EXHIBIT C
AREAS OF BIOLOGICAL WEALTH

Describe any areas in the vicinity of the proposed site or route which are unique because of biological wealth or because they are habitats for rare and endangered species. Describe the biological wealth or species involved and state effects, if any, the proposed facilities will have thereon.

Methods

The United States Fish and Wildlife Service (USFWS) and the Arizona Game and Fish Department (AGFD) were solicited for information regarding the potential occurrence of special status species for the Project Red Hawk (Project). Special status plant and wildlife species are subject to regulations under the authority of federal and state agencies. Special status species that could be associated with the Project include those species that are listed by the USFWS as federally endangered, threatened, proposed, or candidate species under the Endangered Species Act of 1973, as amended (ESA); listed as Wildlife of Special Concern by the AGFD; or protected under the Arizona Native Plant Law (NPL) [Arizona Department of Agriculture (AZDA)]. Descriptions of these special status species are summarized below:

- Endangered species, protected under the ESA, are those species in danger of extinction throughout all or a significant portion of their range.
- Threatened species, protected under the ESA, are those species likely to become endangered in the foreseeable future.
- Proposed species are those species recommended for listing by USFWS pursuant to Section 4 of the ESA.
- Candidate species are those species for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but has precluded the development of a proposed listing regulation because of other higher priority listing activities. Candidate species are not protected under the ESA.
- USFWS Species of Concern is an informal term that refers to those species that the USFWS believes may be in need of concentrated conservation actions. Conservation actions, such as monitoring, vary depending on the health of the populations and degree and types of threats. USFWS Species of Concern receive no legal protection under the ESA and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species.
- AGFD Species of Greatest Conservation Need (SGCN) are species determined to be vulnerable in at least one of the following eight criteria: extirpated from Arizona, federal or state status; declining status; disjunct status, demographic status; concentration status, fragmentation status; and distribution status, as described by the AGFD's listing of Wildlife of Special Concern in Arizona (WSCA, updated July 5, 2019).
- AZDA Highly Safeguarded or Salvage Restricted Native Plants identifies special status plants that are protected under the Arizona NPL and that fall into these categories: Highly Safeguarded (no collection allowed); Salvage Restricted (collection allowed only with permit); Export Restricted (transport out of State prohibited); Salvage Assessed (permits

required to remove live trees); and Harvest Restricted (permits required to remove plant by-products).

The USFWS Information for Planning and Consulting (IPaC) website was accessed and a report was generated listing proposed, candidate, threatened, and endangered species and other resources, such as critical habitat, under the USFWS's jurisdiction that could potentially occur on the Project Site (USFWS 2019a). In addition, the AGFD has published a list of special status species that could occur in each county in Arizona (AGFD 2019a) as well as a list of species occurrences for each county (AGFD 2019b). These lists were consulted to identify species that could potentially be present in the vicinity of the Project Site. An AGFD online Project Evaluation Program (PEP) search was completed for the Project as well; the PEP generated a report listing all Special Status Species, Special Areas, and Species of Greatest Conservation Need within a three mile buffer of the Project. The information provided in the PEP is used to guide preliminary decisions and assessments of proposed land development, management, and conservation projects, while incorporating fish and wildlife resource needs or features. **Table C-1** presents the special status species potentially occurring within Maricopa County (where the Project is located) listed by common name, scientific name, and status based upon the IPaC report, AGFD PEP report, and the Maricopa County species lists.

The USFWS has identified no plant species and two wildlife species (two birds) that are listed as endangered or threatened under the ESA and 16 Birds of Conservation Concern (BCC) that have the potential to occur on or within the vicinity of the Project Site. The results of the IPaC report are included in **Exhibit C-1.**

The AGFD PEP indicated that there are four special status species and 46 wildlife SGCN that are known to occur within three miles of the Project Site (17 mammals, 17 birds, 1 amphibian, and 11 reptiles). The results of the PEP search are included in **Exhibit C-1.**

The published lists of species by county from AGFD identify plant and animal species that are known to occur within Maricopa County, but are not known to occur on or in the vicinity of the Project Site (they were not identified by the IPaC or PEP). These lists indicate that 21 additional plants and 25 additional wildlife species (1 mammal, 5 birds, 12 reptiles, 5 amphibians, 2 invertebrates) may occur within Maricopa County (See **Table C-1**).

A qualified biologist researched the ecology and habitat requirements of special status species that have the potential to occur on or within the vicinity of the Project Site. The information was used to evaluate the potential effects of Project implementation on those species. Fish species that occur within Maricopa County are not anticipated to be impacted by the Project because there are no bodies of water, streams, or rivers on the Project Site (the concrete-lined Roosevelt Water Conservation Distric (RWCD) Canal exists to the west of the Project Site).

Results of Analysis

The analysis determined that overall habitat quality, plant diversity, and plant density on the Project Site are low. The Project Site has historically been used for agriculture with recent aerial photography showing the presence of row crops (imagery date 8/28/2018). As of August 2019, the

site was not being actively cultivated and the land was in a fallowed condition. Areas of disturbance associated with older agricultural use, such as dirt roads and ditches/water control structures occur around the edges of the Project Site. Vegetation is comprised of remnant row crops and weeds; native plants are limited or absent. The Project Site elevations are fairly flat and range from 1,338 to 1,357 feet. Vegetation communities found on the Project Site are described below:

Agriculture – Active

The Project Site historically has supported active agriculture, which likely has cycled between periods when fields were planted and when they were allowed to lie fallow (the current state on the Project Site). Irrigation canals and head ditches associated with the agricultural field exist along the edges, and the RWCD Canal exists immediately west of the Project Site. These lands have been used for agriculture for many years and are mostly surrounded by other agricultural lands, residential areas, and disturbed vacant parcels. Agriculture is the primary activity on the Project Site and cultivated fields cover approximately 95% (177 acres) of the Project Site.

Disturbed Urban Habitat

The Project Site currently contains disturbed urban habitat. Disturbed urban habitat only occurs on the edges of the property, primarily on the western and northern sides. This disturbed habitat appears to be associated with historical agricultural practices throughout the Project Site. Disturbed habitat is devoid of all vegetation likely due to frequent vehicle and farming equipment use. There is a very small amount of disturbed habitat on the Project Site (approximately 5% [10 acres] of the total area).

Findings

Plant Species

Threatened and Endangered

Two plant species listed as threatened or endangered under the ESA have the potential to occur within Maricopa County (AGFD 2019a, 2019b). Neither of these species have the potential to occur on the Project Site or within three miles of the Project Site (USFWS 2019a, AGFD 2019c).

Species of Concern

Six plant Species of Concern were identified that have the potential to occur within Maricopa County (AGFD 2019a, 2019b). None of these plant species have the potential to occur on the Project Site or within three miles of the Project Site (USFWS 2019a, AGFD 2019c).

Arizona Native Plant Law Species

Thirteen Arizona Native Plant Law (ANPL) Salvage Restricted or Highly Safeguarded plant species have the potential to occur within Maricopa County (AGFD 2019a, 2019b). None of these

species have the potential to occur on the Project Site or within tree miles of the Project Site (USFWS 2019a, AGFD 2019c).

Wildlife Species

Threatened and Endangered

There are six wildlife species (3 birds, 3 mammals) that are listed as endangered under the ESA and three wildlife species (1 reptile, 1 amphibian, 1 bird) that are listed as threatened under the ESA that have the potential to occur within Maricopa County (AGFD 2019a, 2019b; USFWS 2019a). Based on our site investigations, there is no suitable habitat on the Project Site for any of these wildlife species.

Wildlife Species of Concern and Birds of Conservation Concern (BCC)

There are 24 Species of Concern (8 mammals, 6 birds, 6 reptiles, 2 amphibians, and 2 invertebrates), and 19 BCCs that have the potential to occur within Maricopa County (AGFD 2019a, 2019b, USFWS 2019a). Three bird species that are listed as Species of Concern were identified as having the potential to occur on the Project Site. These species are also listed as Species of Greatest Conservation Need (SGCN) and will be discussed in the next section.

There are two BCCs that have a low potential to occur on the Project Site (Mississippi kite [*Ictinea mississippiensis*] and long-billed curlew [*Numenius americanus]*). The Mississippi kite has a very low potential to use the Project Site for foraging purposes (can nest in urban/suburban trees, no suitable trees exist on the Project Site, but occur in the vicinity); the long-billed curlew has a low potential to use the Project Site during migration periods (frequents agricultural fields during migration).

Arizona Wildlife Species of Greatest Conservation Need (SGCN)

There are 32 wildlife species that have been identified as SGCN by the state of Arizona (no other federal status) (7 mammals, 6 birds, 3 amphibians, and 16 reptiles) that have the potential to occur within Maricopa County. There is potentially suitable habitat for five SGCN wildlife species (all birds) within the Project area – the western burrowing owl *(Athene cunicularia hypugaea)* (BUOW) (USFWS Species of Concern and AGFD SGCN 1B), ferruginous hawk (*Buteo regalis*) (FEHA) (USFWS Species of Concern and AGFD SGCN 1B), American peregrine falcon (*Falco peregrinuns anatum)* (PEFA) (USFWS Species of Concern and AGFD SGCN 1A), Abert's towhee (*Melozone aberti*) (ABTO) (SGCN 1B) and savannah sparrow (*Passerculus sandwichensis*) (SAVS) (SGCN 1B).

The active agricultural and disturbed lands on the Project Site provide potential nesting and foraging habitat for BUOW and the likelihood of occurrence for this species is moderate, although it is unknown if this species currently inhabits the Project Site. BUOW are known to occupy disturbed and agricultural habitats in the vicinity of the Project Site, especially on field edges and berms with friable soils where small mammal burrows exist. The active agricultural and disturbed lands on the Project Site provide potential foraging habitat for PEFA and winter foraging habitat

for FEHA. PEFA have a low potential to nest in urban/suburban environments on buildings and transmission towers, and may use the agricultural lands on the Project Site for foraging purposes. FEHA will likely only be migrating through or wintering in the Project vicinity, and may use the agricultural areas for foraging. Both species have a low potential to occur on the Project Site, and a small amount of foraging habitat would be altered by the construction of the Project. ABTO and SAVS are known to occur within three miles of the Project Site (AGFD 2019c) and have a moderate potential to use the area for foraging, especially when the agricultural areas are active. A small amount of potential foraging habitat for ABTO and SAVS would be altered by construction of the Project.

Southwestern willow flycatcher (*Empidonax traillii extimus*) (USFWS Endangered and AGFD SGCN 1A), golden eagle (*Aquila chrysaetos*) (Species of Concern, AGFD SGCN 1B, Bald and Golden Eagle Protection Act [BGEPA], bald eagle (*Haliaeetus leucocephalus*) (Species of Concern, AGFD SGCN 1A, BGEPA), yellow-billed cuckoo (*Coccyzus americanus*) (USFWS Threatened and AGFD SGCN 1A), and California least tern (*Sterna antillarum browni*) (USFWS Endangered) have been known to occur within three miles of the Project Site (AGFD 2019c); however, no suitable nesting or foraging habitat for any of these species occurs on the Project Site.

No special status bat species are expected to occur on the Project Site due to the lack of suitable habitat.

The Project Site is not within the appropriate elevation ranges or there is no suitable habitat for the remainder of the special status species identified by the USFWS and AGFD for Maricopa County. Therefore, the potential for occurrence of these species on or within the vicinity of the Project Site is highly unlikely (**Table C-1**).

Table C-1. Special Status Species with the Potential to Occur in Maricopa County				
Species		Protection Status[1]		
Common name	**Scientific name**	**ESA[2]**	**Arizona SGCN[3]**	**Potential to Occur in Project Area (Justification)[4]**
Plants				
Pima Indian Mallow	*Abutilon parishii*	SC	SR	No (Habitat)
Tonto Basin Agave	*Agave delamateri*	SC	HS	No (Habitat)
Hohokam Agave	*Agave murpheyi*	SC	HS	No (Habitat)
Toumey Agave	*Agave toumeyana var. bella*	--	SR	No (Elevation)
Arizona Agave	*Agave x arizonica*	--	HS	No (Elevation)
Bigelow Onion	*Allium bigelovii*	--	SR	No (Habitat)
Yavapai Hedgehog Cactus	*Echinocereus yavapaiensis*	--	SR	No (Habitat)
Acuna Cactus	*Echinomastus erectocenturs var. acunensis*	E	HS	No (Habitat)
Johnson's Fishhook Cactus	*Echinomastus johnsonii*	--	SR	No (Habitat)
Fish Creek Fleabane	*Erigeron piscaticus*	SC	SR	No (Elevation)
Ripley Wild-buckwheat	*Eriogonum ripleyi*	SC	SR	No (Habitat)
Desert Barrel Cactus	*Ferocactus cylindraceus*	--	SR	No (Habitat)
Emory's Barrel Cactus	*Ferocactus emoryi*	--	SR	No (Habitat)
Flannel Bush	*Fremontodendron californicum*	--	SR	No (Habitat)
Varied Fishhook Cactus	*Mammillaria viridifloria*	--	SR	No (Elevation)
Straw-top Cholla	*Opuntia echinocarpa*	--	SR	No (Habitat)
Cactus Apple	*Opuntia engelmannii* var. *Flavispina*	--	SR	No (Habitat)
Roosevelt Dam Rockdaisy	*Perityle saxicola*	SC	--	No (Habitat)
Arizona Cliff Rose	*Purshia subintegra*	E	HS	No (Elevation)
Organ Pipe Cactus	*Stenocereus thurberi*	--	SR	No (Habitat)
Tumamoc Globeberry	*Tumamoca macdougalii*	--	SR	No (Habitat)
Mammals				
Harris' Antelope Squirrel	*Ammonospermophilus harrisii*	--	1B	No (Habitat)
Pale Townsend's Big-eared Bat	*Corynorhinus townsendii pallescens*	SC	1B	No (Elevation)
Spotted Bat	*Euderma maculatum*	SC	1B	No (Habitat)
Greater Western Bonneted Bat	*Eumops perotis californicus*	SC	1B	No (Habitat)
Western Red Bat	*Lasiurus blossevillii*	--	1B	No (Elevation)
Western Yellow Bat	*Lasiurus xanthinus*	--	1B	No (Habitat)
Ocelot	*Leopardus pardalis*	E	1A	No (Habitat)
Jaguar	*Panthera onca*	E	1A	No (Habitat
Lesser Long-nosed Bat	*Leptonycteris yerbabuenae*	SC	1A	No (Habitat)
Sonoran Pronghorn	*Antilocapra americana sonofriensis*	E	1A	No (Habitat)
Antelope Jackrabbit	*Lepus alleni*	--	1B	No (Habitat)

Table C-1. Special Status Species with the Potential to Occur in Maricopa County				
Species		**Protection Status[1]**		
Common name	**Scientific name**	**ESA[2]**	**Arizona SGCN[3]**	**Potential to Occur in Project Area (Justification)[4]**
California Leaf-nosed Bat	*Macrotus californicus*	SC	1B	No (Habitat)
Arizona Myotis	*Myotis occultus*	SC	1B	No (Habitat)
Cave Myotis	*Myotis velifer*	SC	1B	No (Habitat)
Yuma Myotis	*Myotis yumanensis*	SC	1B	No (Habitat)
Pocketed Free-tailed Bat	*Nyctinomops femorosaccus*	--	1B	No (Habitat)
Brazilian Free-tailed Bat	*Tadarida brasilensis*	--	1B	No (Habitat)
Kit Fox	*Vulpes macrotis*	--	1B	No (Habitat)
Birds				
Wood Duck	*Aix sponsa*	--	1B	No (Habitat)
American Bittern	*Botaurus lentiginosus*	BCC	1B	No (Habitat)
Ferruginous Hawk	*Buteo regalis*	SC	1B	Yes (Foraging)
Golden Eagle	*Aquila chrysaetos*	BCC	1B	No (Habitat)
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	T	1A	No (Habitat)
Western Burrowing Owl	*Athene cunicularia hypugaea*	SC	1B	Yes
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	E	1A	No (Habitat)
American Peregrine Falcon	*Falco peregrinuns anatum*	SC	1A	Yes (Foraging)
Bald Eagle	*Haliaeetus leucocephalus*	SC	1A	No (Habitat)
California Least Tern	*Sterna antillarum browni*	E	--	No (Habitat)
Gilded Flicker	*Colaptes chrysoides*	BCC	1B	No (Habitat)
Gila Woodpecker	*Melanerpes uropygialis*	BCC	1B	No (Habitat)
Lincoln's Sparrow	*Melospiza lincolnii*	--	1B	No (Habitat)
Abert's Towhee	*Melozone aberti*	--	1B	Yes (Foraging)
Savannah Sparrow	*Passerculus sandwichensis*	--	1B	Yes (Nesting/Foraging)
Yuma Ridgway's Rail	*Rallus obsoletus yumanensis*	E	1A	No (Habitat)
Yellow Warbler	*Setophaga petechia*	BCC	1B	No (Habitat)
LeConte's Thrasher	*Toxostoma lecontei*	BCC	1B	No (Habitat)
Pacific Wren	*Troglodytes pacificus*	--	1B	No (Habitat)
Arizona Bell's Vireo	*Vireo Bellii arizonae*	BCC	1B	No (Habitat)
Bendire's Thrasher	*Toxostoma bendirei*	BCC	--	No (Habitat)
Black-chinned Sparrow	*Spizella atrogularis*	BCC	--	No (Habitat)
Clark's Grebe	*Aechmophorous clarkii*	BCC	--	No (Habitat)
Costa's Hummingbird	*Calypte costae*	BCC	--	No (Habitat)
Elf Owl	*Micrathene whitneyi*	BCC	--	No (Habitat)

Table C-1. Special Status Species with the Potential to Occur in Maricopa County				
Species		**Protection Status[1]**		
Common name	**Scientific name**	**ESA[2]**	**Arizona SGCN[3]**	**Potential to Occur in Project Area (Justification)[4]**
Lawrence's Goldfinch	*Carduelis lawrencei*	BCC	--	No (Habitat)
Long-Billed Curlew	*Numenius americanus*	BCC	--	Low (Winter/Migration)
Marbled Godwit	*Limosa fedoa*	BCC	--	No (Habitat)
Rufous Hummingbird	*Selasphorous rufus*	BCC	--	No (Habitat)
Rufous-winged Sparrow	*Aimophila carpalis*	BCC	--	No (Habitat)
Willet	*Tringa semipalmata*	BCC	--	No (Habitat)
Swainson's Thrush	*Catharus ustulatus*	--	1B	No (Habitat)
Snowy Plover	*Charadrius nivosus*	BCC	1B	No (Habitat)
Cactus Ferruginous Pygmy Owl	*Glaucidium brasilianum*	SC	1B	No (Habitat)
Mississippi Kite	*Ictinia mississippiensis*	BCC	1B	Low (Foraging)
Reptiles				
Pai Striped Whiptail	*Aspidoscelis pai*	--	1B	No (Elevation)
Giant Spotted Whiptail	*Aspidoscelis stictogramma*	SC	1B	No (Habitat_
Red-backed Whiptail	*Aspidoscelis xanthonota*	SC	1B	No (Elevation)
Sonoran Collared Lizard	*Crotaphytus nebrius*	--	1B	No (Habitat)
Variable Sandsnake	*Chilomeniscus stramineus*	--	1B	No (Habitat)
Tucson Shovel-nosed Snake	*Chionactis occipitalis klauberi*	SC	1A	No (Habitat)
Sonoran Whipsnake	*Coluber bilineatus*	--	1B	No (Habitat)
Tiger Rattlesnake	*Crotalus tigris*	--	1B	No (Habitat)
Sonoran Desert Tortoise	*Gopherus morafkai*	--	1A	No (Habitat)
Gila Monster	*Heloderma suspectum*	--	1A	No (Habitat)
Banded Gila Monster	*Heloderma suspectum cictum*	SC	1A	No (Habitat)
Reticulate Gila Monster	*Heloderma suspectum suspectum*	--	1A	No (Habitat)
Arizona Mud Turtle	*Kinosternon arizonense*	--	1B	No (Habitat)
Rosy Boa	*Lichanura trivirgata*	SC	1B	No (Habitat)
Saddled Leaf-nosed Snake	*Phyllorhynchus browni*	--	1B	No (Habitat)
Common Chuckwalla	*Sauromalus ater*	SC	--	No (Habitat)
Northern Mexican Gartersnake	*Thamnophis eques megalops*	T	1A	No (Habitat)
Bezy's Night Lizard	*Xantusia bezyi*	--	1B	No (Elevation)
Desert Mud Turtle	*Kinosternon sonoriesnse sonoriense*	--	1B	No (Habitat)
Sonoran Coralsnake	*Micruroides euryxanthus*	--	1B	No (Habitat)
Goode's Horned Lizard	*Phrynosoma goodei*	--	1B	No (Habitat)
Regal Horned Lizard	*Phrynosoma solare*	--	1B	No (Habitat)

Table C-1. Special Status Species with the Potential to Occur in Maricopa County				
Species		**Protection Status[1]**		
Common name	**Scientific name**	**ESA[2]**	**Arizona SGCN[3]**	**Potential to Occur in Project Area (Justification)[4]**
Saddled Leaf-nosed Snake	*Phyllorhynchus browni*	--	1B	No (Habitat)
Amphibians				
Arizona Toad	*Anaxyrus microscaphus*	SC	1B	No (Habitat)
Sonoran Green Toad	*Anaxyrus retiformes*	--	1B	No (Habitat)
Chiricahua Leopard Frog	*Lithobates chiricahuensis*	T	1A	No (Habitat)
Lowland Burrowing Frog	*Smilisca fodiens*	--	1B	No (Habitat)
Sonoran Desert Toad	*Incilius alvarius*	--	1B	No (Habitat)
Lowland Leopard Frog	*Lithobates yavapaiensis*	SC	1A	No (Habitat)
Invertebrates				
Maricopa Tiger Beetle	*Cicindela oregona maricopa*	SC	--	No (Habitat)
Squaw Peak Tallussnail	*Maricopella allynsmithi*	SC	1B	No (Habitat)

[1] E=Endangered, T=Threatened, C=Candidate, EP, NE=Experimental Population, Non-Essential, SC=Species of Concern, DM= Delisted taxon, recovered, and being monitored for the first five years, WSC=Wildlife of Special Concern, SR=Salvage Restricted, HS=Highly Safeguarded, BCC=Bird of Conservation Concern only, no other FWS listing

[2] USFWS 2019a

[3] AGFD 2019a

[4] Elevation means the species does not have the potential to occur because the Project Area is not within its elevation requirements. Habitat means the Project Area is within the species elevation requirements but there is no suitable or potential habitat for the species. References are provided in the References Section.

Other Sources: ReptilesofAZ 2008, eflora 2013, Corman et al. 2005, AGFD Species Abstracts (AGFD 2019d)

Potential Effects

The following sections address the potential effects from development of the Project to special status species identified as having the potential to occur on the Project Site.

Plants

Of the 21 special status plant species having some potential to occur within Maricopa County, none have been recorded on or within three miles of the Project Site (AGFD 2019c). The Project Site either does not contain suitable habitat for these plant species or is out of their elevation range. The Project will, therefore, have no direct or indirect impacts on threatened, endangered, and state-protected plants.

Wildlife

There are no natural habitat conditions on the Project Site. Agricultural development, along with its associated roads and infrastructure, has converted and degraded areas that might have consisted of native vegetation (wildlife habitat). The construction of the Project would permanently impact a small area of agricultural and disturbed habitats. The majority of the other Project-related impacts would be temporary and short-term in nature and are discussed in more depth in the sections below.

There are no suitable habitats for federally threatened, endangered, or candidate species on the Project Site, so there would be no impacts on these species from construction of the Project.

Five special status wildlife species, BUOW, FEHA, PEFA, ABTO, and SAVS, have the potential to occur on the Project Site. There is potentially suitable BUOW habitat that exists on the Project Site, and BUOW habitat (burrows and foraging habitat) could be directly impacted by construction activities. Construction-related impacts may include the loss of foraging/nesting habitat and displacement of resident BUOW from the construction area, possible injury or death during ground-disturbing activities (active burrow removal), temporary impacts on foraging behaviors, and noise-related disturbance. A majority of the impacts would be short-term and temporary, but some permanent loss of habitat is likely to occur.

Pre-construction protocol surveys for BUOW per the *Burrowing Owl Project Clearing Guidance for Landowners* (AGFD 2009) would be conducted to ensure that any active BUOW burrows are avoided. If active burrows are found (burrows being currently used by BUOW), an appropriate avoidance buffer would be established (per AGFD guidelines) and construction would not occur within that buffer until the nest becomes inactive, or a permit would be obtained to relocate the owls. Therefore, direct impacts associated with the Project would constitute a short-term minor impact on BUOW.

The Project Site provides suitable but low-quality foraging habitat for the PEFA, FEHA, SAVS, and ABTO. This habitat could be directly impacted by construction activities. Construction-related impacts would be temporary and short-term, and may include the temporary loss of habitat and displacement of foraging birds from the construction area, temporary impacts on foraging behaviors, and noise-related disturbance.

The presence of irrigation infrastructure in the agricultural areas may attract waterfowl and shorebirds. This may increase the potential for avian / power line interactions when birds make localized movements between water features and roost sites. To minimize risk to migratory birds, any transmission lines will be constructed following industry suggested practices aimed at reducing avian collisions and electrocutions (Avian Power Line Interaction Committee [APLIC] 2006 and 2012). If avian / power line interactions become an issue, the Proponent will move quickly to evaluate and address the issue.

Conclusions

The entire Project Site has been previously disturbed and developed for agriculture, significantly reducing the overall habitat quality. Construction of the Project would occur in previously disturbed areas. The sensitive species with the potential to occur on the Project Site would not be expected to be negatively affected because habitat on the site is in a degraded condition.

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USFWS. 2019a. Information for Planning and Consultation Resource List, List of Species. [Web Page] Located at http://www. http://ecos.fws.gov/ipac/. Accessed: August 9, 2019.

USFWS. 2019b. Nationwide Standard Conservation Measures. [Web Page] Located at https://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf Accessed August 9, 2019.

EXHIBIT C-1
AGENCY CORRESPONDENCE

Arizona Environmental Online Review Tool Report

Arizona Game and Fish Department Mission
To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:
Unknown

Project Description:
Unknown

Project Type:
Energy Storage/Production/Transfer, Energy Transfer, substation

Contact Person:
Scott Albrecht

Organization:
Heritage

On Behalf Of:
OTHER

Project ID:
HGIS-09584

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

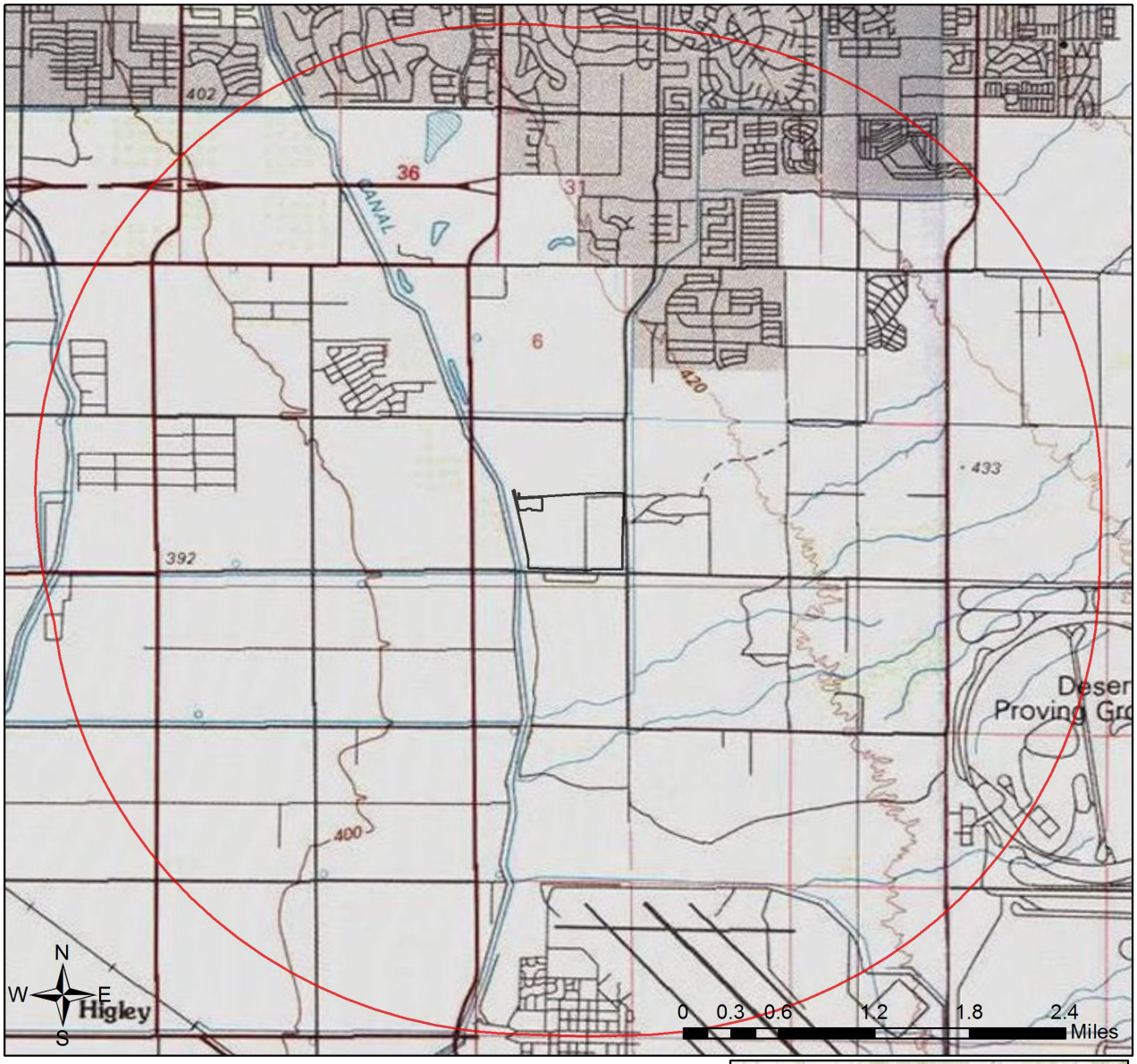
Locations Accuracy Disclaimer:
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
   Project Evaluation Program, Habitat Branch
   Arizona Game and Fish Department
   5000 West Carefree Highway
   Phoenix, Arizona 85086-5000
   Phone Number: (623) 236-7600
   Fax Number: (623) 236-7366
   Or
   PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Unknown

USA Topo Basemap With Locator Map



Project Boundary

Buffered Project Boundary

Project Size (acres): 186.37

Lat/Long (DD): 33.3541 / -111.6760

County(s): Maricopa

AGFD Region(s): Mesa

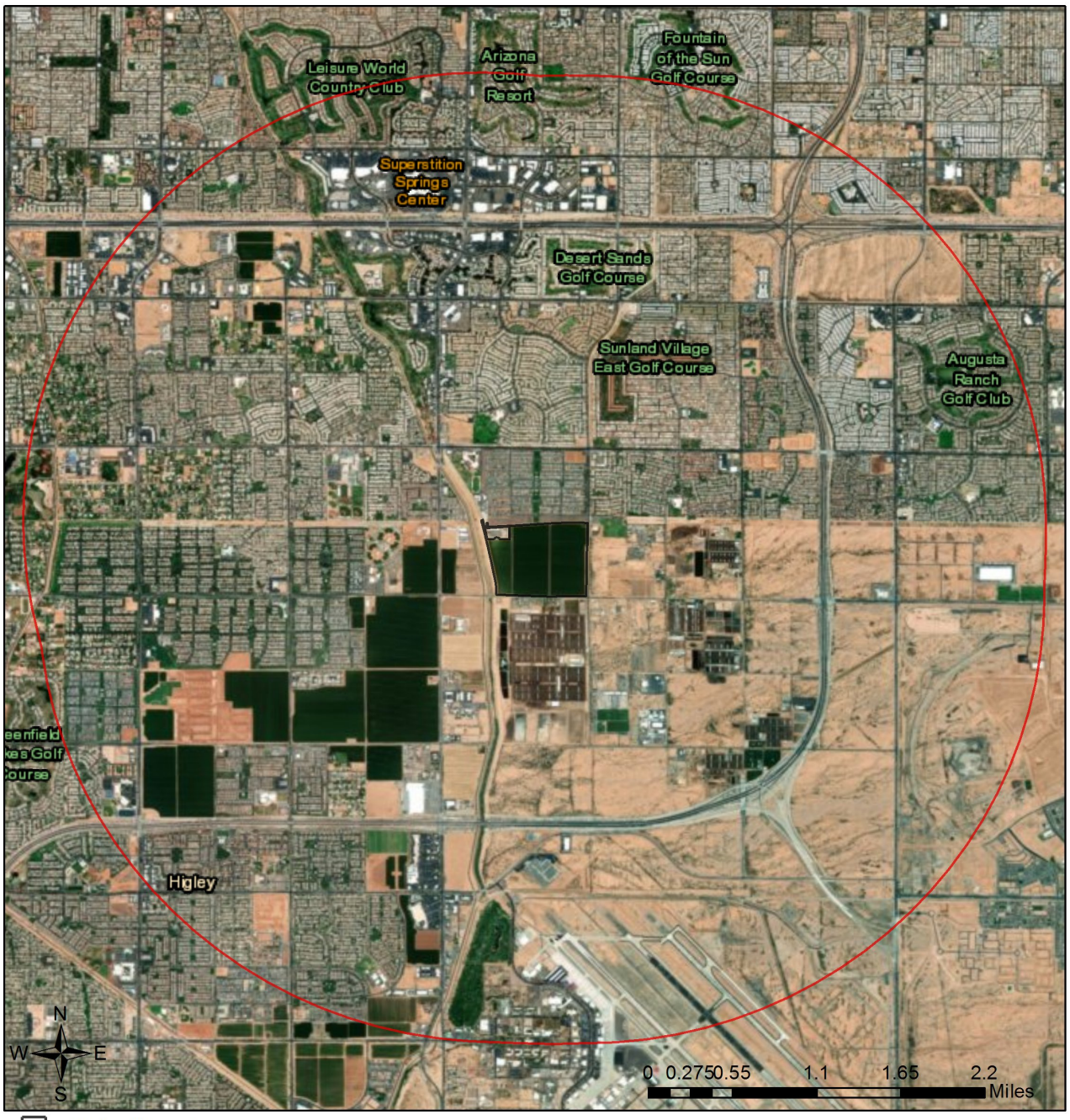
Township/Range(s): T1S, R7E

USGS Quad(s): HIGLEY

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap

Unknown

Web Map As Submitted By User



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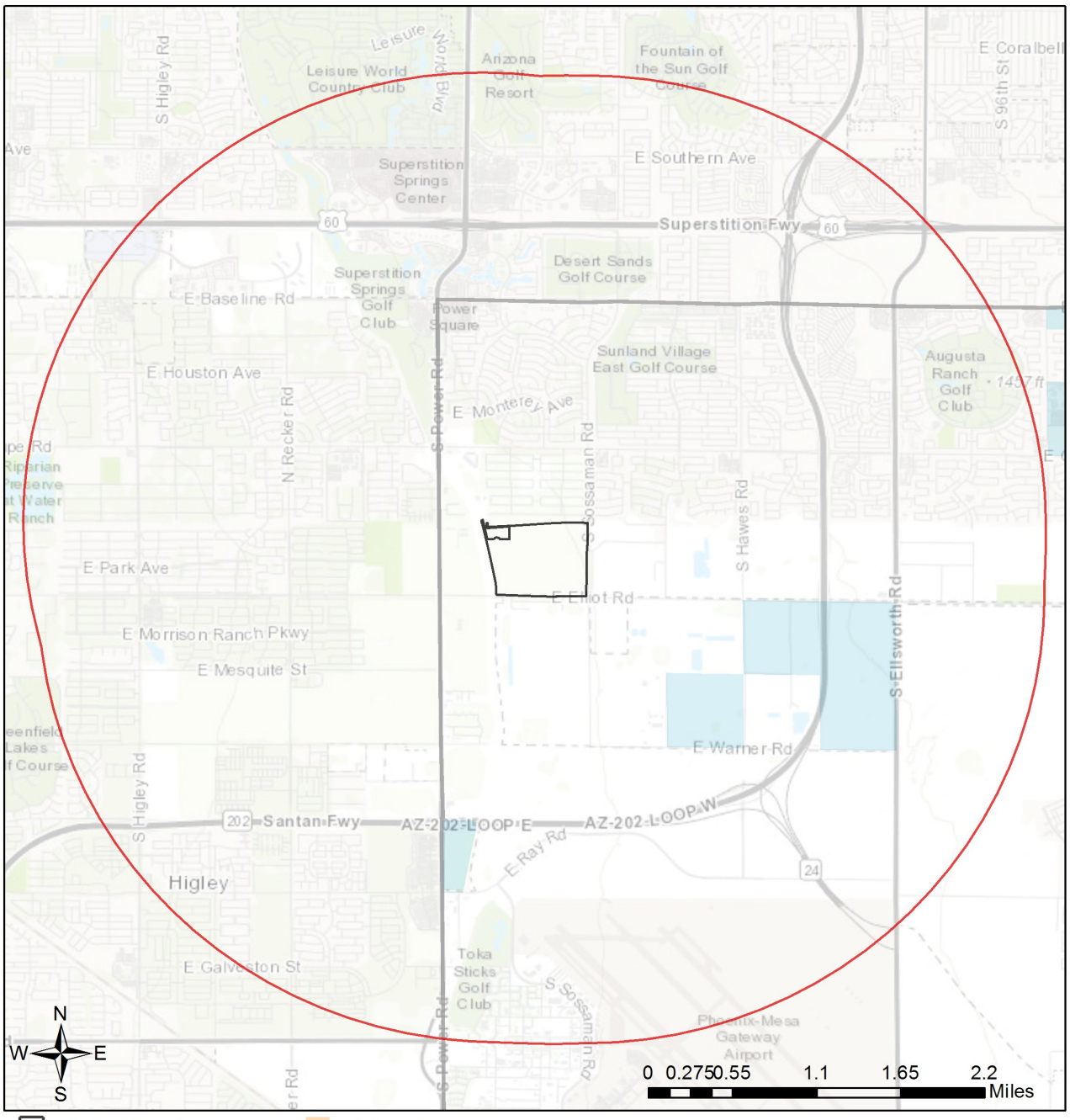
USGS Quad(s): HIGLEY

Unknown

Topo Basemap with Township/Ranges, Land Ownership, Critical Habitats, Wildlife Corridors



- Project Boundary
- Buffered Project Boundary
- Township/Ranges
- Wildlife Corridors
- Critical Habitat

Land Ownership

- AZ Game & Fish Dept.
- BLM
- BOR
- Indian Res.
- Military
- Mixed/Other
- National Park/Mon.
- Private
- State & Regional Parks
- State Trust
- US Forest Service
- Wildlife Area/Refuge

Project Size (acres): 186.37

Lat/Long (DD): 33.3541 / -111.6760

County(s): Maricopa

AGFD Region(s): Mesa

Township/Range(s): T1S, R7E

USGS Quad(s): HIGLEY

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 3 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gilbert Riparian Preserves IBA						
Haliaeetus leucocephalus pop. 3	Bald Eagle - Sonoran Desert Population	SC, BGA	S	S		1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A

Note: Status code definitions can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
.

Species of Greatest Conservation Need
Predicted within 3 Miles of Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisii	Harris' Antelope Squirrel					1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Calypte costae	Costa's Hummingbird					1C
Chilomeniscus stramineus	Variable Sandsnake					1B
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Cistothorus palustris	Marsh Wren					1C
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus tigris	Tiger Rattlesnake					1B
Empidonax wrightii	Gray Flycatcher					1C
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Incilius alvarius	Sonoran Desert Toad					1B
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leopardus pardalis	Ocelot	LE				1A

Species of Greatest Conservation Need
Predicted within 3 Miles of Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Leptonycteris yerbabuenae	Lesser Long-nosed Bat	SC				1A
Lepus alleni	Antelope Jackrabbit					1B
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolnii	Lincoln's Sparrow					1B
Melozone aberti	Abert's Towhee		S			1B
Micrathene whitneyi	Elf Owl					1C
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myiarchus tyrannulus	Brown-crested Flycatcher					1C
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Oreoscoptes montanus	Sage Thrasher					1C
Oreothlypis luciae	Lucy's Warbler					1C
Panthera onca	Jaguar	LE				1A
Passerculus sandwichensis	Savannah Sparrow					1B
Phrynosoma goodei	Goode's Horned Lizard					1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Rallus obsoletus yumanensis	Yuma Ridgway's Rail	LE				1A
Setophaga petechia	Yellow Warbler					1B
Sphyrapicus nuchalis	Red-naped Sapsucker					1C
Spizella breweri	Brewer's Sparrow					1C
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Toxostoma lecontei	LeConte's Thrasher			S		1B
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox	No Status				1B

Species of Economic and Recreation Importance Predicted within 3 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Energy Storage/Production/Transfer, Energy Transfer, substation

Project Type Recommendations:
Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on Wildlife Friendly Guidelines page, which is part of the WIldlife Planning button at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, canted, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, https://agriculture.az.gov/. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, http://www.usda.gov/wps/portal/usdahome. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information https://www.azgfd.com/hunting/regulations.

Follow manufacturer's recommended application guidelines for all chemical treatments. The U.S. Fish and Wildlife Service, Region 2, Environmental Contaminants Program has a reference document that serves as their regional pesticide recommendations for protecting wildlife and fisheries resources, titled "Recommended Protection Measures for Pesticide Applications in Region 2 of the USFWS", http://www.fws.gov/southwest/es/arizona/Documents/ECReports/RPMPA_2007.pdf. The Department recommends that direct or indirect impacts to sensitive species and their forage base from the application of chemical pesticides or herbicides be considered carefully.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

For any powerlines built, proper design and construction of the transmission line is necessary to prevent or minimize risk of electrocution of raptors, owls, vultures, and golden or bald eagles, which are protected under state and federal laws. Limit project activities during the breeding season for birds, generally March through late August, depending on species in the local area (raptors breed in early February through May). Conduct avian surveys to determine bird species that may be utilizing the area and develop a plan to avoid disturbance during the nesting season. For underground powerlines, trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herptefauna (snakes, lizards, tortoise) from entering ditches. In addition, indirect affects to wildlife due to construction (timing of activity, clearing of rights-of-way, associated bridges and culverts, affects to wetlands, fences) should also be considered and mitigated.

Based on the project type entered, coordination with State Historic Preservation Office may be required (http://azstateparks.com/SHPO/index.html).

Trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herptefauna (snakes, lizards, tortoise) from entering ditches.

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Project Location and/or Species Recommendations:
HDMS records indicate that one or more **Listed, Proposed, or Candidate** species or **Critical Habitat** (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at http://www.fws.gov/southwest/es/arizona/ or:

Phoenix Main Office
9828 North 31st Avenue #C3
Phoenix, AZ 85051-2517
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office
201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office
SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

The analysis has detected one or more **Important Bird Areas** within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Maricopa County, Arizona

Local office

Arizona Ecological Services Field Office

(602) 242-0210
(602) 242-2513

9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517

http://www.fws.gov/southwest/es/arizona/
http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS

California Least Tern Sterna antillarum browni — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/8104

Yellow-billed Cuckoo Coccyzus americanus — Threatened
There is **proposed** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/3911

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the

Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Bendire's Thrasher Toxostoma bendirei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9435	Breeds Mar 15 to Jul 31
Black-chinned Sparrow Spizella atrogularis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9447	Breeds Apr 15 to Jul 31
Burrowing Owl Athene cunicularia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Dec 31

Costa's Hummingbird Calypte costae — Breeds Jan 15 to Jun 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9470

Elf Owl Micrathene whitneyi — Breeds May 1 to Jul 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9085

Gila Woodpecker Melanerpes uropygialis — Breeds Apr 1 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/5960

Gilded Flicker Colaptes chrysoides — Breeds May 1 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/2960

Golden Eagle Aquila chrysaetos — Breeds Dec 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Rufous-winged Sparrow Aimophila carpalis — Breeds Jun 15 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

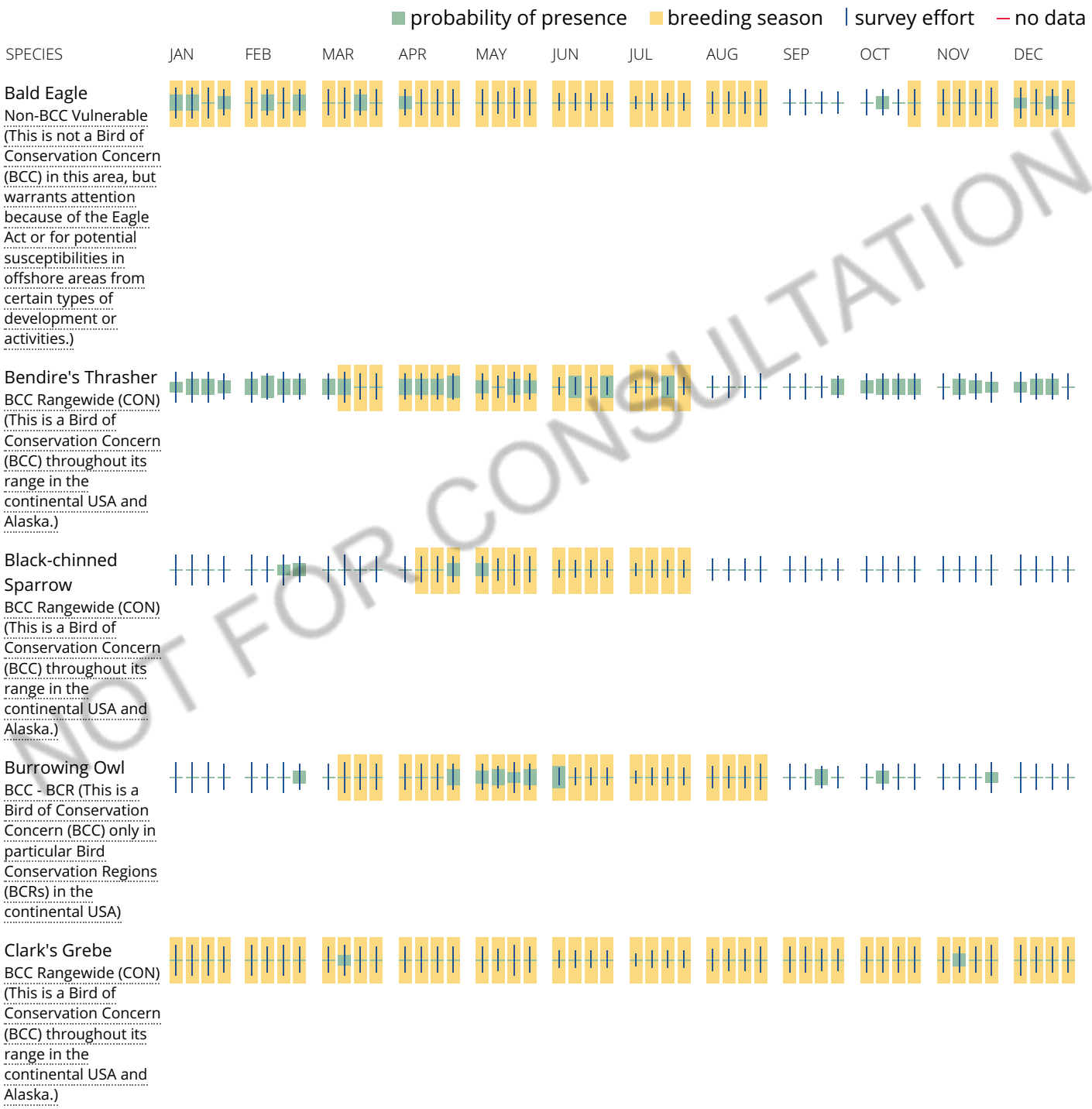
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Costa's Hummingbird
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Elf Owl
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

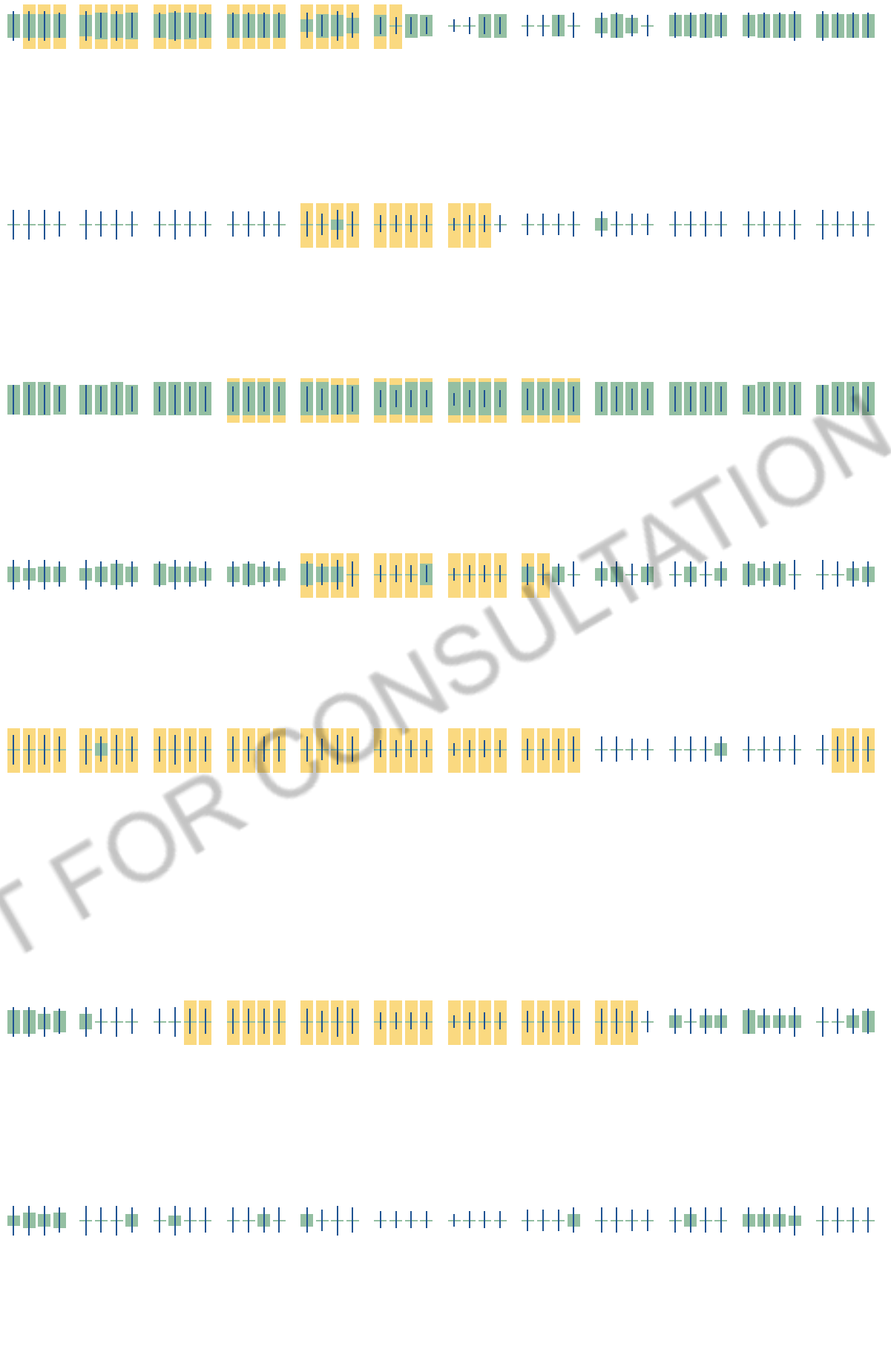
Gila Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Gilded Flicker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

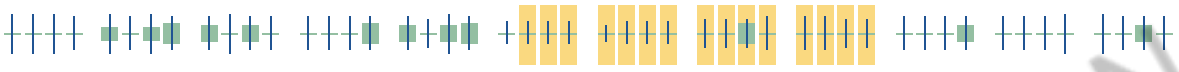
Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Rufous-winged Sparrow
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.