The logo for SWCA (Soil Water Conservation Agency) is displayed vertically on the left side of the page. It consists of the letters 'S', 'W', 'C', and 'A' stacked vertically in a large, light blue, serif font.

Federally Listed Threatened and Endangered Species Habitat Assessment for the Fair Oaks Ranch 542-Acre Property Project, Wagoner County, Oklahoma

JULY 2023

PREPARED FOR

PartnerTulsa

PREPARED BY

SWCA Environmental Consultants

**FEDERALLY LISTED THREATENED AND ENDANGERED
SPECIES HABITAT ASSESSMENT FOR THE FAIR OAKS
RANCH 542-ACRE PROPERTY PROJECT, WAGONER
COUNTY, OKLAHOMA**

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1 INTRODUCTION

SWCA Environmental Consultants (SWCA) was retained by PartnerTulsa to perform a threatened and endangered species habitat assessment for the Fair Oaks Ranch 542-Acre Property Project (project). The project consists of approximately 542 acres of privately owned land (project area) at the northwest corner of East 31st Street and the Creek Turnpike in Tulsa, Wagoner County, Oklahoma (Figure 1). The purpose of this habitat assessment is to identify the extent of potentially suitable habitat for federally listed threatened and endangered species within the project area, and to evaluate the potential for federally listed endangered or threatened species to occur within the project area.

2 METHODS

SWCA first completed a desktop-level habitat assessment, then followed that with a field investigation. Prior to the field investigation, SWCA used ArcGIS software to review aerial photography and topographic mapping of lands occurring within 0.5 mile of the project area. This review determined that lands occurring within 0.5 mile of the project area consist of habitats generally similar to those in the project area (see Figure 1 and Figure 2). This review also assisted SWCA in identifying areas of interest to inspect during the field investigation.

On June 14, 16, and 20, 2023, two SWCA biologists conducted a field-based habitat assessment within the project area. SWCA photographed and described vegetation and evaluated the suitability for federally protected species to occur within the project area. SWCA had full access to the private land within the project area. Outside of the project area, the biologists viewed lands from project area boundaries and from public roads.

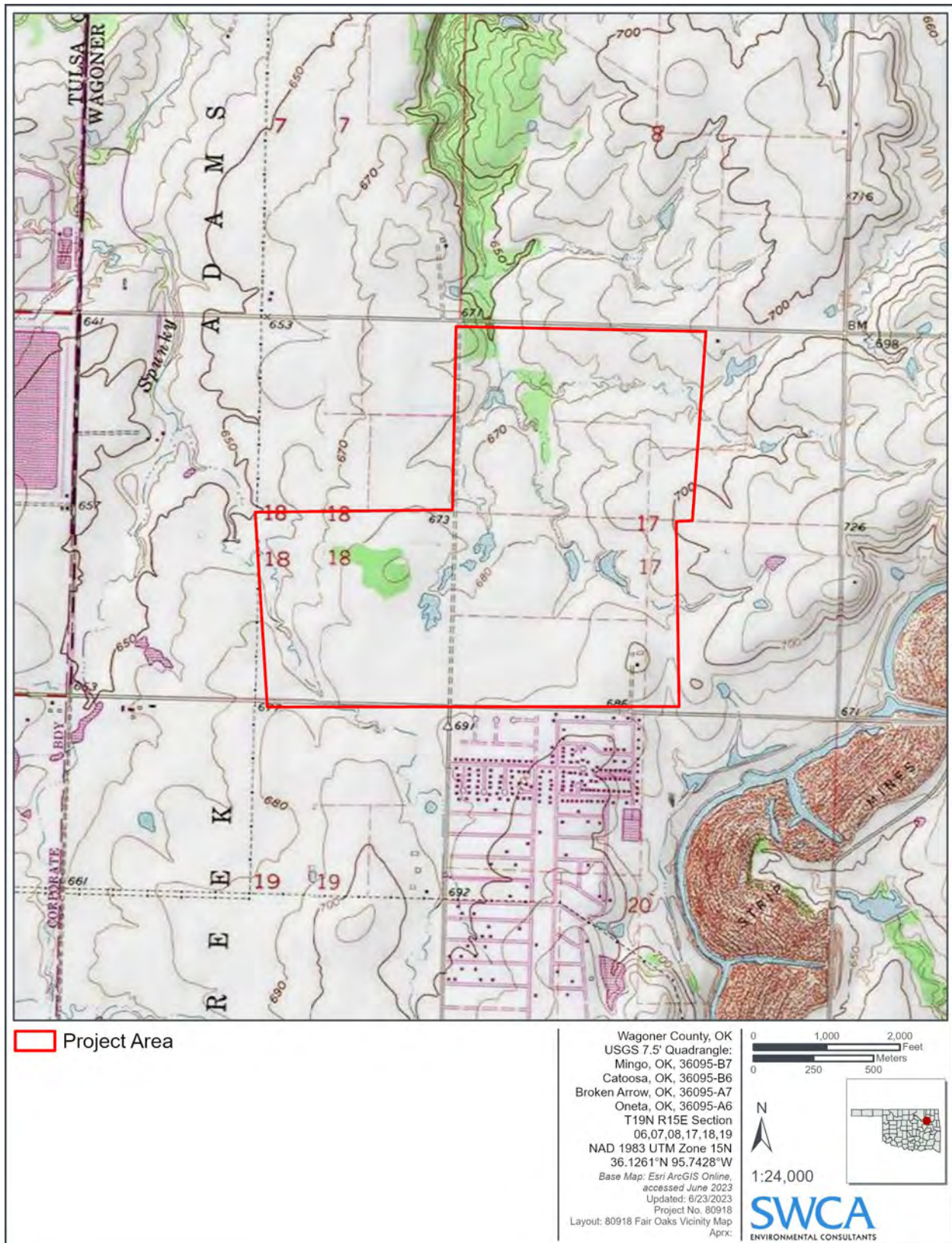


Figure 1. Project area location.

3 PROJECT AREA DESCRIPTION

The project area is located within the Osage Cuestas (ecoregion 40b) subdivision of the Central Irregular Plains Level III ecoregion (Woods et al. 2005). The Osage Cuestas ecoregion occurs on mostly flat to irregular plains, separated by low hills and east-facing cuestas. Ecoregion 40b is primarily underlain by Pennsylvanian-age sandstone and shale interbedded with western-dipping coal and limestone. Perennial streams occur throughout the Osage Cuestas, with most streams possessing pools of sand, mud, or gravel substrates. Natural vegetation consists of tall grass prairie, including little bluestem, switchgrass, and Indiangrass, that gradually mixes with oak-hickory forests in the eastern portion of the ecoregion. Additionally, oak woodlands and oak forests occur on rocky hills. Ground elevation within the project area ranges from approximately 649 to 743 feet above mean sea level. Current land use within the project area is primarily rangeland and undeveloped pastures; adjacent housing developments are located to the south of the project area.

3.1 Aquatic Resources

The project area is located within the Spunky Creek sub-watershed (Oklahoma Water Resources Board 2022). The primary source of surface water within the project area is precipitation runoff (overland flow). The FEMA Flood Insurance Rate Map panels 40145C0020J, 40145C0040J, 40145C0085J, and 40145C0105J for this region indicate that the project area is outside of the 100 and 500-year floodplains (FEMA 2022). Flow is generally south to north with perennial connection to Spunky Creek.

As a result of an aquatic resources delineation conducted concurrently with the habitat assessment, SWCA identified 1 perennial, 4 intermittent, and 12 ephemeral waterways within the project area. The perennial and intermittent waterways provide direct surface water flow to the Spunky Creek watershed. The ephemeral waterways were classified as ephemeral because they appear to only convey water in direct response to precipitation events. SWCA identified 8 waterbodies within the project area, primarily impoundments varying from 0.13 to 1.90 acres in size. SWCA delineated 2 wetlands during the aquatic resources delineation, with both being categorized as palustrine emergent (PEM) (Figure 2) (SWCA 2023).

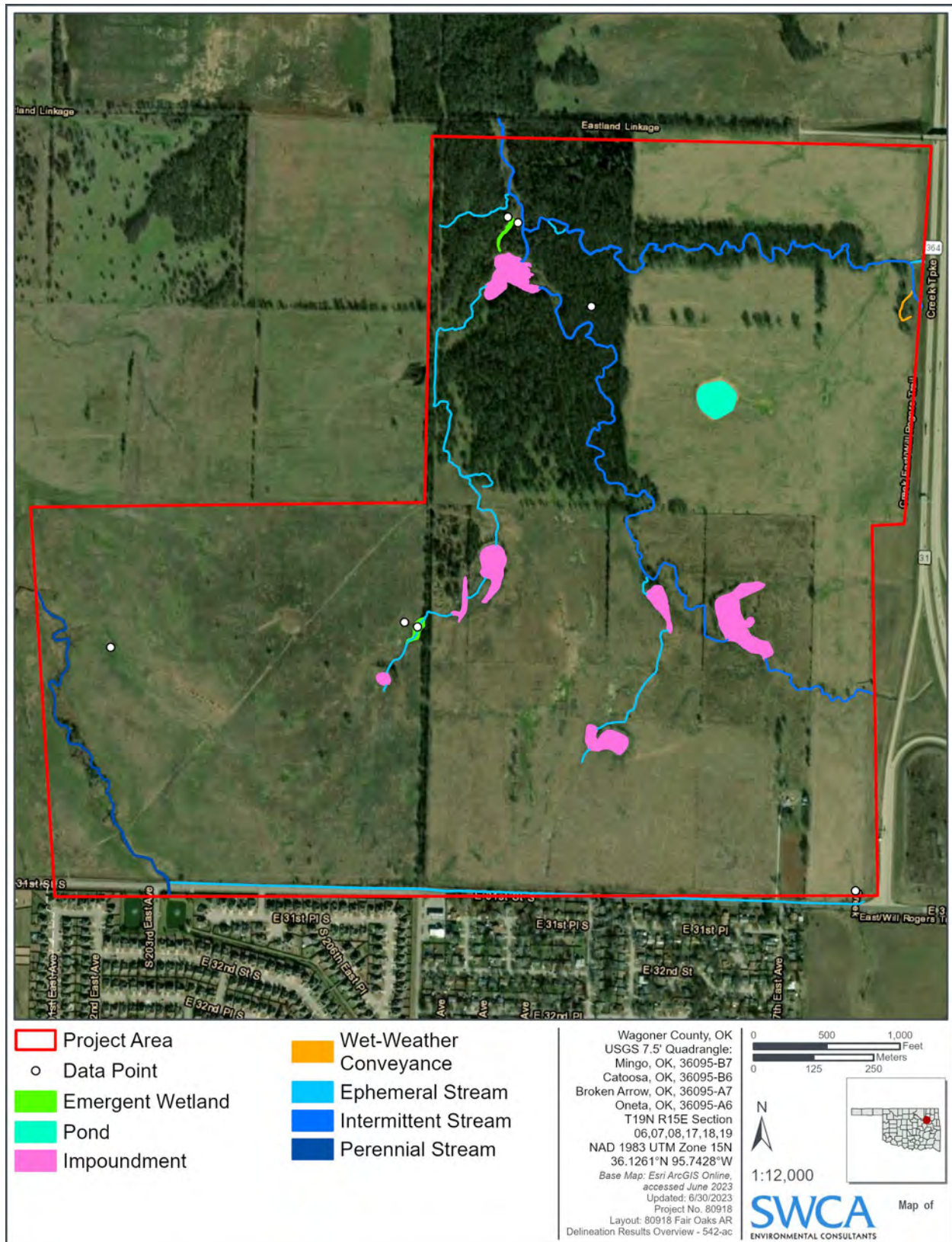


Figure 2. Aquatic resources identified within the project area.

3.2 Vegetation and Land Cover

The National Land Cover Database (NLCD), as of 2019 (Multi-Resolution Land Characteristics Consortium 2019), categorizes the project area as primarily consisting of Hay/Pasture (80.4%, 434.7 acres) and deciduous forest (17.2%, 93.1 acres). The project area also consists of developed, open space (0.9%, 4.8 acres) and herbaceous (0.7%, 3.9 acres). The remaining 0.8% of the project area is mapped by the NLCD as developed low, medium, and high intensity, shrub scrub, and emergent herbaceous wetlands (Table 1, Figure 3).

Table 1. Land Cover and Use Categories within the Project Area

Land Cover Type	Acreage of Land Cover Type within the Project Area	Percent of Land Cover Type within the Project Area
Developed, Open Space	4.8	0.9%
Developed, Low Intensity	1.0	0.2%
Developed, Medium Intensity	1.6	0.3%
Developed, High Intensity	0.0	0.0%
Deciduous Forest	93.1	17.2%
Shrub/Scrub	1.5	0.3%
Herbaceous	3.9	0.7%
Hay/Pasture	434.7	80.4%
Emergent Herbaceous Wetlands	0.2	0.0%
Total	540.7	100.0%

Source: Multi-Resolution Land Characteristics Consortium (2019)

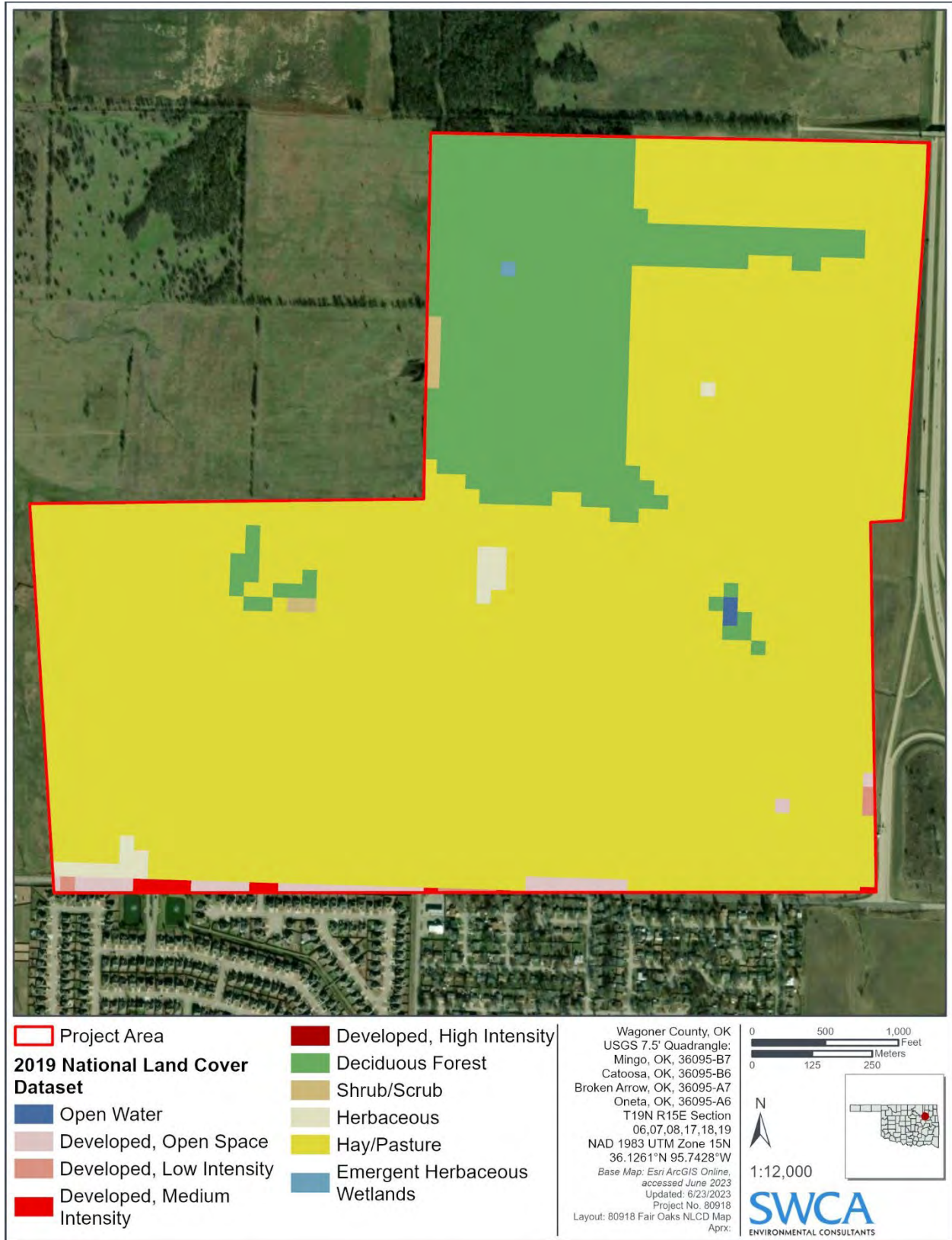


Figure 3. Land cover within the project area.

SWCA identified three vegetation communities within the project area during the aquatic resources delineation: forested upland, herbaceous upland, and palustrine emergent (PEM) wetland. Dominant plant species observed in each vegetation community are listed below. Appendix A contains a photographic log of representative habitats for each of the vegetation communities observed in the project area.

- **Forested Upland:** The forested upland vegetation community consisted of a tree stratum dominant in American elm (*Ulmus americana*) and sugarberry (*Celtis laevigata*), with a minor gum bully (*Sideroxylon lanuginosum*) component. The sapling/shrub stratum displays a dominance of coralberry (*Symphoricarpos orbiculatus*), accompanied by pecan (*Carya illinoensis*), possumhaw (*Ilex decidua*), and American elm. The herbaceous stratum consists of eastern woodland sedge (*Carex blanda*), arrow-feather threeawn (*Aristida purpurascens*), Asiatic dayflower (*Commelina communis*), and winter bentgrass (*Agrostis hyemalis*). The woody vine stratum consists of saw greenbrier (*Smilax bona-nox*) and muscadine (*Vitis rotundifolia*).
- **Herbaceous Upland:** The majority of the herbaceous upland consists of prairie rangelands. Dominant vegetation within the herbaceous stratum consists of Bermuda grass (*Cynodon dactylon*), Persian ryegrass (*Lolium persicum*), and little barley (*Hordeum pusillum*). Additional herbaceous species include tall fescue (*Schedonorus arundinaceus*), rough barnyardgrass (*Echinochloa muricata*), Heller's rosette grass (*Dichanthelium oligoanthos*), and yellow-fruit sedge (*Carex annectens*). Scattered trees and shrubs are minimal within herbaceous upland communities.
- **PEM Wetland:** The PEM wetlands vegetation community is primarily composed of herbaceous species with a dominance of rough cocklebur (*Xanthium strumarium*), American water-willow (*Justicia americana*), and marshpepper knotweed (*Persicaria hydropiper*). Hairy beggarticks (*Bidens pilosa*), frogfruit (*Phyla lanceolata*), and Buckley slimpod rush (*Juncus diffusissimus*) also occur within the PEM wetland communities.

3.3 Geology

The entirety of the assessment area is underlain by the Senora Formation. The Senora Formation is from the Middle Pennsylvanian period and primarily consists of sandstone and shale with limestone and incidental coal inclusions. (U.S. Geological Survey [USGS] 2023a).

4 SPECIES FOR HABITAT ASSESSMENT

SWCA reviewed lists of threatened and endangered species produced by the Oklahoma Department of Wildlife Conservation (ODWC) (2023a) and U.S. Fish and Wildlife Service (USFWS) (2023a) to develop a list of federally and state-listed threatened and endangered species that are known or considered to have potential to occur in Wagoner County. Table 2 identifies the federally and state-listed threatened and endangered species that have the potential to occur within the project area.

The field assessment focused on evaluating the potential of the project area to provide habitat for these species. Each of the species identified in Table 2 is described as having a low, moderate, or high potential to occur in the project area. These occurrences have been further refined based on the field habitat assessment. Potential for occurrence is described as:

- **Low potential:** Limited habitat in or near the project area and no recent documentation in or near the project area; or usable habitat may be present, but the project area is well outside the regular range of the species.

- Moderate potential: Potential habitat is or may be present, but no recent documentation in or near the project area.
- High potential: Known observations of the species in or near the project area or high-quality habitat characterizations in the project area.

Further information is provided on the species preferred habitat usage, habitat evaluated within the project area, and SWCA's determination of the potential for occurrence of the species within the project area.

Table 2. Threatened and Endangered Species with Potential to Occur within the Project Area

Species	Status	Status in Wagoner County	Preferred Habitat	Suitable Habitat in Project Area	Likelihood of Occurrence in Project Area
Birds					
Piping plover (<i>Charadrius melodus</i>)	T	M	During migration, the piping plover may stop in habitats similar to its wintering and breeding habitat, including sandbars along large rivers, salt flats, shallow wetlands, and mudflats along reservoirs.	No – Potential for migratory flyover; however, the project area is not within breeding or wintering range. The aquatic features identified within the project area do not provide adequate forage.	Low
Rufa red knot (<i>Calidris canutus rufa</i>)	E	M	During migration, the rufa red knot may stop in habitats similar to their wintering and breeding habitat, including tidal flats, shorelines, coastal and intertidal mudflats, and sandy beaches.	No – Potential for migratory flyover, however, the project area is not within breeding or wintering range. The aquatic features identified within the project area do not provide adequate forage.	Low
Reptiles					
Alligator snapping turtle (<i>Macrochelys temminckii</i>)	PT	P	Found in rivers, lakes, oxbows, and sloughs, preferring areas with tree canopy cover.	Yes – The streams and associated ponds provide potential habitat.	Moderate
Clams and Mussels					
Neosho mucket (<i>Lampsilis rafinesqueana</i>)	E	P	In Oklahoma, the species is found within the Neosho, Illinois, and Verdigris River Basins, located on riffles and runs comprised of gravel substrates with a moderate to swift current.	No – Perennial streams were identified within the project area but do not have required substrates or rates of flow.	Low
Rabbitsfoot mussel (<i>Quadrula cylindrica cylindrica</i>)	T	P	Often occupies the shallow areas of perennial stream with sand and gravel, often in side-channels with slower flow near the shore. In Oklahoma, populations are only known from McCurtain County.	No – Perennial streams were identified within the project area but do not have required substrates.	Low
Insects					
American burying beetle (<i>Nicrophorus americanus</i>)	T	P	Oak-hickory forests with native grass cover, and to a lesser extent closed-canopy forests and tallgrass prairie habitats.	Yes – Deciduous forest provide potential habitat.	Moderate

Monarch butterfly (<i>Danaus plexippus</i>)	C	P	Adult monarchs are found in a variety of habitats with abundant nectar plants including native prairies, pastures, open woodlands and savannas, desert scrub, roadsides, and other habitats, including urbanized areas. The species requires milkweed (primarily <i>Asclepias</i> spp.), as an obligate host plant for egg deposition, which is an essential component of habitat required for reproduction and survival of the species.	Yes – Open pasture portions of the project area contain abundant nectar plants for forage and milkweed needed for reproduction.	High
Mammals					
Gray bat (<i>Myotis grisescens</i>)	E	P	Use caves year-round as hibernacula during winter and roosting habitat during the summer.	No – No known suitable caves within the area.	Low
Tricolored bat (<i>Perimyotis subflavus</i>)	PE	P	The species hibernates primarily in caves and mines of varying size, though in its southern range it can be found in road culverts, abandoned wells, and in tree cavities. During non-hibernating seasons, the tricolored bat primarily roosts in forested areas among live and dead leaf clusters of deciduous hardwood trees but they have been known to use a variety of other sheltered roosting sites.	Yes – Suitable roosting and foraging habitat is present throughout the forested portions of the project area.	Moderate

Sources: ODWC (2023a—e); SWCA (2021); USFWS (2023a); Buthod and Hoagland (2013)

Note: C = Candidate; E = Endangered; M = migrant; O = occasional, irregular visitor; P = permanent resident; PE = Proposed Endangered; PT = Proposed Threatened; T = Threatened; SAT = Similarity of Appearance, Threatened

4.1 Piping Plover

The piping plover (*Charadrius melodus*) is a federally listed threatened small shorebird that is pale sand-colored and weighs 1.5 to 2.5 ounces. This species has a body length of 7 inches and a wingspan of 15 inches (Haig et al. 2005). This plover is a migratory species with a breeding distribution within the Great Lakes region, Atlantic coast, and along shorelines of rivers and lakes in the northern great plains (USFWS 2015). The plovers encountered in Oklahoma are part of the Great Plains population. The primary southern boundary of this species' breeding range within the Great Plains is Kansas, although one nesting record exists in the Oklahoma Panhandle (ODWC 2023b). The non-breeding or wintering distribution occurs mainly along the coast from North Carolina to Florida and the Gulf Coast states (USFWS 2015). Wagoner County is located within this species' migration corridor, with migration in the project region typically occurring from March to May in the spring and July to September post-breeding (ODWC 2023b). During migration, the piping plover may stop in habitats similar to its wintering and breeding habitat, including sandbars along large rivers, salt flats, shallow wetlands, and mudflats along reservoirs (National Audubon Society 2023a; USFWS 2023b). In Oklahoma, the plover may stop over in habitats such as reservoirs, mudflats, or sandbars to forage (ODWC 2023b). The Oklahoma Natural Heritage Inventory (ONHI) (2023) does not hold records of this species within 5 miles of the project area. The closest record in iNaturalist is 12 miles northwest of the project area. The piping plover has not been recorded on the Christmas Bird Count (CBC) (National Audubon Society 2023b) or the USGS Breeding Bird Survey (BBS) (USGS 2023b) within the project area. eBird (2023) shows 1 observation from Lynn Lane Reservoir just west of the project area but the observation is 40 years old.

The project area lacks the mudflats and sand bars associated with rivers and reservoirs that would be primarily used for forage. The project area contains small ponds and impoundments typically less than one acre in size. While receding waters in times of dry conditions could create muddy flats, the piping plover would likely prefer habitats to the east along the banks of the Verdigris River or south along the Arkansas River. Therefore, based on the field habitat assessment, and the documentation record of the species occurrence, it is SWCA's opinion that there is low potential for a piping plover to utilize the project area as stopover habitat. There is a moderate potential for flyover during its migration between breeding and wintering grounds, however it is not anticipated that the piping plover would be impacted by construction activities.

4.2 Rufa Red Knot

The rufa red knot (*Calidris canutus rufa*) is a federally listed threatened medium-sized shorebird with a body length of 10 inches and distinctive red plumage during breeding season (ODWC 2023c). During the nonbreeding season, plumage shifts to predominantly dusky gray above and whitish below (Baker et al. 2020). The rufa red knot breeding range encompasses the central Canadian Arctic and breeding takes place from late May to early August (USFWS 2020). The species migrates annually between breeding grounds in the Canadian Arctic to various wintering locations spanning from northern Brazil, Tierra del Fuego at the southern tip of South America, the southeastern United States, and the northwest Gulf of Mexico, including Texas. Typical habitats used by this species may include tidal flats, shorelines, coastal and intertidal mudflats, or sandy beaches (National Audubon Society 2023c). The species prefers muddy or sandy coastal areas located in the mouths of bays, with a strong preference being given towards beaches. The wintering and migration diet of the rufa red knot includes hard-shelled mollusks, small crustaceans, and marine worms found along beaches, oyster reefs, and exposed bay bottoms (USFWS 2020). Rufa red knots observed in Oklahoma would be temporarily stopping over during migration with most observed during the fall migration (ODWC 2023c). This species is rarely encountered in the state and the majority of sightings are attributed to inexperienced or malnourished birds or following inclement weather that pushes migrating birds to the ground (ODWC 2023c). The ONHI (2023) does not hold records of this

species within 5 miles of the project area and iNaturalist does not have records of the species within Wagoner County. The rufa red knot has not been recorded on the CBC (National Audubon Society 2023b) or BBS (USGS 2023b) within the project area. eBird (2023) does not show observations from hotspots within the vicinity of the project.

The project area lacks the tidal flats, shorelines, coastal and intertidal mudflats, and sandy beaches that would be primarily used for forage. The project area contains small ponds and impoundments typically less than one acre in size. While receding waters in times of dry conditions could create muddy flats, the rufa red knot would likely prefer habitats to the south along the banks of the Arkansas River, and to the east along the shores of the Neosho River. Therefore, based on the field habitat assessment, and the documentation record of the species occurrence, it is SWCA's opinion that there is low potential for a rufa red knot to utilize the project area as stopover habitat. There is a moderate potential for flyover during its migration between breeding and wintering grounds, however it is not anticipated that the rufa red knot would be impacted by construction activities.

4.3 Alligator Snapping Turtle

The proposed endangered alligator snapping turtle (*Macrochelys temminckii*) is the largest freshwater turtle native to North America. They are found in rivers, lakes, oxbows, and sloughs, preferring areas with tree canopy cover. They spend most of their time in the water. They feed on fish, crayfish, mussels, birds, mammals, and other reptiles and amphibians. Opportunistic feeders, they will scavenge food and may lure prey with a specialized appendage on the floor of the mouth (Sievert and Sievert 2021). The ONHI (2023) does not hold records of this species within 5 miles of the project area and iNaturalist does not have records of the species within Wagoner County.

The project area contains perennial streams and ponds which are suitable habitat for the species but there have been no reported sightings of the species near the project area. Therefore, based on the field habitat assessment, and the documentation record of the species occurrence, it is SWCA's opinion that there is moderate potential for the alligator snapping turtle to utilize the project area. Coordination with the USFWS for technical guidance is recommended if there is potential for perennial aquatic habitat to be impacted by development activities.

4.4 Neosho Mucket

The Neosho mucket (*Lampsilis rafinesqueana*) is a freshwater mussel known from the Neosho, Illinois, and Verdigris River Basins in northeast Oklahoma, southeast Kansas, southwest Missouri, and northwest Arkansas. Specifically, they are currently found in 9 rivers within these basins including: the Cottonwood, Elk, Fall, Illinois, Neosho, Shoal, Spring, North Fork Spring, and Verdigris Rivers.

Neosho mucket habitat is commonly associated with riffles and runs comprised of gravel substrates with a moderate to swift current. This species becomes gravid from May to August, and releases larva from July through September which then attach to smallmouth and largemouth bass that serve as a host fish (MDOC 2013).

The project area streams are within the Verdigris River watershed but none contain suitable habitat for this mussel species. Based on the field habitat assessment, and the documentation record of the species occurrence, it is SWCA's opinion that there is low potential for the Neosho mucket to occur within the project area.

4.5 Rabbitsfoot Mussel

Rabbitsfoot (*Quadrula cylindrica cylindrica*) are medium-sized freshwater mussels with an elongated, rectangular shell. The outside of the shell is typically olive to yellow-brown and covered with dark triangles; the inside of the shell is white. This mussel occupies streams with stable currents, gravel bottoms, and clear water (ODWC 2023d).

The project site does contain streams suitable for rabbitsfoot habitat, however, in Oklahoma, rabbitsfoot is only known to occur in McCurtain County. Based on the field habitat assessment, and the documentation record of the species occurrence, it is SWCA's opinion that there is low potential for the rabbitsfoot mussel to occur within the project area.

4.6 American Burying Beetle

The American burying beetle (*Nicrophorus americanus*) is federally listed as threatened and is currently known to occur in at least 29 counties in the eastern half of Oklahoma. The highest densities of the American burying beetle occur in open, oak-hickory forests with native grass cover, but this species has been successfully live-trapped in a wide range of habitats, including wet meadows, partially forested loess canyons, oak-hickory forests, shrub land and grasslands, lightly grazed pastures, riparian zones, coniferous forests, and deciduous forests with open understory (ODWC 2023e; USFWS 2019). Current risk factors include habitat loss and alteration due to intensive agricultural land uses, commercial forestry, and some areas of urban development. Land use from planted pine silviculture provides marginal habitat at best (USFWS 2019). The two limiting factors for this beetle are access to suitable soils for carcass burial and a diverse small mammal or bird community for prey. This beetle is nocturnal and spends the daylight hours buried in loose soil. It feeds almost exclusively on the carcasses of dead animals, especially small birds and rodents (ODWC 2023e). The ONHI (2023) has two records documenting the occurrence of the American burying beetle within approximately 4.6 miles and 1.8 miles of the project area, and one record exists for Wagoner County in iNaturalist (2023) approximately 27 miles southeast of the project area.

The project area consists primarily of pasture and deciduous forest habitats with tall vegetation suitable for American burying beetle habitat. Based on the field habitat assessment, and the documentation record of the species occurrence, it is SWCA's opinion that there is moderate potential for the American burying beetle to occur within the project area. However, under the protective regulations issued under section 4(d) of the Endangered Species Act (ESA) for this species, incidental take is not prohibited for projects without a federal nexus if the project is outside of two specific conservation areas in Oklahoma (Federal Register 85: 65241–65261), neither of which are within nor adjacent to the project area.

4.7 Monarch Butterfly

This species has been designated as a candidate for listing as threatened or endangered (USFWS 2020). The eastern population of the monarch butterfly (*Danaus plexippus*) occurs in Oklahoma for breeding and migration in the spring (March through July) and migration in the fall (September and October) (Monarch Joint Venture 2023). This population overwinters in the mountains of central Mexico, primarily in the state of Michoacán. Adult monarchs are found in a variety of habitats with abundant nectar plants including native prairies, pastures, open woodlands and savannas, desert scrub, roadsides, and other habitats, including urbanized areas. The species requires milkweed (primarily *Asclepias* spp.), as an obligate host plant for egg deposition, which is an essential component of habitat required for reproduction and survival of the species (USFWS 2020). iNaturalist (2023) has records documenting the

occurrence of the monarch butterfly just south of the project area. SWCA biologists also observed two species of milkweed within the project area.

Due to the known occurrence of milkweed and flowering plants within the project area, and the occurrence of monarchs adjacent to the project area, it is SWCA's opinion that there is a high potential for monarch butterflies to occur within the project area. Since this species is not currently listed by the ESA, no further action is required for development activities at this time.

4.8 Gray Bat

The gray bat (*Myotis grisescens*) is a cave obligate, using caves year-round as hibernacula during winter and roosting habitat during the summer, though different caves may be occupied seasonally. The major wintering caves are located in the limestone karst of Arkansas, Tennessee, Missouri, Kentucky, and Alabama with the summer range expanding out to eastern Oklahoma and Kansas to western Virginia and North Carolina and from southern Illinois and Indiana to northern Florida. There are no known gray bat hibernacula in Oklahoma while all historic and/or current summer roosting caves are located in the northeastern Oklahoma counties of Adair, Cherokee, Delaware, and Ottawa. Crawford County, in southeast Kansas, is the only county in Kansas known to have summer gray bats (Martin 2007; USFWS 2009a).

Gray bats have specific habitat requirements and it is estimated that only 5 percent of available caves represent suitable habitat. Typical winter hibernacula are characterized by deep, vertical caves with multiple openings, good airflow, and cool temperatures ranging from 42 to 52 degrees Fahrenheit (°F) (USFWS 1982; Martin 2007). Caves used during the summer for maternity colonies or bachelor roosting are warmer with typical temperatures ranging from 57 to 77°F. Hibernation begins as early as September with emergence occurring as early as late March.

Foraging takes place over nearby wetlands, streams, lakes, or reservoirs where flying insects are naturally abundant. Summer colonies rarely occur more than a few miles away from a major waterbody that provides foraging opportunities with maternity colonies often located especially close to foraging habitat. Forested areas around caves also represent an important aspect of gray bat habitat as it provides a safe travel corridor to nearby foraging areas and protective cover for emerging young.

Geology within the project area does not support a landscape commonly associated with presence of cave or karst features (ODWC 2021); and, during the field assessment, SWCA did not identify caves or geologic features within the project area that would support roosting sites.

The gray bat is unlikely to utilize habitat within and adjacent to the project area to forage due to lack of potential roost caves. Additionally, no individuals have been documented within Wagoner County. Given this species' habitat requirements, it is SWCA's opinion that there is low potential that the gray bat would occur within the project area.

4.9 Tricolored Bat

The proposed endangered tricolored bat (*Perimyotis subflavus*) occupies a wide range, occurring in roughly the eastern half of the United States from Minnesota, South Dakota, and the eastern edges of Wyoming, Colorado, and New Mexico east to the Atlantic coast. The species hibernates primarily in caves and mines of varying size, though in its southern range it can be found in road culverts, abandoned wells, and in tree cavities. This species has high site fidelity and will often return to the same place of hibernation year after year. During non-hibernating seasons, the tricolored bat primarily roosts in forested

areas among live and dead leaf clusters of deciduous hardwood trees but they have been known to use a variety of other sheltered roosting sites. (USFWS 2023c; ODWC 2013)

As a species only recently proposed for listing, the tricolored bat lacks the detailed long-term occurrence data that other species may have. It was proposed as endangered on September 13, 2022 and the final rule is expected in fall 2023.

Geology within the project area consists of sandstone and shale material which is not commonly associated with presence of cave or karst features (ODWC 2021); and, during the field assessment, SWCA did not identify caves or geologic features within the project area that would support maternity sites.

The tricolored bat may utilize the riparian corridors that consist of deciduous trees within and adjacent to the project area to forage and for potential roost trees. Additional forage may occur throughout the forested canopy. While no individuals have been documented within Wagoner County, the project area is within the species' range. Given this species' migratory potential, it is SWCA's opinion that there is moderate potential for the species to occur within the project area. Due to the moderate potential for forage in the forested areas, coordination with the USFWS for technical guidance is recommended if development requires any tree clearing.

5 DISCUSSION

The project area has been field verified to be somewhat consistent with the NLCD (Multi-Resolution Land Characteristics Consortium 2019). Perennial and intermittent streams are found within the project area, running south to north and east to west, towards Spunky Creek. Mature deciduous forest is found primarily in the northern portion of the property with the rest being pasture. PEM wetlands are primarily associated with the floodplains of streams. Impoundments are scattered throughout the project area and provide minimal habitat.

The project area is within the migratory range of the federally listed threatened piping plover and federally listed endangered rufa red knot. These species will typically utilize habitats similar to their breeding and wintering habitats, such as mudflats, tidal flats, and sandbars, for stopover habitat. The project area does not provide these preferred habitats; therefore, there is low potential for the piping plover and rufa red knot to stop over within the project area and moderate potential for these species to fly over the project area during migration. It is not anticipated that development activities would impact the piping plover and red knot.

The project area is within range of the proposed endangered alligator snapping turtle, which inhabits rivers, lakes, oxbows, and sloughs, preferring areas with tree canopy cover. As the project area contains canopy covered waterways and waterbodies, there is moderate potential for the species to utilize the project area. Development is only expected to impact this species if aquatic resources are impacted.

The project area is within the range of the federally listed threatened American burying beetle, which inhabits a wide variety of forested and grass plain habitats. The project areas deciduous forest and pasture provide good habitat. It is anticipated that the project area has moderate potential for the occurrence of the American burying beetle. However, under the protective regulations issued under section 4(d) of the ESA for this species, incidental take is not prohibited for projects without a federal nexus if the project is outside of two specific conservation areas in Oklahoma (Federal Register 85: 65241–65261), neither of which are within nor adjacent to the project area.

Due to the known occurrence of milkweed and flowering plants within the project area, and the occurrence of monarch butterflies adjacent to the project area, it is SWCA's opinion that there is a high potential for monarch butterflies to occur within the project area. Since this species is not currently listed by the ESA, no further action is required for development activities at this time.

The gray bat is unlikely to utilize habitat within and adjacent to the project area to forage due to lack of potential roost caves. Additionally, no individuals have been documented within Wagoner County. Given this species' habitat requirements, it is SWCA's opinion that there is low potential that the gray bat would occur within the project area.

The project area is within the range of the proposed endangered tricolored bat. The project area provides potential forage and summer roosting habitat along the riparian corridors and mature deciduous wooded areas. The project area has bridge/culvert habitat that supports hibernacula for this species. It is anticipated that the project area has moderate potential to support roosting and foraging habitat for the tricolored bat. It is recommended that the project coordinate with the USFWS for technical guidance regarding potential development restrictions.

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APPENDIX A

Photographic Log



Figure A1. Representative photo of herbaceous upland vegetative community within the project area, facing south (DPA001_U).



Figure A2. Representative photo of herbaceous upland vegetative community within the project area, facing west (DPA003_U).



Figure A3. Representative photo of herbaceous upland vegetative community within the project area, facing north (DPA004_U).



Figure A4. Representative photo of forested upland vegetative community within the project area, facing east (DPA006_U).



Figure A5. Representative photo of forested upland vegetative community within the project area, facing south (DPA007_U).



Figure A6. Representative photo of PEM wetland vegetative community within the project area, facing south (WA001; DPA002_PEM).



Figure A7. Representative photo of PEM wetland vegetative community within the project area, facing west (WA002; DPA005_PEM).



Figure A8. Representative photo of perennial stream SA003 within the project area, facing downstream.



Figure A9. Representative photo of intermittent stream SA001a within the project area, facing downstream.



Figure A10. Representative photo of intermittent stream SA001b within the project area, facing downstream.



Figure A11. Representative photo of intermittent stream SA001c within the project area, facing upstream.



Figure A12. Representative photo of intermittent stream SA005 within the project area, facing downstream.



Figure A13. Representative photo of ephemeral stream SA002a within the project area, facing upstream.



Figure A14. Representative photo of ephemeral stream SA002c within the project area, facing downstream.



Figure A15. Representative photo of ephemeral stream SA004b within the project area, facing downstream.



Figure A16. Representative photo of ephemeral stream SA006 within the project area, facing upstream.



Figure A17. Representative photo of ephemeral stream SA008 within the project area, facing upstream.



Figure A18. Representative photo of ephemeral stream SA009 within the project area, facing upstream.



Figure A19. Representative photo of ephemeral stream SA010 within the project area, facing downstream.



Figure A20. Representative photo of ephemeral stream SA015 (roadside ditch) within the project area, facing upstream.



Figure A21. Representative photo of wet-weather conveyance SA007 within the project area, facing upstream.



Figure A22. Representative photo of man-made pond within the project area, facing west (PA008).



Figure A23. Representative photo of man-made impoundment within the project area, facing east (PA001).



Figure A24. Representative photo of man-made impoundment within the project area, facing east (PA002).



Figure A25. Representative photo of man-made impoundment within the project area, facing south (PA003).



Figure A26. Representative photo of natural impoundment within the project area, facing north (PA004).



Figure A27. Representative photo of man-made impoundment within the project area, facing south (PA005).



Figure A28. Representative photo of man-made impoundment within the project area, facing east (PA006).



Figure A29. Representative photo of man-made impoundment within the project area, facing west (PA007).

APPENDIX B

IPaC and ONHI Species Lists



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
Phone: (918) 581-7458 Fax: (918) 581-7467

In Reply Refer To:
Project Code: 2023-0104995
Project Name: Fair Oaks 542ac

July 14, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
 - USFWS National Wildlife Refuges and Fish Hatcheries
 - Migratory Birds
 - Wetlands
-

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Oklahoma Ecological Services Field Office

9014 East 21st Street

Tulsa, OK 74129-1428

(918) 581-7458

PROJECT SUMMARY

Project Code: 2023-0104995
Project Name: Fair Oaks 542ac
Project Type: Acquisition of Lands
Project Description: Unspecified municipal development
Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@36.1226576,-95.74322531097954,14z>



Counties: Wagoner County, Oklahoma

ENDANGERED SPECIES ACT SPECIES

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [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.

MAMMALS

NAME	STATUS
Gray Bat <i>Myotis grisescens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> There is proposed critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

REPTILES

NAME	STATUS
Alligator Snapping Turtle <i>Macrochelys temminckii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

CLAMS

NAME	STATUS
Neosho Mucket <i>Lampsilis rafinesqueana</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3788	Endangered
Rabbitsfoot <i>Quadrula cylindrica cylindrica</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5165	Threatened

INSECTS

NAME	STATUS
American Burying Beetle <i>Nicrophorus americanus</i> Population: Wherever found, except where listed as an experimental population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/66	Threatened
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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 OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

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.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

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
Bald Eagle <i>Haliaeetus leucocephalus</i> 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.	Breeds Oct 15 to Aug 31
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

NAME	BREEDING SEASON
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere

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.

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 (|)

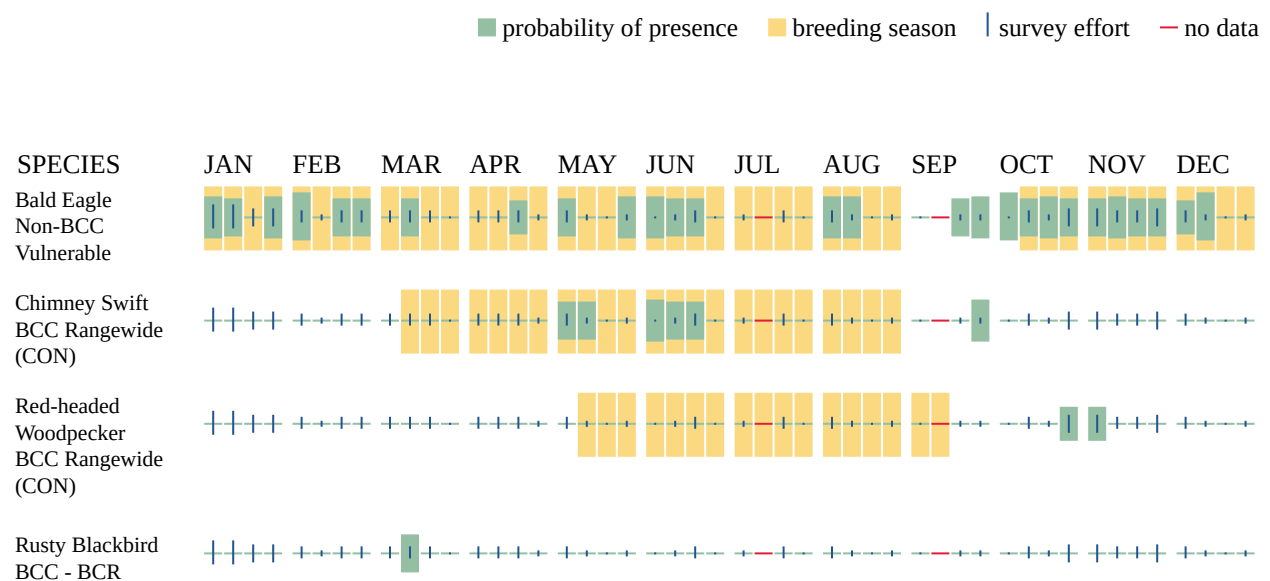
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

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.



Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

MIGRATORY BIRDS FAQ

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](#) 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 list of migratory birds that potentially occur 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 [Rapid Avian Information Locator \(RAIL\) 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 or migrating in my 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 query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. 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
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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.

WETLANDS

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.

FRESHWATER EMERGENT WETLAND

- [PEM1C](#)

FRESHWATER FORESTED/SHRUB WETLAND

- [PFO1A](#)

RIVERINE

- [R4SBC](#)
- [R5UBF](#)

FRESHWATER POND

- [PUBHh](#)
-

IPAC USER CONTACT INFORMATION

Agency: SWCA Environmental Consultants

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State: OK

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Phone: 7573755595

OBS Ref. 2023-332-BUS-SWC

Dear Anthony Thornton,

July 20, 2023

We have reviewed occurrence information on federal and state threatened, endangered, or candidate species currently in the Oklahoma Natural Heritage Inventory database for the following location you provided:

Sec. 7, 17, and 18-T19N-R15E, Wagoner County

We found 3 occurrences of relevant species within the vicinity of the project location as described.

Species Name	Common Name	Federal Status
<i>Nicrophorus americanus</i>	American Burying Beetle	Threatened
County	TRS	Count
Tulsa	Sec. 3-T18N-R14E	1
Wagoner	Sec. 28-T19N-R15E	1
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Protected
County	TRS	Count
Tulsa	Sec. 23-T19N-R14E	1

Additionally, absence from our database does not preclude such species from occurring in the area.

If you have any questions about this response, please send me an email, or call us at the number given below.

Although not specific to your project, you may find the following link helpful.

ONHI, guide to ranking codes for endangered and threatened species:
<http://www.oknaturalheritage.ou.edu/content/biodiversity-info/ranking-guide/>

Kristin Comolli
Oklahoma Natural Heritage Inventory
(405) 325-4700
kcomolli@ou.edu

APPENDIX C
Biologist Resumes

KRISTA MCCLURE, B.A., ASSISTANT STAFF BIOLOGIST

Krista McClure is an assistant staff biologist who has been working remotely for SWCA's Arlington, Texas office, for excess of one year. She is certified to conduct wetland delineations, with guidance from USACE regional supplements, as of March 2023. Ms. McClure has served as a field crew member in Oklahoma and Texas on a multitude of natural resource surveys, including aquatic resource delineations, habitat assessments for threatened and endangered species, aerial and on-the-ground raptor nest surveys, and Phase I environmental site assessments. Her experience in environmental consulting also entails biological resource desktop reviews, prey base assessment ground-truthing, and extensive stormwater pollution prevention plan (SWPPP) inspections associated with oil and natural gas pipeline construction and transmission line re-builds.

YEARS OF EXPERIENCE

1+

EXPERTISE

Field data collection, including notetaking and GPS data (using Juniper Geode)

Wetland and stream delineation

Raptor nest surveys

Natural resources and habitat surveys

Environmental compliance monitoring

Desktop reviews

EDUCATION

B.A., Sustainability Studies; University of Texas at Austin, TX; December 2021

B.A., Geography; University of Texas at Austin, TX; 2021

REGISTRATIONS / CERTIFICATIONS

Certified Wetland Delineator; Wetland Training Institute, Inc.; 2023

SELECTED PROJECT EXPERIENCE (* denotes project experience prior to SWCA)

Pittsburg to Johnston County; American Electric Power; Johnston County, Oklahoma. SWCA is conducting various cultural and natural resources services for a transmission line rebuild. *Role: Assistant Staff Biologist. Performed wetland delineation and habitat suitability surveys for American Burying Beetle as crew member.*

Barnsdall to Skiatook Transmission Line; American Electric Power; Osage County, Oklahoma. SWCA managed the protected species investigations, mitigation plan, and stormwater pollution prevention plan (SWPPP) for a transmission line rebuild. *Role: Assistant Staff Biologist. Performed SWPPP inspections and generated inspection reports with photologs. Assisted with American Burying Beetle presence surveys.*

Daytona Pipeline; Confidential Client and Location. SWCA managed the Section 404 aquatic resources delineation, cultural resources investigations, and protected species investigations prior to construction of a natural gas pipeline. *Role: Assistant Staff Biologist. Performed wetland delineation and T&E species field surveys as crew member for proposed project and associated access roads.*

Beaver Creek Delineation; Confidential Client and Location. SWCA provided environmental support via Section 404 aquatic resources delineation for a proposed solar project. *Role: Natural Resource Technician. Performed wetland delineation as GPS technician for the proposed project.*

Buzz Solar; Confidential Client and Location. SWCA was engaged to prepare a Phase I environmental site assessment, Section 404 aquatic resources delineation, and wildlife habitat assessment for a proposed solar project. *Role: Natural Resource Technician. Recorded field observations and photos for Phase I environmental site assessment. Performed wetland delineation as crew member.*

Wagon Wheel; Confidential Client and Location. SWCA provided environmental services that included bat, raptor, and prey base assessment surveys for a proposed wind project. *Role: Natural Resource Technician. Assisted with aerial eagle (and other raptor) nest surveys. Conducted ground-truthing surveys for prey base (e.g., prairie dogs) assessment.*

ANTHONY THORNTON, M.S., STAFF BIOLOGIST

Mr. Thornton is a staff biologist with over 8 years of experience, including 1 year of experience working in SWCA's Arlington, Texas, office. His project responsibilities include serving as crew lead for aquatic resources delineations and threatened and endangered (T&E) species surveys for habitat analysis. He has led multiple crews for aquatic resources delineation surveys within the Arid West, Great Plains, and Atlantic and Gulf Coastal Plains U.S. Army Corps of Engineers (USACE) wetland delineation regions. His versatility as a staff biologist also includes experience with Phase I environmental site assessments and report and permitting preparation. He is also certified to conduct aquatic resources delineations nationwide, following the USACE manual.

YEARS OF EXPERIENCE

8+

EXPERTISE

Plant identification and T&E species surveys with habitat assessment

Stream and wetland delineation per USACE manual with Richard Chinn Environmental Training, Inc., certification

Field data collection, including taking adequate notes and using Juniper Geode

Phase I environmental site assessments

American burying beetle surveys

Raptor nest surveys

Invertebrate and fish sampling for stream health assessment as part of Oklahoma's Blue Thumb program

Water and soil testing, vegetation surveys, and wetland delineation as part of development of the Oklahoma Rapid Assessment for Floodplain Wetlands

EDUCATION

M.S., Natural Resource Ecology and Management; Oklahoma State University; Stillwater; 2021

REGISTRATIONS / CERTIFICATIONS

Certified Wetland Delineator; Richard Chinn Environmental Training, Inc.; 2022

SELECTED PROJECT EXPERIENCE

AEP Rock Falls Wind Farm PCMM; American Electric Power, Kay County, Oklahoma. SWCA is conducting Post Construction Mortality Monitoring for an established wind farm. *Role: Staff Biologist. Performed searcher efficiency trials, carcass persistence trials, and collected bat acoustic recordings for the project.*

Pittsburg to Johnston County; American Electric Power; Johnston County, Oklahoma. SWCA is conducting various cultural and natural resources services for a transmission line rebuild. *Role: Staff Biologist. Performed aquatic delineation and habitat suitability surveys for American burying beetle as field lead.*

Barnsdall to Skiatook Transmission Line; American Electric Power; Osage County, Oklahoma. SWCA managed the protected species investigations, mitigation plan, and stormwater pollution prevention plan (SWPPP) for a transmission line rebuild. *Role: Staff Biologist. Performed SWPPP inspections and generated inspection reports with photologs. Assisted with American burying beetle presence/absence surveys.*

Natural Gas Pipeline; Confidential Client and Location. SWCA managed the Section 404 aquatic resources delineation, cultural resources investigations, and protected species investigations prior to construction of a natural gas pipeline. *Role: Staff Biologist. Performed wetland delineation and T&E species field surveys as field lead for proposed project and associated access roads.*

Beaver Creek Delineation; Confidential Client and Location. SWCA provided environmental support via Section 404 aquatic resources delineation for a proposed solar project. *Role: Staff Biologist. Performed aquatic delineation as field lead for the proposed project.*

Buzz Solar; Confidential Client and Location. SWCA was engaged to prepare a Phase I environmental site assessment, Section 404 aquatic resources delineation, and wildlife habitat assessment for a proposed solar project. *Role: Staff Biologist. Recorded field observations and photos for Phase I environmental site assessment. Performed aquatic delineation as field lead.*

Wagon Wheel; Confidential Client and Location. SWCA provided environmental services that included bat, raptor, and prey base assessment surveys for a proposed wind project. *Role: Staff Biologist. Conducted aerial eagle (and other raptor) nest surveys.*