locations are situated on two ridgelines, Bear River Ridge and Monument Ridge, 4.7 mi south and southwest of Scotia, in Humboldt County, California (Figure 1).

The project area encompasses areas of potential activity and includes a 1,000-foot-(ft-) wide corridor centered on proposed turbine locations; a 200-ft-wide corridor centered on project roads, the electrical collection line, and the gentie; and a 500-ft-wide buffer around proposed staging and temporary impact areas and project substations, encompassing 2,241 acres (Figure 2). The project area is divided into the following segments for description purposes:

- Bear River Ridge
- Western Monument Ridge
- Eastern Monument Ridge
- Monument Ridge Highway 101
- Highway 101 Shively Ridge
- Shively Ridge
- Bridgeville

Stantec Consulting Services Inc. (Stantec) prepared a Draft Biological Resources Work Plan (Draft Work Plan) detailing biological resource surveys designed to support project planning (Stantec 2018). In March and May 2018, eagle and raptor aerial nest surveys were completed. This Eagle and Raptor Aerial Nesting Survey Report summarizes the methods and results of 2018 aerial nest surveys.

## 2.0 PROJECT AREA

Per the USFWS *Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Energy* (USFWS 2013), a 10-mi (16-kilometer) radius was established around the turbine locations as of the date of the Draft Work Plan (survey area). The survey area encompasses approximately 405,313 acres centered on Monument and Shively Ridges, located immediately south-southwesterly and east, respectively, of Scotia, Humboldt County, California. The survey area generally extends from the Pacific Ocean coastline south of the Eel River estuary and north of Petrolia, extending eastward to Bridgeville and further east (Figure 3). The overall topography is steep, with moderate slopes on ridgelines and gently sloped to generally flat topography on floodplain and other bottomland areas. Elevations range from sea level to 3,500 ft.

# 3.0 HABITATS

Habitats in the survey area are dominated by coniferous forests, coastal prairies, woodlands, and riparian, agricultural, and other habitats dominated by urban, suburban, and rural development. Aquatic habitats also occur, including riverine and emergent wetlands and estuarine areas.

The coniferous habitats are dominated by coastal redwood (*Sequoia sempervirens*) and Douglas-fir (*Pseudotsuga menziesii*) forests. Most forest habitat consists of managed private timberlands characterized by early to mid-seral forests, with occasional late-seral and old growth stands. Most old growth forests regionally now occur only in the California State Parks.

Coastal prairies occur throughout the survey area along ridgetops, as inclusions on slopes within forest habitats, or as extensive open ridges. These habitats are dominated by dense perennial and annual grasses and forbs. Extensive coastal prairies occur as a complex mosaic with conifer forest and woodland habitats in the northeastern and western portions of the survey area, often with forests and woodlands confined to the lower reaches of the ridgelines and northerly slopes, and prairies occurring on the ridgelines and southerly exposures.

Woodland habitats occur scattered throughout the survey area and are characterized by deciduous and evergreen species including Oregon white oak (*Quercus garryana*), tanoak (*Notholithocarpus densiflorus*), and canyon live oak (*Quercus chrysolepis*). Oregon white oak stands are the dominant woodland habitat in the eastern portion of the survey area where they occur interspersed among coastal prairie and coniferous forest habitats. Tanoak and canyon live oak woodlands occur scattered throughout the survey area as small- to moderate-sized hardwood stands associated with the conifer forest habitats. Other woodland habitats include extensive red alder (*Alnus rubra*) stands commonly found on many lower slopes and bottomlands occurring in the western portion of the survey area.

Riparian habitats occur along most riverine features and adjacent floodplains and bottomlands or estuarine areas. These habitats range from narrow bands of riparian vegetation to extensive patches dominated by red alder, black cottonwood (*Populus trichocarpa*), and willow (*Salix* spp.).

Agricultural habitats occur primarily along the floodplains and bottomlands associated with the larger riverine habitats found in the survey area including the Van Duzen, Eel, Bear, and Mattole rivers. These habitats include irrigated and non-irrigated pastures and various row and field crops. Livestock grazing commonly occurs in the agricultural habitats.

Urban habitats include the cities of Ferndale, Fortuna, and Rio Dell; scattered small communities such as Bridgeville, Carlotta, Holmes, Redcrest, Scotia, and Weott; and numerous other rural residential developments. Anthropogenic structures occurring in the survey area include features associated with the urban habitats, such as houses and outbuildings, and associated road infrastructure. Other structures include a portion of the PG&E Bridgeville-Cottonwood 115 kV transmission line and numerous smaller transmission lines or wood pole distribution lines. Many of the transmission and distribution lines traverse wildland habitats and cross steep drainages or waterways within the survey area, including many crossings along the Eel and Van Duzen rivers.

The primary aquatic habitats include the riverine features occurring in the survey area and their tributaries. The dominant riverine features include the Van Duzen, Eel, Bear, and Mattole rivers. The estuarine areas include the Bear River estuary and bottomlands located south of the Eel River estuary. Other aquatic habitats include scattered

ponds and emergent wetlands associated with the agricultural habitats. These features primarily occur in the bottomland areas located near the lower Van Duzen and Eel rivers and the Ferndale Bottoms.

## 3.1 POTENTIAL BALD AND GOLDEN EAGLE PREY

Potential bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) prey occurs in the survey area in the aquatic and terrestrial habitats. The primary bald eagle prey species are in the aquatic habitats and include various fish and waterfowl occurring in the riverine habitats. Numerous native and introduced fish species occur in these habitats, including fall-run California Coast Chinook salmon (*Oncorhynchus tshawytscha*), Southern Oregon/Northern California Coho salmon (*O. kisutch*), winter-run and summer-run North California Coast steelhead (*O. mykiss*), resident rainbow trout (*O. mykiss*), anadromous coastal cutthroat trout (*O. clarkii*), Pacific lamprey (*Entosphenus tridentatus*), Sacramento sucker (*Catostomus occidentalis*), and the non-native Sacramento pikeminnow (*Ptychocheilus grandis*).

Resident and migratory waterfowl occur in the larger riverine habitats and other wetland features scattered throughout low-lying areas within the survey area. Additionally, other potential avian prey species, such as gulls (e.g., *Larus* sp.) and occasional marine mammals occur in the lower reaches and estuarine areas of the Eel and Bear rivers.

California ground squirrels (*Otospermophilus beecheyi*) likely represent the primary golden eagle prey species in the upland habitats. Other potential prey in the upland habitats include black-tailed hare (*Lepus californicus*); young or carrion from feral pig (*Sus scrofa*); and carrion from Columbian black-tailed deer (*Odocoileus hemionus* subsp. *columbianus*), Roosevelt elk (*Cervus canadensis* subsp. *roosevelti*), and livestock.

# 4.0 CONSULTATION HISTORY

On Monday, January 8, 2018, the project team met at the California State Office of the USFWS to discuss studies related to bald and golden eagles. Attendees for USFWS were Heather Beeler, Eagle Permit Specialist; Thomas Leeman, Deputy Chief, Migratory Birds; and Tracy Borneman Migratory Bird Biologist. Attending for the Humboldt project team were Kevin Martin, Director of Environmental Permitting, and Stantec's Erec DeVost, project manager, and Dave Plumpton, wildlife biologist.

# 5.0 EAGLE INFORMATION

Bald and golden eagles are both known to occur in Humboldt County, including the survey area and vicinity. Bald eagles are considered a rare to uncommon resident and local breeder in the county, with increased numbers during winter (Harris 2005, Hunter et al. 2005). Golden eagles are also rare to uncommon residents and breeders (Harris 2005, Hunter et al. 2005) and best known from southern Humboldt County, including the survey area and vicinity (Hunter et al. 2005, McAllister and Fix 2008).

Bald eagle and golden eagle habitat occurs throughout the survey area. The coniferous forest, coastal prairie, woodland, riparian, agricultural, and aquatic habitats provide known or potential nesting, roosting, and foraging habitat for both species. Bald eagles likely use the riverine, riparian, and agricultural habitats for most foraging and roosting activities, while riparian and conifer forest habitats provide potential nesting habitat. Golden eagles likely use all habitats in the survey area for foraging, most likely focusing on the coastal prairie and nearby woodlands and forests. Historic nest locations (i.e., those known from previously recorded agency records or databases, or other public-domain data) were recorded in conifer forest stands in areas characterized by interspersed forest and prairie habitats.

## 5.1 BALD EAGLE

Two historic bald eagle nest sites occur in the survey area. The oldest was initially reported in 2010 when local observations suggested potential nesting near Rio Dell (HRC 2014). The nest site was confirmed during 2013 and located on the south side of the Eel River near the Belleview area north of Rio Dell, though the nest may have failed (HRC 2014). The most recent historic bald eagle nest site was discovered during 2014 along the Avenue of the Giants adjacent to the Eel River near the CAL FIRE High Rock Conservation Camp (HRC 2015). Nesting behavior was confirmed at this site in 2015, but nest success was undetermined at that time (HRC 2015). The nest was unoccupied during 2018; however, we observed adult bald eagles during the breeding season approximately 13 mi upstream of this location near Scotia. The continued late season observations suggest bald eagles are more common residents in the Eel River valley compared to the recent past when summer and fall observations were rare (HRC 2016).

### 5.2 GOLDEN EAGLE

The California Natural Diversity Data Base records were reviewed for nesting golden eagles within the survey area. Historic golden eagle nests have been documented in the 10-mi aerial eagle nest survey area. However, these records date from 1994, and the most recent documented nests were recorded in 2006. Of the 12 golden eagle nests for which data were available in the 10-mi survey area, 10 were in the southwestern portion of the survey area in the southwestern portion of the survey area in the Bear River and North Fork Mattole River watersheds, and date from 2003 to 2006. Two historic golden eagle nests were reported in the southeastern portion of the survey area in the Larabee Creek watershed, in 1994 and 2002. These sites were located during surveys and monitoring associated with timber harvest planning between 1994 and 2007 (CDFW 2018, McAllister and Fix 2008).

## 6.0 METHODS

The biological resource surveys include several avian studies designed to characterize species composition, abundance, and habitat use in the project area to provide Tier 3 pre-construction information, as outlined in the U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines (USFWS 2012) and CDFW Bald Eagle Breeding Survey Instructions (CDFW 2017), and to meet recommendations and guidance provided in the California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development (California Energy Commission and California Department of Fish and Game 2007), and the U.S. Fish and Wildlife Service (USFWS) Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy Guidance (USFWS 2013).

Stantec conducted the aerial nesting eagle survey during two separate survey rounds. Each survey round covered the entire survey area, and we separated the two survey rounds by at least 30 days. We conducted the surveys from a Bell Long Ranger L-4 helicopter, which provides stable vertical and slow speed maneuverability in steep, mountainous terrain and good visibility for all observers.

During the surveys, aerial routes were flown in potential bald and golden eagle habitat following the guidelines described by USFWS (2013), Jackman and Jenkins (2004), and Pagel et al. (2010). Each survey included three biologists with aerial nest survey experience, excluding the helicopter pilot. The surveys consisted of systematic passes over landscape features representing potential bald and golden eagle nesting, roosting, and foraging habitat such as ridgelines, canyons, river corridors, and forest edges to access potential nesting substrates (e.g., trees, cliffs, and other natural features and transmission line towers or other anthropogenic structures) and any historic nesting locations. We flew multiple flight paths over the same areas when necessary, such as steep canyons with dense vegetative cover, to provide multiple-elevation passes, and different light and viewing angles. We conducted the surveys during appropriate weather and related conditions including wind, light, and visibility. In the event unsuitable survey conditions occurred over a planned survey area (e.g., fog or low clouds over a ridge or canyon), we adjusted flight planning and focused the survey effort in areas with suitable conditions, to avoid having surveyor visibility compromised.

We made observations during the surveys with the unaided eye and using image-stabilizing binoculars. Distances from cliff faces or other rock outcrops occurring in the survey area ranged from approximately 30 to 650 ft depending on light, winds, and potential avian disturbance or safety considerations. Airspeeds during the surveys ranged between 15 to 35 knots for surveys, with occasional hovering, and 35 to 100 knots during cruising. Flight altitude above ground level ranged from 150 to 1,000 ft during surveys, with most surveys between 250 to 500 ft, and 300 to 1,000 ft during cruising.

We documented flight time, survey conditions and parameters, and all eagle observations on standard data sheets and maps. All eagle observations included species, behavior, general habitat, location, age (if possible), and nest reproductive status, as applicable. We recorded all eagle and other relevant survey observations and flight tracks with using tablet computers loaded with project maps using global positioning system and Avenza Maps<sup>®</sup> software. The helicopter's guidance system provided backup in the event of potential tablet computer or software failure, which did not occur. We uploaded and archived all data files daily following each survey and post-processed using ESRI<sup>®</sup> ArcGIS<sup>™</sup> software for analysis and presentation purposes.

# 7.0 RESULTS

## 7.1 SURVEY ROUND 1

We conducted the first survey round between March 27 and 29, 2018. The first round consisted of approximately 16.5 hours of survey time. Good survey conditions including clear weather, sufficient light, and good visibility occurred during the surveys.

We observed two bald eagles along the Eel River. We first observed one adult bald eagle on March 28, 2018, soaring over the Thompson Creek drainage at the southeastern portion of the survey area (Figure 4). We observed a second adult bald eagle on the same date roosting in a tree adjacent to the Eel River across the river (west) from Scotia.

Additionally, we located and surveyed the known bald eagle nest near the High Rock Conservation Camp on March 27 and 28, 2018, and determined the nest was unoccupied. After multiple passes among surveys, no bald eagle activity was observed in the area and we determined the nest structure was unused and in disrepair.

## 7.2 SURVEY ROUND 2

The second survey round occurred between May 1 and 3, 2018, and consisted of approximately 18.5 hours survey time. Good survey conditions including clear weather, good light, and sufficient visibility also occurred during these surveys.

We observed seven eagles: five bald eagles, one golden eagle, and one eagle species was recorded as unknown; our brief observation did not yield definitive plumage clues to resolve age and species with certainty. We observed bald eagles along the Van Duzen and Eel rivers and south of the Ferndale Bottoms. The Van Duzen River observation consisted of an adult on May 1, 2018, perched in a tree adjacent to the Van Duzen River near Swains Flat, downstream from Bridgeville. The Eel River observations included an adult on May 1, 2018 soaring and roosting along the river downstream of the South Fork Eel River confluence, near the High Rock Conservation Camp nest site; an adult observed on May 3, 2018, roosting in a tree near the same location as the March 28, 2018, bald eagle observation near Scotia; and an adult observed 3 mi upstream of Scotia flying along the river edge.

The golden eagle observation occurred on May 1, 2018, in the southern portion of the survey area and consisted of a subadult observed near the ridgeline separating the upper North Fork Mattole River and Bull Creek. We observed the unidentified eagle species in the same area at the same time as the golden eagle observation (Figure 4). The aerial survey routes from the first and second survey rounds are shown in Figure 5, respectively. A list of all avian species observed during the aerial surveys is included as Appendix A.

## 8.0 **DISCUSSION**

We observed 36 avian species during the aerial surveys, including 11 raptors (Appendix A). We also observed numerous active and inactive osprey (*Pandion haliaetus*) nests, an active red-tailed hawk (*Buteo jamaicensis*) nest, a suspected white-tailed kite (*Elanus leucurus*) nest, a suspected peregrine falcon (*Falco peregrinus*) eyrie, cliff nesting Canada geese (*Branta canadensis*), and numerous mid-size inactive stick nests. The range of avian species observed coupled with active and inactive stick nests of varying size detected suggest that the survey methods are appropriate and suitable to observe eagles or their nests if the opportunity presented.

Stantec found no active bald eagle or golden eagle nests in the survey area during the aerial surveys, including all the previously-documented (i.e., historic) sites. The most recently known bald eagle nest in the survey area, located near High Rock Conservation Camp, appeared inactive this year. However, we observed adult bald eagles during each survey round in the nest vicinity and further downstream along the Eel River. These observations and seasonal timing suggest at least one bald eagle pair occurs in the area and either has an alternative nest that we were unable

to locate during our surveys, attempted but did not successfully nest this season, or did not attempt nesting this season. It is not unusual for non-nesting eagles to forage in common areas, so an alternative explanation was that multiple eagles were foraging along the Eel River non-territorially.

The California Natural Diversity Data Base has records for nesting eagles in the survey area dating from 1994, and the most recent of which was 2006. We observed only one golden eagle observation and no nest sites or suspected nest sites.

We observed bald eagles more frequently than golden eagles, but chiefly along the Eel River, and secondarily along the Van Duzen River. The total number of bald eagle observations made among different survey days and survey rounds may have included the same eagles seen on different occasions. Accordingly, the locations shown (Figure 4) may not represent an estimate of the total number of eagles (it likely is an over-estimate), but the locations can serve as an indication of probable activity centers.

## 9.0 **REFERENCES**

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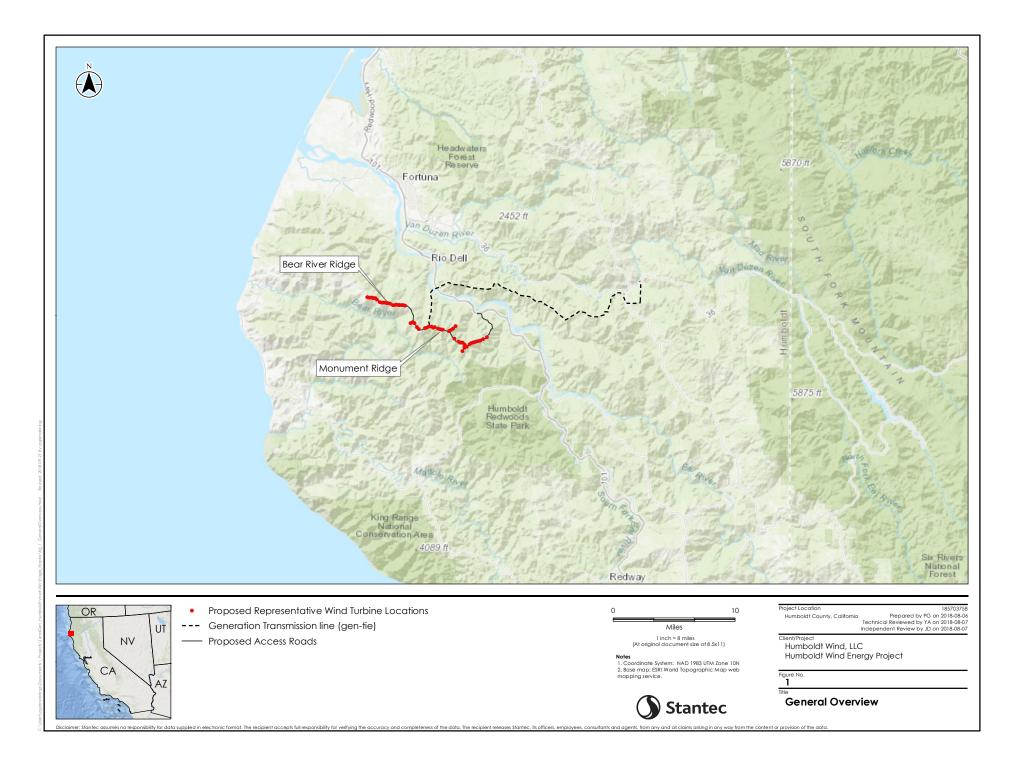
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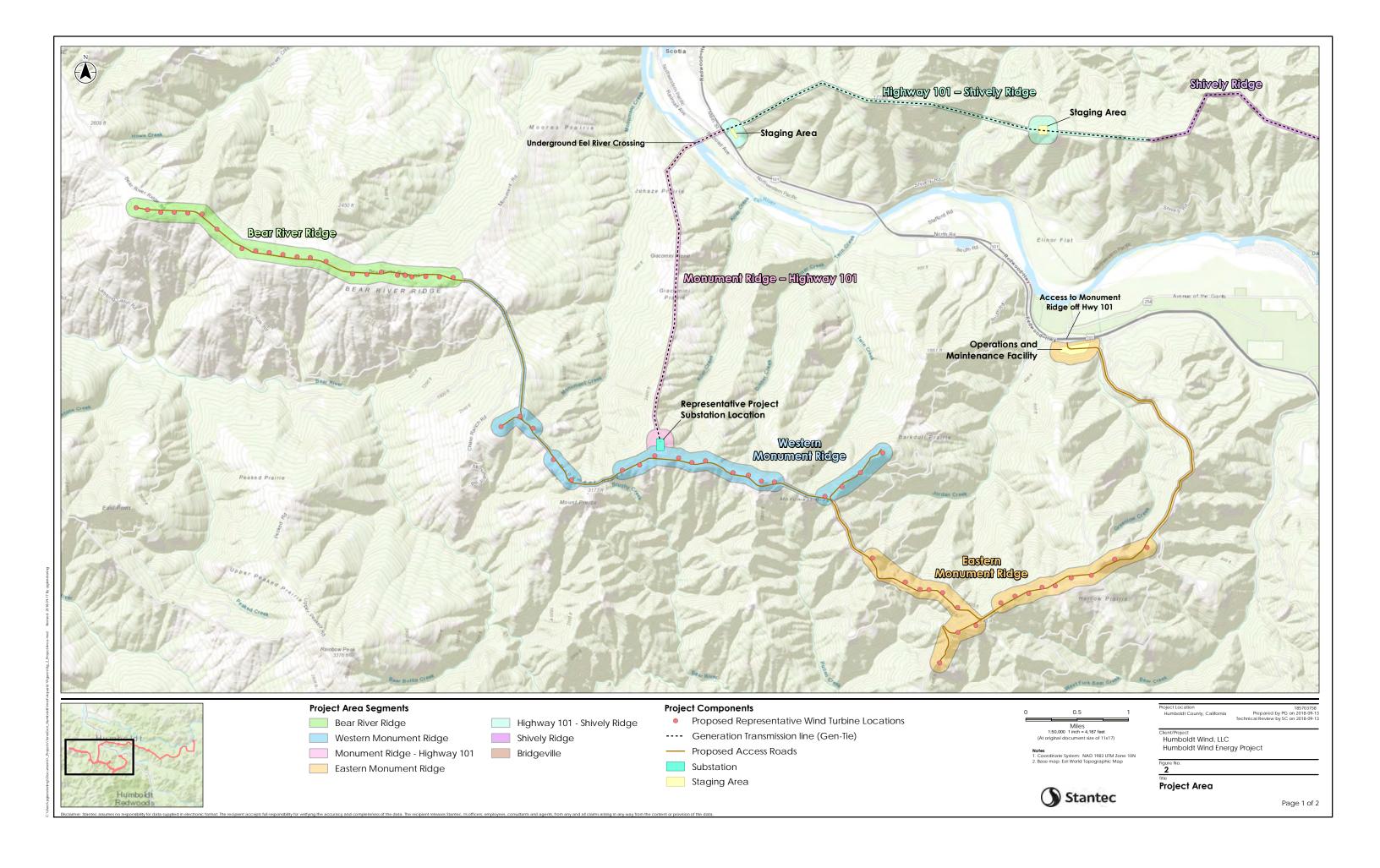
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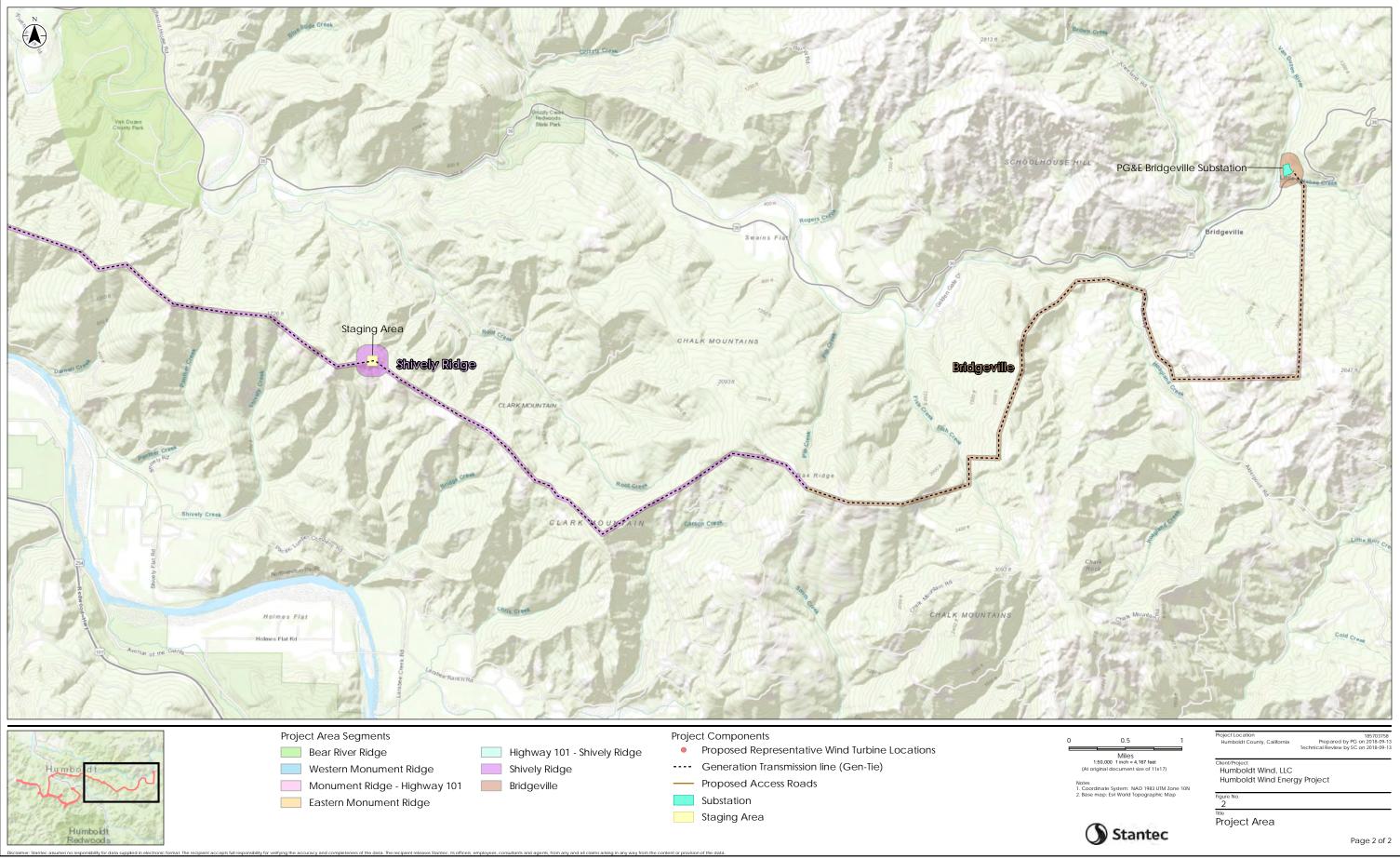
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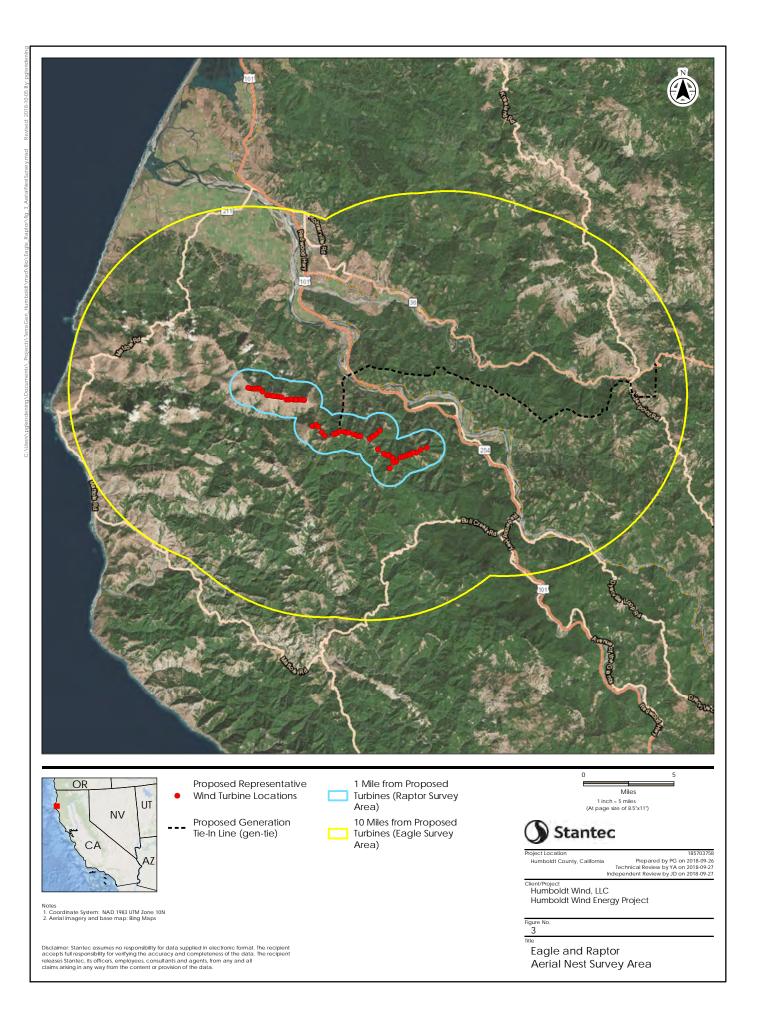
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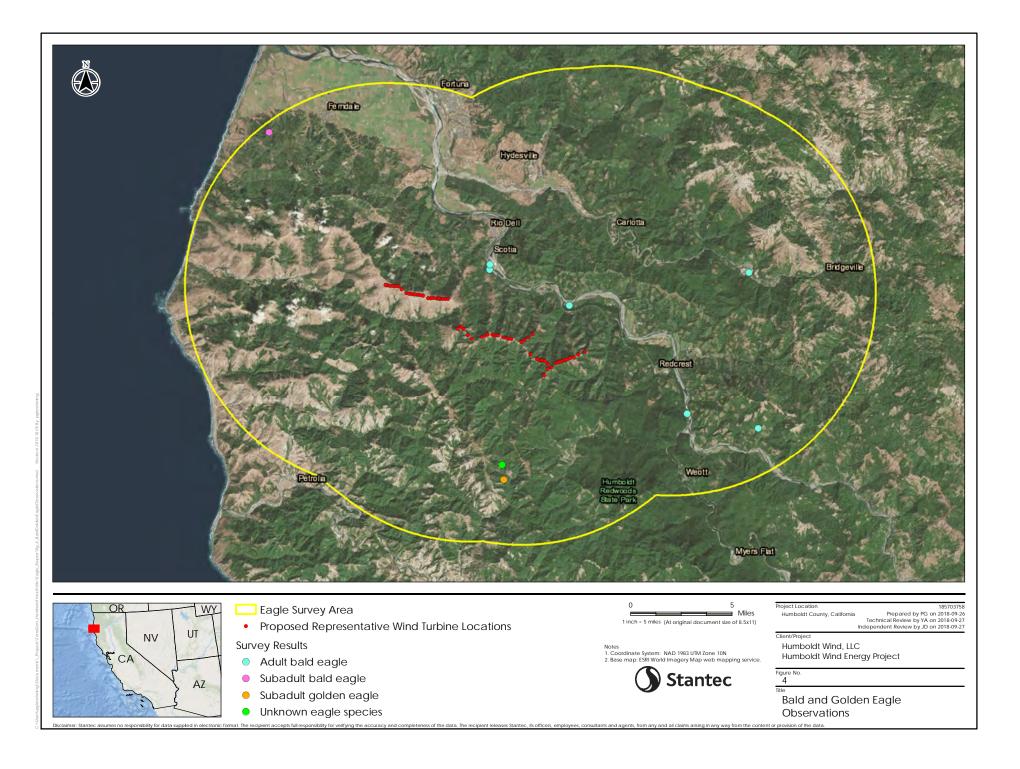
# FIGURES

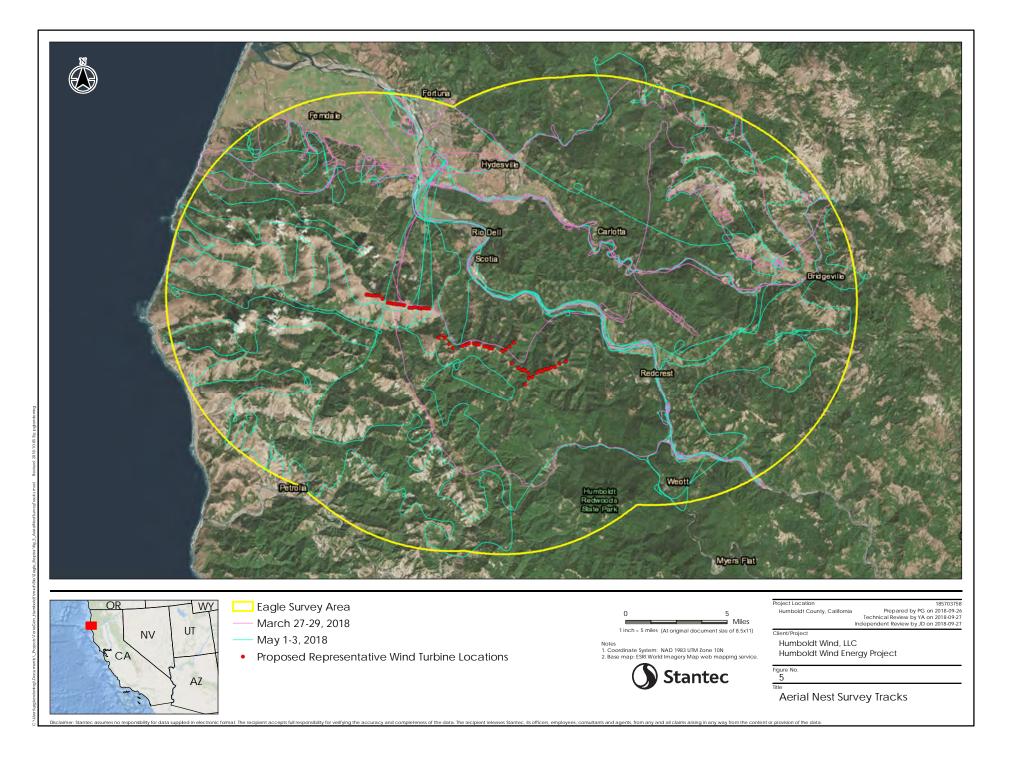












# **APPENDICES**

# Appendix A SPECIES OBSERVED

#### Table A-1. Species Observed

Common Name	Scientific Name
American crow	Corvus brachyrhynchos
American kestrel	Falco sparverius
American robin	Turdus migratorius
Bald eagle	Haliaeetus leucocephalus
Band-tailed pigeon	Patagioenas fasciata
Barn swallow	Hirundo rustica
Brewer's blackbird	Euphagus cyanocephalus
Canada goose	Branta canadensis
Common merganser	Mergus merganser
Common raven	Corvus corax
Cooper's hawk	Accipiter cooperii
Eurasian collared-dove	Stretopelia decaocto
European starling	Sturnus vulgaris
Glaucous-winged gull	Larus glaucescens
Golden eagle	Aquila chrysaetos
Great blue heron	Ardea Herodias
Great egret	Ardea alba
Greater white-fronted goose	Anser albifrons
Gull sp. (unidentified)	
Herring gull	Larus argentatus
Mallard	Anas platyrhynchos
Mourning dove	Zenaida macroura
Northern flicker	Colaptes auratus
Northern harrier	Circus cyaneus
Northern shoveler	Anas clypeata
Osprey	Pandion haliaetus
Peregrine falcon	Falco peregrinus
Red-shouldered hawk	Buteo lineatus
Red-tailed hawk	Buteo jamaicensis
Steller's jay	Cyanocitta stelleri
Tree swallow	Tachycineta bicolor
Turkey vulture	Cathartes aura
Vaux's swift	Chaetura vauxi
White-tailed kite	Elanus leucurus
White-throated swift	Aeronautes saxatalis
Wild turkey	Meleagris gallopavo